

NABIRA MAHAVIDYALAYA, KATOL ,
DIST. NAGPUR (MAHARASHTRA)

NABIRA MAHAVIDYALAYA, KATOL

Criterion 1 - Curricular Aspects

1.1 - Curricular Planning and Implementation

1.1.2 – The Institution adheres to the academic calendar including for the conduct of Continuous Internal Evaluation (CIE)

NABIRA MAHAVIDYALAYA, KATOL

K.K. Chandak Marg, Dhantoli, Katol
Distt. Nagpur (M.S.) Pin - 441 302
Graduation & Post Graduation in
Arts, Commerce, Science & Management

Phone : 07112 - 222004 Mobile : 8857026884
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NAAC'S B++ Accredited College

Ref.No. :

Date : 09/11/2024

DECLARATION

This is to declare that the information, reports, true copies and numerical data etc. furnished in this file as supporting documents are verified by IQAC and found correct.

Hence this is certificate.

Dr. Punit Raut
Co-Ordinator
IQAC, NMV Katol

Dr. S. K. Navin
Principal
Nabira Mahavidyalaya,
Katol, Dist. Nagpur.

B.Sc.- I SEMESTER -I Examination

Lie and Diversity of Non-chordates

(ZOOLOGY)

Time: 60 min Marks: 20

Q. 1. Describe the Reproduction in *Paramecium*. [10]

Q. 2 a) Describe the life cycle of *Plasmodium*. [05]

b) Write a note on Corals and Coral reef formation in *Obelia*. [05]

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Unit test Internal Marks Sheet

me : FIRST SEMESTER BACHELOR OF SCIENCE (B.Sc.)

Name : ZOOLOGY (PAPER I)

Name : (325) NABIRA MAHAVIDYALAYA

Winter-2023 Dr. V.G. Barsagade.

Sr. No.	STUDENT NAME	MARKS
1	ACHAL ANIL LOKHANDE	10
2	ANJALI DEVIDAS SEMBEKAR	12
3	ANUSHKA SUNILRAO INGOLE	13
4.	ASHIYA AZEEMUDDIN SYED	09
5	ASHVINI MAHADEO SONEKAR	15
6.	BHARATI DEVIDAS RAUT	14
7	BHARTI SANJAYRAO KINKAR	14
8	BHUMIKA MAHADEV MADAVI	14
9	CHANDA RAVINDRA RATHOD	12
10	CHETANA PRAMOD MESHRAM	13
11.	CHETNA SUNIL BONDRE	12
12	DIKSHA PANDURANG BORGHATE	—
13	DIMPAL HEMRAJ KALBANDE	12
14	DIPALI DILIP MAHATPURE	—
15	DIVYA DEVENDRA BEHANIYE	10
16	FARHAT NAZ RASHEED SHEIKH	16
17	GAYATRI PRAKASH NARNAWARE	12
18	GAYATRI PUNDLIKRAO GHORMADE	14
19	HARSHADA PRAMOD JAGDALE	17
20	HIMAKSHI MADHUKAR GHARAD	18
21	HIMANI HHIRACHANDRA BARAI	10
22	JANHAVI WASUDEO GHARAD	18
23	JAYASHRI NILESH GUND	—
24	KANCHAN NARENDRA NATHE	—
25	KHUSHALI SAHEBRAO KATLAM	8
26	KHUSHBU MEGHRAJ ZODE	9

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RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR

UNIT Test Internal Marks Sheet

Name : FIRST SEMESTER BACHELOR OF SCIENCE (B.Sc.)
Subject Name : ZOOLOGY (PAPER I)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : Winter-2023

Sr. No	STUDENT NAME	MARKS
27	KHUSHI GIRISH DHONDE	—
28	KOMAL DURGADAS TARASE	14
29	KOMAL NAMDEO VAIDYA	14
30	KOMAL RAMESH CHAUDHARI	—
31	KRUNALI PRAMOD BODHALE	12
32	KUNTI ANUP NARETE	12
33	LITESHWARI OMKAR BANGADKAR	10
34	MAHIMA TARESHWAR TIJARE	8
35	MANISHA MANOHAR TIJARE	8
36	MANSI RAJKUMAR WANGAL	10
37	MAYURI DHIRAJ LONE	—
38	MAYURI RAJENDRA DHOPRE	10
39	MONIKA MANOHAR BARAI	8
40	MONIKA SUNILRAO KHAWSHE	14
41	MRUNALI CHANDRASHEKHAR NAGMOTE	8
42	NAINA SAJAN THOSAR	12
43	NANDINI NARENDRA CHARDE	10
44	NEHA PRAMOD CHANNE	10
45	NEHA RAMESHWAR KHANDAIT	12
46	OSHIKA HARINARAYAN GHUGUSKAR	14
47	PAYAL RAMESHRAO TAYWADE	12
48	PAYAL VIJAY SHRIRAME	14
49	PRACHI RAJU NEHARE	10
50	PRAJAKTA PURUSHOTTAM NASARE	—
51	PRANALI MAHADEO TOPALE	10
52	PRIYA GOVINDA SIRSAM	08

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B.Sc.- I SEMESTER -I Examination

Environmental Biology

(ZOOLOGY)

Time: 60 min Marks: 20

Q. 1. Define Hydrosphere. Explain Physico-chemical characteristics of water. [10]

Q. 2 a) Write a note on Ecosystem and its type. [05]

b) Explain Single channel and Universal model of Ecosystem. [05]

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RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR

4 unit test Internal Marks Sheet

ıme : FIRST SEMESTER BACHELOR OF SCIENCE (B.Sc.)
Name : ZOOLOGY (PAPER II)
Name : (325) NABIRA MAHAVIDYALAYA
Winter-2023 Dr. T. S. Khedkar.

Sr. No.	STUDENT NAME	MARKS
01	ACHAL ANIL LOKHANDE	12
2	ANJALI DEVIDAS SEMBEKAR	11
3	ANUSHKA SUNILRAO INGOLE	12
4	ASFIYA AZEEMUDDIN SYED	10
5	ASHVINI MAHADEO SONEKAR	10
6	BHARATI DEVIDAS RAUT	—
7	BHARTI SANJAYRAO KINKAR	08
8	BHUMIKA MAHADEV MADAVI	—
9	CHANDA RAVINDRA RATHOD	10
10	CHETANA PRAMOD MESHRAM	12
11	CHETNA SUNIL BONDRE	12
12	DIKSHA PANDURANG BORGHATE	13
13	DIMPAL HEMRAJ KALBANDE	13
14	DIPALI DILIP MAHATPURE	14
15	DIVYA DEVENDRA BEHANIYE	16
16	FARHAT NAZ RASHEED SHEIKH	10
17	GAYATRI PRAKASH NARNAWARE	14
18	GAYATRI PUNDLIKRAO GHORMADE	8
19	HARSHADA PRAMOD JAGDALE	10
20	HIMAKSHI MADHUKAR GHARAD	—
21	HIMANI HHIRACHANDRA BARAI	12
22	JANHAVI WASUDEO GHARAD	16
23	JAYASHRI NILESH GUND	11
24	KANCHAN NARENDRA NATHE	10
25	KHUSHALI SAHEBRAO KATLAM	—
26	KHUSHBU MEGHRAJ ZODE	10

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...SAHEB MAHARAJ NAGPUR UNIVERSITY,
NAGPUR

UNIT Test Internal Marks Sheet

n Name : FIRST SEMESTER BACHELOR OF SCIENCE (B.Sc.)
ect Name : ZOOLOGY (PAPER I)
ge Name : (325) NABIRA MAHAVIDYALAYA
on : Winter-2023

Sr. No.	STUDENT NAME	MARKS
27	KHUSHI GIRISH DHONDE	08
28	KOMAL DURGADAS TARASE	10
29	KOMAL NAMDEO VAIDYA	12
30	KOMAL RAMESH CHAUDHARI	12
31	KRUNALI PRAMOD BODHALE	14
32	KUNTI ANUP NARETE	—
33	LITESHWARI OMKAR BANGADKAR	10
34	MAHIMA TARESHWAR TIJARE	10
35	MANISHA MANOHAR TIJARE	08
36	MANSI RAJKUMAR WANGAL	10
37	MAYURI DHIRAJ LONE	—
38	MAYURI RAJENDRA DHOPRE	—
39	MONIKA MANOHAR BARAI	14
40	MONIKA SUNILRAO KHAWSHE	12
41	MRUNALI CHANDRASHEKHAR NAGMOTE	10
42	NAINA SAJAN THOSAR	10
43	NANDINI NARENDRA CHARDE	08
44	NEHA PRAMOD CHANNE	11
45	NEHA RAMESHWAR KHANDAIT	12
46	OSHIKA HARINARAYAN GHUGUSKAR	—
47	PAYAL RAMESHRAO TAYWADE	—
48	PAYAL VIJAY SHRIRAME	10
49	PRACHI RAJU NEHARE	08
50	PRAJAKTA PURUSHOTTAM NASARE	14
51	PRANALI MAHADEO TOPALE	10
52	PRIYA GOVINDA SIRSAM	08

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B.Sc.- I SEMESTER - II Examination

Life and Diversity of Nonchordates

(ZOOLOGY)

Time: 60 min Marks: 20

Q. 1. Describe the respiratory system of *Pila.* [10]

Q. 2.a) Describe the female reproductive system of Cockroach. [05]

b) Give an account on life cycle of Mosquito and their role as an insect vector. [05]

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UNIT TEST Internal Marks Sheet

Exam Name : SECOND SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER I)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : SUMMER-2024

Sr. No.	STUDENT NAME	MARKS
01	ANJALI DEVIDAS SEMBEKAR	08
02	ANUSHKA SUNILRAO INGOLE	–
03	ASFIYA AZEEMUDDIN SYED	06
04	ASHVINI MAHADEO SONEKAR	14
05	BHARATI DEVIDAS RAUT	12
06	BHARTI SANJAYRAO KINKAR	10
07	CHANDA RAVINDRA RATHOD	10
08	CHETNA PRAMOD MESHRAM	12
09	CHETNA SUNIL BONDRE	11
10	DIKSHA PANDURANG BOROHATE	–
11	DIMPAL HEMRAJ KALBANDE	10
12	DIPALI DILIP MAHATPURE	10
13	DIVYA DEVENDRA BEHANIYE	06
14	FARHAT NAZ RASHEED SHEIKH	08
15	GAYATRI PRAKASH NARNAWARE	–
16	GAYATRI PUNDLIKRAO GHORMADE	10
17	HARSHADA PRAMOD JAGDALE	15
18	HIMAKSHI MADHUKAR GHARAD	11
19	HIMANI HIRACHANDRA BARAI	–
20	JANHAVI WASUDEO GHARAD	12
21	KANCHAN NARENDRA NATHE	10
22	KHUSHALI SAHEBRAO KATLAM	10
23	KHUSHBU MEGHRAJ ZODE	–
24	KHUSHI GIRISH DHONDE	10
25	KOMAL DURGADAS TARASE	09
26	KOMAL NAMDEO VAIDYA	09

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RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
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Unit test ~~Internal~~ Marks Sheet

Exam Name : SECOND SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER I)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : SUMMER-2024

Dr. T. S. Khedkar.

Sr. No.	STUDENT NAME	MARKS
27	KOMAL RAMESH CHAUDHARI	18
28	KRUNALI PRAMOD BODHALE	10
29	KUNTI ANUP NARETE	10
30	LITESHWARI OMKAR BANGADKAR	—
31	MAHIMA TARESHWAR TIJARE	—
32	MANISHA MANOHAR TIJARE	16
33	MANSI RAJKUMAR WANGAL	8
34	MAYURI DHIRAJ LONE	06
35	MONIKA MANOHAR BARAI	04
36	MONIKA SUNILRAO KHAWSHE	08
37	NAINA SAJAN THOSAR	10
38	NANDINI NARENDRA CHARDE	10
39	NEHA RAMESHWAR KHANDAIT	12
40	OSHIKA HARINARAYAN GHUGUSKAR	14
41	PAYAL VIJAY SHRIRAME	14
42	PRACHI RAJU NEHARE	12
43	PRAJAKTA PURUSHOTTAM NASARE	10
44	PRANALI MAHADEO TOPALE	08
45	PRIYA GOVINDA SIRSAM	08
46	PUJA MUKESH ARODE	10
47	RADHIKA GAJENDRA KAKDE	10
48	RESHAM SANJAY KAWADSE	06
49	RIDDHI VIJAY KALBANDE	—
50	RUCHIKA DHARMARAJ SURYAVANSHI	—
51	RUTUJA SUDHIRRAO DHARME	10
52	SAKSHI NARENDRA FUSE	08

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RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

Internal Marks Sheet

Exam Name : SECOND SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER I)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : SUMMER-2024

Sr. No.	STUDENT NAME	MARKS
53	SAKSHI SURYAKANT VYAWAHARE	08
54	SALONI JANARDHAN MANMODE	06
55	SALONI SURESH SIRAM	09
56	SAMIKSHA UTTAM KAWALKAR	10
57	SAMRUDDHI DEVENDRA YEOLE	11
58	SANAKSHI ISHWAR SHENDE	12
59	SANSKRUTI DEWANAND MESHRAM	13
60	SHALAKA PRAKASH ATRAM	13
61	SHRUTI PRAMOD MOHOD	14
62	SHUBHANGINI SIDDHARTH SOMKUWAR	16
63	SNEHAL UDARAM AHAKE	—
64	SRUSHTI RATNAKAR DHOK	—
65	TANUJA PRAKASH BHALAVI	16
66	TANVI GAJANAN PANDE	12
67	TEJASWINI MOHANRAO MANMODE	10
68	TINA RAJU MAHORIYA	11
69	TRUPTI NIRANJAN CHARDE	—
~~70~~	TUBA MAHEROSH USMAN KHAN	06
71	VAISHALI RAMESH CHAVHAN	08
72	VAISHNAVI VIDYADHAR BAGDE	08
73	VEDANTI DILIP REWATKAR	14
74	VISHAKHA MAHESH UKE	10
75	VISHALI MAROTI JUGSENIYA	10
76	YAMINI RAJENDRA THOTE	09
~~77~~	YAMINI SUNIL THAKRE	06
78	ANIKET SITARAM RATHOD	08

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B.Sc.- I SEMESTER - II Examination
Cell Biology
(ZOOLOGY)

Time: 60 min Marks: 20

Q. 1. Describe the Prokaryotic and Eukaryotic cell. [10]

Q. 2.a) Describe the Electron Transport Chain (ETS). [05]

b) Give an account on Lysosomes. [05]

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Unit test/ ~~Internal~~ Marks Sheet

Exam Name : SECOND SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER II)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : SUMMER-2024 Kel. Ankita Gajabe.

Sr. No.	STUDENT NAME	MARKS
01	ANJALI DEVIDAS SEMBEKAR	11
02	ANUSHKA SUNILRAO INGOLE	12
03	ASFIYA AZEEMUDDIN SYED	11
04	ASHVINI MAHADEO SONEKAR	10
05	BHARATI DEVIDAS RAUT	9
06	BHARTI SANJAYRAO KINKAR	10
07	CHANDA RAVINDRA RATHOD	11
08	CHETNA PRAMOD MESHRAM	12
09	CHETNA SUNIL BONDRE	7
10	DIKSHA PANDURANG BOROHATE	—
11	DIMPAL HEMRAJ KALBANDE	—
12	DIPALI DILIP MAHATPURE	04
13	DIVYA DEVENDRA BEHANIYE	06
14	FARHAT NAZ RASHEED SHEIKH	11
15	GAYATRI PRAKASH NARNAWARE	12
16	GAYATRI PUNDLIKRAO GHORMADE	14
17	HARSHADA PRAMOD JAGDALE	14
18	HIMAKSHI MADHUKAR GHARAD	12
19	HIMANI HIRACHANDRA BARAI	10
20	JANHAVI WASUDEO GHARAD	10
21	KANCHAN NARENDRA NATHE	12
22	KHUSHALI SAHEBRAO KATLAM	12
23	KHUSHBU MEGHRAJ ZODE	11
24	KHUSHI GIRISH DHONDE	—
25	KOMAL DURGADAS TARASE	—
26	KOMAL NAMDEO VAIDYA	11

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RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

Internal Marks Sheet

Exam Name : SECOND SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER I)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : SUMMER-2024

Sr. No.	STUDENT NAME	MARKS
27	KOMAL RAMESH CHAUDHARI	14
28	KRUNALI PRAMOD BODHALE	14
29	KUNTI ANUP NARETE	12
30	LITESHWARI OMKAR BANGADKAR	12
31	MAHIMA TARESHWAR TIJARE	13
32 32	MANISHA MANOHAR TIJARE	13
33 43	MANSI RAJKUMAR WANGAL	10
34 44	MAYURI DHIRAJ LONE	10
35 45	MONIKA MANOHAR BARAI	—
36. 45	MONIKA SUNILRAO KHAWSHE	—
37 47	NAINA SAJAN THOSAR	10
38 48	NANDINI NARENDRA CHARDE	8
39 49	NEHA RAMESHWAR KHANDAIT	04
40 50	OSHIKA HARINARAYAN GHUGUSKAR	04
41 51	PAYAL VIJAY SHRIRAME	—
42 52	PRACHI RAJU NEHARE	08
43 53	PRAJAKTA PURUSHOTTAM NASARE	06
44 54	PRANALI MAHADEO TOPALE	10
45 55	PRIYA GOVINDA SIRSAM	10
46 56	PUJA MUKESH ARODE	12
47 57	RADHIKA GAJENDRA KAKDE	11
48 58	RESHAM SANJAY KAWADSE	14
49 59	RIDDHI VIJAY KALBANDE	12
50 60	RUCHIKA DHARMARAJ SURYAVANSHI	12
51 61	RUTUJA SUDHIRRAO DHARME	10
52 62	SAKSHI NARENDRA FUSE	10

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RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

UNIT TEST ~~Internal~~ Marks Sheet

Exam Name : SECOND SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER I)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : SUMMER-2024

Sr. No.	STUDENT NAME	MARKS
53 ~~63~~	SAKSHI SURYAKANT VYAWAHARE	10
54 ~~64~~	SALONI JANARDHAN MANMODE	11
55 ~~65~~	SALONI SURESH SIRAM	12
56 ~~66~~	SAMIKSHA UTTAM KAWALKAR	10
57 ~~67~~	SAMRUDDHI DEVENDRA YEOLE	04
58 ~~68~~	SANAKSHI ISHWAR SHENDE	10
59 ~~69~~	SANSKRUTI DEWANAND MESHRAM	06
60 ~~70~~	SHALAKA PRAKASH ATRAM	15
61 ~~71~~	SHRUTI PRAMOD MOHOD	16
62 ~~72~~	SHUBHANGINI SIDDHARTH SOMKUWAR	09
63 ~~73~~	SNEHAL UDARAM AHAKE	10
64 ~~74~~	SRUSHTI RATNAKAR DHOK	11
65 ~~75~~	TANUJA PRAKASH BHALAVI	12
66 ~~76~~	TANVI GAJANAN PANDE	—
67 ~~77~~	TEJASWINI MOHANRAO MANMODE	—
68 ~~78~~	TINA RAJU MAHORIYA	13
69 ~~79~~	TRUPTI NIRANJAN CHARDE	14
70	TUBA MAHEROSH USMAN KHAN	—
71	VAISHALI RAMESH CHAVHAN	10
72	VAISHNAVI VIDYADHAR BAGDE	10
73	VEDANTI DILIP REWATKAR	11
74	VISHAKHA MAHESH UKE	13
75	VISHALI MAROTI JUGSENIYA	14
76	YAMINI RAJENDRA THOTE	10
77	YAMINI SUNIL THAKRE	08
78	ANIKET SITARAM RATHOD	06

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B.Sc.- II SEMESTER -III Examination

Life and Diversity of Chordates

(ZOOLOGY)

Time: 60 min Marks: 20

Q. 1 Describe the process of spermatogenesis and type of eggs. [10]

Q. 2 a) Write a note on development of aortic arches of frog. [05]

b) Explain the types of cleavages. [05]

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UNIT TEST ~~Internal Marks Sheet~~

Exam Name : THIRD SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER I)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : Winter-2023

Ku. Ankita A. Gaibe

Seat No	STUDENT NAME	MARKS
01	ALFIYA TABASSUM SABIR HUSEN SHAH	15
02	AMISHA VIJAY BUJRUK	13
03	ANJALI RAMDAS DHONGADE	12
04	APARNA GAJANAN CHINCHMALATPURE	13
05	ASHWINI YADAVRAO KAMBALE	14
06	BHUMESHWARI MOHANRAO KHAWSHI	15
07	CHHAKULI MADHAV WADULE	13
08	DAMINI SURESH KEWATE	12
09	DEVYANI NARENDRA RAIPURKAR	10
10	DHANSHRI SANJAY NANOTE	12
11	DISHA ANIL GIRADKAR	13
12	DIVYA VILAS MANKAWADE	15
13	DNYANESHWARI DATTARAJ WARTHE	16
14	GAURI SUNIL BARDE	13
15	GRENCY SANDIP DHANDE	15
16	HEMLATA RAMESHWAR KALE	14
17	JANHAVI NAMDEO MEHAR	12
18	JAYSHRI ASHOK RAUT	13
19	KALYANI BHASKARRAO BABHULKAR	14
20	KALYANI CHHAGAN KALBANDE	12
21	KHUSHALI DATTUJI THOMBRE	13
22	KIRTI HEMANTRAO SONAK	14
23	KRUTIKA MURLIDHAR TOPALE	15
24	LATIKA UMESH MAKDE	14
25	MADHURI MAROTI SARWARE	13
26	MANASVI CHHATRAPALSING JAKHNAWAT	12
27	MANSI PRAKASH SASANKAR	14
28	MITALI MAHADEO GAJBHIYE	15
29	MONALI RAMESH NARNAWARE	12
30	NANDINI RADHESHYAM CHARPE	13
31	NEHA NARENDRA PATIL	14
32	NIKITA PRAKASHRAOJI KALMEGH	10
33	NISHA NITIN DHOLE	13
34	PALLAVI UTTAM PATHADE	12
35	POOJA ANIL DAMBHALE	13

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NAGPUR UNIVERSITY,
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Internal Marks Sheet

Name : THIRD SEMESTER BACHELOR OF SCIENCE (B.SC.)
Object Name : ZOOLOGY (PAPER I),
College Name : (325) NABIRA MAHAVIDYALAYA
Session : Winter-2023

J	STUDENT NAME	M
36	PRACHI VIJAY DHOPRE	10
37	PRANALI ASHOK UTANE	11
38	PRATIKSHA DILIP FULB	14
39	PRATIKSHA RAVINDRA SAHARE	14
40	PURVA SHESHRAO KHARPKAR	10
41	RAJSHREE RAJENDRA REWATKAR	13
42	RASIKA ANANDRAO SIRSAM	11
43	RASIKA KESHAV WAGHE	09
44	RUCHIKA PRAMOD MALVI	12
45	RUSHALI RANJITRAO RAMPURE	12
46	SAKSHI DAMODHAR NANOTKAR	14
47	SAKSHI RAJU BUIRUK	09
48	SAKSHI SEWADAS NIKOSE	12
49	SAMIKSHA CHANDRASHEKHAR DONGARE	13
50	SAMIKSHA RAMDASJI CHANNE	12
51	SAPANA DIWAKAR WARKHADE	12
52	SEJAL NARENDRA WASULE	08
53	SHARVARI RAVICHAND SOMKUWAR	15
54	SHIVANI PRABHAKAR MOHANKAR	09
55	SHRADDHA DILIP NAWALNETE	09
56	SNEHA ASHOK GAIKWAD	13
57	SNEHA HEMRAJ SHIRASKAR	12
58	SUKANYA ASHOK KODAPE	15
59	TINA SANDIP YELEKAR	15
60	VAISHNAVI LILADHAR NIBUDE	12
61	VAISHNAVI MOHAN WERULKAR	12
62	VAISHNAVI UMESHCHANDRA NADEKAR	10
63	SAMEER SHESHRAO ATRAM	15
64	SHIVPRASAD PANDHARINATH SURYAVANSHI	10
65	TUSHAR DILIP PANCHABHOLE	02
66	ACHAL SANJAY WATANE	AA
67	AKANKSHA REVNATH ASOLE	AA
68	ANAMIKA DAMODHAR ASOLE	AA
69	ASHWINI SUDHODHAN RAKSHIT	AA
70	AVANTIKA AVINASH KHARABE	AA

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B.Sc.- II SEMESTER -III Examination

Genetics

(ZOOLOGY)

Time: 60 min Marks: 20

Q. 1 Give an account on Mendelian principle. [10]

Q. 2 a) Write a note on Cytoplasmic inheritance-

Kappa particle in *Paramecium*. [05]

b) Explain the Linkage and Crossing over. [05]

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UNIT TEST Internal Marks Sheet

am Name : THIRD SEMESTER BACHELOR OF SCIENCE (B.SC.)
bject Name : ZOOLOGY (PAPER II)
llege Name : (325) NABIRA MAHAVIDYALAYA
ssion : Winter-2023

Serial No	STUDENT NAME	Marks
01	ALFIYA TABASSUM SABIR HUSEN SHAH	15
02	AMISHA VIJAY BUJRUK	13
03	ANJALI RAMDAS DHONGADE	12
04	APARNA GAJANAN CHINCHMALATPURE	13
05	ASHWINI YADAVRAO KAMBALE	14
06	BHUMESHWARI MOHANRAO KHAWSHI	15
07	CHHAKULI MADHAV WADULE	13
08	DAMINI SURESH KEWATE	12
09	DEVYANI NARENDRA RAIPURKAR	14
10	DHANSHRI SANJAY NANOTE	12
11	DISHA ANIL GIRADKAR	13
12	DIVYA VILAS MANKAWADE	15
13	DNYANESHWARI DATTARAJ WARTHE	16
14	GAURI SUNIL BARDE	13
15	GRENCY SANDIP DHANDE	15
16	HEMLATA RAMESHWAR KALE	14
17	JANHAVI NAMDEO MEHAR	12
18	JAYSHRI ASHOK RAUT	13
19	KALYANI BHASKARRAO BABHULKAR	14
20	KALYANI CHHAGAN KALBANDE	12
21	KHUSHALI DATTUJI THOMBRE	13
22	KIRTI HEMANTRAO SONAK	14
23	KRUTIKA MURLIDHAR TOPALE	15
24	LATIKA UMESH MAKDE	14
25	MADHURI MAROTI SARWARE	13
26	MANASVI CHHATRAPALSING JAKHNAWAT	12
27	MANSI PRAKASH SASANKAR	14
28	MITALI MAHADEO GAJBHIYE	15
29	MONALI RAMESH NARNAWARE	10
30	NANDINI RADHESHYAM CHARPE	13
31	NEHA NARENDRA PATIL	14
32	NIKITA PRAKASHRAOJI KALMEGH	15
33	NISHA NITIN DHOLE	10
34	PALLAVI UTTAM PATHADE	12
35	POOJA ANIL DAMBHALE	13

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NAGPUR

Internal Marks Sheet

Name : THIRD SEMESTER BACHELOR OF SCIENCE (B.SC.)
Object Name : ZOOLOGY (PAPER IV)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : Winter-2023

	STUDENT NAME	MARKS
36	PRACHI VIJAY DHOPRE	12
37	PRANALI ASHOK UTANE	10
38	PRATIKSHA DILIP FULE	09
39	PRATIKSHA RAVINDRA SAHARE	12
40	PURVA SHESHRAO KHARPKAR	13
41	RAJSHREE RAJENDRA REWATKAR	14
42	RASIKA ANANDRAO SIRSAM	11
43	RASIKA KESHAV WAGHE	04
44	RUCHIKA PRAMOD MALVI	09
45	RUSHALI RANJITRAO RAMPURE	09
46	SAKSHI DAMODHAR NANOTKAR	10
47	SAKSHI RAJU BUJRUK	05
48	SAKSHI SEWADAS NIKOSE	14
49	SAMIKSHA CHANDRASHEKHAR DONGARE	14
50	SAMIKSHA RAMDASJI CHANNE	10
51	SAPANA DIWAKAR WARKHADE	13
52	SEJAL NARENDRA WASULE	12
53	SHARVARI RAVICHAND SOMKUWAR	14
54	SHIVANI PRABHAKAR MOHANKAR	10
55	SHRADDHA DILIP NAWALNETE	05
56	SNEHA ASHOK GAIKWAD	13
57	SNEHA HEMRAJ SHIRASKAR	12
58	SUKANYA ASHOK KODAPE	14
60	TINA SANDIP YELEKAR	13
61	VAISHNAVI LILADHAR NIBUDE	10
62	VAISHNAVI MOHAN WERULKAR	12
63	VAISHNAVI UMESHCHANDRA NADEKAR	10
64	SAMEER SHESHRAO ATRAM	14
65	SHIVPRASAD PANDHARINATH SURYAVANSHI	12
66	TUSHAR DILIP PANCHABHOLE	08
67	ACHAL SANJAY WATANE	A
68	AKANKSHA REVNATH ASOLE	A
69	ANAMIKA DAMODHAR ASOLE	A
70	ASHWINI SUDHODHAN RAKSHIT	A

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Life and Diversity of Chordates

(ZOOLOGY)

Time: 60 min Marks: 20

Q. 1. Describe the poison apparatus, biting mechanism, snake venom and its importance. [10]

Q. 2.a) Write a short on Darwinism. [05]

b) Write a note on Races in Man. [05]

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UNIT TEST MARKS ~~Practical Report Sheet~~

Exam Name : FOURTH SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER I)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : SUMMER-2024

Sr. No	STUDENT NAME	MARKS
01	NISHA NITIN DHOLE	15
02	PALLAVI UTTAM PATHADE	13
03	POOJA ANIL DAMBHALE	10
04	PRACHI VIJAY DHOPRE	09
05	PRANALI ASHOK UTANE	09
06	PRATIKSHA DILIP FULE	08
07	PRATIKSHA RAVINDRA SAHARE	08
08	PURVA SHESHRAO KHARPKAR	13
09	RAJSHREE RAJENDRA REWATKAR	14
10	RASIKA KESHAV WAGHE	08
11	RUCHIKA PRAMOD MALVI	10
12	RUSHALI RANJITRAO RAMPURE	12
13	SAKSHI DAMODHAR NANOTKAR	14
14	SAKSHI RAJU BUJRUK	08
15	SAKSHI SEWADAS NIKOSE	14
16	SAMIKSHA CHANDRASHEKHAR DONGARE	13
17	SAPANA DIWAKAR WARKHADE	13
18	SEJAL NARENDRA WASULE	08
19	SHARVARI RAVICHAND SOMKUWAR	14
20	SHIVANI PRABHAKAR MOHANKAR	10
21	SHRADDHA DILIP NAWALNETE	08
22	SNEHA ASHOK GAIKWAD	08
23	SNEHA HEMRAJ SHIRASKAR	09
24	SUKANYA ASHOK KODAPE	12
25	TINA SANDIP YELEKAR	14
26	VAISHNAVI LILADHAR NIBUDE	07

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Practical Report Sheet

Exam Name : FOURTH SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER II)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : SUMMER-2024

Sr. No.	STUDENT NAME	MARKS
27	ALFIYA TABASSUM SABIR HUSEN SHAH	15
28	AMISHA VIJAY BUJRUK	13
29	ANJALI RAMDAS DHONGADE	-
30	APARNA GAJANAN CHINCHMALATPURE	-
31	ASHWINI YADAVRAO KAMBALE	-
32	BHUMESHWARI MOHANRAO KHAWSHI	10
33	CHHAKULI MADHAV WADULE	10
34	DAMINI SURESH KEWATE	08
35	DEVYANI NARENDRA RAIPURKAR	07
36	DHANSHRI SANJAY NANOTE	07
37	DISHA ANIL GIRADKAR	08
38	DIVYA VILAS MANKAWADE	13
39	DNYANESHWARI DATTARAJ WARTHE	15
40	GAURI SUNIL BARDE	-
41	GRENCY SANDIP DHANDE	-
42	HEMLATA RAMESHWAR KALE	10
43	JANHAVI NAMDEO MEHAR	09
44	KALYANI BHASKARRAO BABHULKAR	-
45	KALYANI CHHAGAN KALBANDE	-
46	KIRTI HEMANTRAO SONAK	-
47	KRUTIKA MURLIDHAR TOPALE	-
48	LATIKA UMESH MAKDE	12
49	MANASVI CHHATRAPALSING JAKHNAWA	10
50	MONALI RAMESH NARNAWARE	-
51	NEHA NARENDRA PATIL	-
52	NIKITA PRAKASHRAOJI KALMEGH	14

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B.Sc.- II SEMESTER - IV Examination

Molecular Biology and Immunology

(ZOOLOGY)

Time: 60 min Marks: 20

Q. 1. Describe the Lac Operon and Tryptophan Operon. [10]

Q. 2 a) Give and account on Griffith's Experiment. [05]

b) Give and account on transcription mechanism of protein synthesis. [05]

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UNIT TEST MARKS [redacted] Sheet

Exam Name : FOURTH SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER III)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : SUMMER-2024

Ms. Ankita A. Gajbe

Sr. No	STUDENT NAME	MARKS
01	ALFIYA TABASSUM SABIR HUSEN SHAH	18
02	AMISHA VIJAY BUJRUK	16
03	ANJALI RAMDAS DHONGADE	10
04	APARNA GAJANAN CHINCHMALATPURE	11
05	ASHWINI YADAVRAO KAMBALE	09
06	BHUMESHWARI MOHANRAO KHAWSHI	15
07	CHHAKULI MADHAV WADULE	11
08	DAMINI SURESH KEWATE	16
09	DEVYANI NARENDRA RAIPURKAR	15
10	DHANSHRI SANJAY NANOTE	09
11	DISHA ANIL GIRADKAR	10
12	DIVYA VILAS MANKAWADE	11
13	DNYANESHWARI DATTARAJ WARTHE	09
14	GAURI SUNIL BARDE	16
15	GRENCY SANDIP DHANDE	11
16	HEMLATA RAMESHWAR KALE	11
17	JANHAVI NAMDEO MEHAR	10
18	KALYANI BHASKARRAO BABHULKAR	15
19	KALYANI CHHAGAN KALBANDE	11
20	KIRTI HEMANTRAO SONAK	16
21	KRUTIKA MURLIDHAR TOPALE	15
22	LATIKA UMESH MAKDE	11
23	MANASVI CHHATRAPALSING JAKHNAWA	09
24	MONALI RAMESH NARNAWARE	14
25	NEHA NARENDRA PATIL	10
26	NIKITA PRAKASHRAOJI KALMEGH	09

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Exam Name : FOURTH SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER I)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : SUMMER-2024

Sr. No.	STUDENT NAME	MARKS
27	NISHA NITIN DHOLE	11
28	PALLAVI UTTAM PATHADE	12
29	POOJA ANIL DAMBHALE	13
30	PRACHI VIJAY DHOPRE	12
31	PRANALI ASHOK UTANE	08
32	PRATIKSHA DILIP FULE	10
33	PRATIKSHA RAVINDRA SAHARE	09
34	PURVA SHESHRAO KHARPKAR	07
35	RAJSHREE RAJENDRA REWATKAR	11
36	RASIKA KESHAV WAGHE	12
37	RUCHIKA PRAMOD MALVI	09
38	RUSHALI RANJITRAO RAMPURE	08
39	SAKSHI DAMODHAR NANOTKAR	11
40	SAKSHI RAJU BUJRUK	14
41	SAKSHI SEWADAS NIKOSE	15
42	SAMIKSHA CHANDRASHEKHAR DONGARE	11
43	SAPANA DIWAKAR WARKHADE	17
44	SEJAL NARENDRA WASULE	11
45	SHARVARI RAVICHAND SOMKUWAR	09
46	SHIVANI PRABHAKAR MOHANKAR	11
47	SHRADDHA DILIP NAWALNETE	10
48	SNEHA ASHOK GAIKWAD	10
49	SNEHA HEMRAJ SHIRASKAR	09
50	SUKANYA ASHOK KODAPE	08
51	TINA SANDIP YELEKAR	07
52	VAISHNAVI LILADHAR NIBUDE	06

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B.Sc.- III SEMESTER -V Examination

General Mammalian Physiology -I

(ZOOLOGY)

Time: 60 min Marks: 20

Q. 1. Describe the mechanism of Respiration. Add a note on Respiratory pigments. [10]

Q. 2 a) Write a note on Transport of O_2 and CO_2. [05]

b) Explain the Cardiac cycle. [05]

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UNIT TEST ~~Final~~ Marks Sheet

Exam Name : FIFTH SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER I)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : Winter-2023

Sr. No	STUDENT NAME	Marks Obtained
01	ACHAL JANARDHAN MALODE	15
02	ACHAL SANJAY WATANE	10
03	AKANKSHA REVNATH ASOLE	12
04	[illegible] AMRUT DAMBHARE	10
05	ANKITA SUDHAKAR KHUSPARE	10
06	ASHWINI BANDUJI DHORE	09
07	[illegible] SUDHODHAN RAKSHE	04
08	[illegible]	[illegible]
09	BHAGYASHRI ANIL WANGAL	-
10	BHAGYASHRI SANJAY CHOUDHARI	15
11	CHAITALI ANIL ANTURKAR	12
12	DEEPALI HARICHANDRA [illegible]	10
13	DNYANESHWARI ASHOK THAKRE	15
14	DURGA GURUCHANDRA WANKHEDE	10
15	EKTA LAXMIKANT KHARWADE	09
16	[illegible] GIRIDHAR WAILKAR	08
17	HIMANSHI MILIND MANKAR	08
18	HINA UDEBHAN NINAVE	05
19	[illegible]	04
20	JANHVI RAJESH TATTE	15
21	JANVI SUDHAKAR KAKDE	10
22	KHUSHALI MORESHWAR BHURE	10
23	[illegible] BHUPENDRAGIRI [illegible]	14
24	[illegible] GUNVANTA CHOUDHARI	12
25	MANISHA MANOJ BAGDE	A
26	[illegible] DAMODHAR PARKHI	A

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RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
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UNIT TEST [redacted]ks Sheet

Exam Name : FIFTH SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER III)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : Winter-2023

Sr. No.	STUDENT NAME	MARKS
27	MONALI PRAMOD DHOTARKAR	10
28	NEHA RAJU PERODIYE	-
29	NUTAN PURUSHOTTAM MOHOD	-
30	PRANJALI SANJAY KHANDATE	10
31	PRIYANKA GANESH SATIMESHRAM	09
32	PRIYANKA MAHESH BONDRE	10
33	RAKSHA SHRIRAM KOTHE	12
34	RESHMA VILAS DHOLE	13
35	RIYA DILIP BANGARE	-
36	RUCHIKA SUNIL DHAWALE	-
37	SAHILI ANANDRAO GAJBHIYE	08
38	SAKSHI ISHWAR NANDAGAVE	12
39	SAKSHI MANOHAR SURUSE	14
40	SAKSHI PRABHAKAR DHOTE	14
41	SAKSHI SHRIRAM KALE	14
42	SANIA SHARFUDDIN SYED	-
43	SEJAL KAILAS WAHANE	-
44	SHITAL VIJAY REWATKAR	10
45	SHRADDHA GOPAL GORE	-
46	SHRUTI RAJENDRA BANSOD	10
47	SHRUTIKA PARSHURAM VALLORWAR	10
48	SHWETA HARISHCHANDRA MENDHE	09
49	UTKARSHA JAGDISH PANCHBHAI	02
50	VAISHNAVI KISNAJI CHOUDHARI	08
51	VAISHNAVI MORESHWAR TIKHE	08
52	VAISHNAVI SUDHAKAR WALKE	12

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B.Sc.- III SEMESTER -V Examination

Applied Zoology-I

(ZOOLOGY)

Time: 60 min Marks: 20

Q. 1 Describe the Prawn culture and Pearl Culture. [10]

Q. 2 a) Write a note on Fish product and byproduct. [05]

b) Explain the Chinese Hatcheries. [05]

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UNIT-TEST ~~Internal~~ Marks Sheet

Exam Name : FIFTH SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER II)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : Winter-2023

KU. ANKITA A. GAJBE

S. No	STUDENT NAME	MARKS
01	ACHAL JANARDHAN MALODE	16
02	ACHAL SANJAY WATANE	10
03	AKANKSHA REVNATH ASOLE	14
04	AMISHA AMRUT DAMBHARE	12
05	ANKITA SUDHAKAR KHUSPARE	12
06	ASHWINI BANDUJI DHORE	10
07	ASHWINI SUDHODHAN RAKSHIT	10
08	AVANTIKA AVINASH KHARABE	12
09	BHAGYASHRI ANIL WANGAL	12
10	BHAGYASHRI SANJAY CHOUDHARI	12
11	CHAITALI ANIL ANTURKAR	10
12	DEEPALI HARICHANDRA THOMBRE	11
13	DNYANESHWARI ASHOK THAKRE	15
14	DURGA GURUCHANDRA WANKHEDE	12
15	EKTA LAXMIKANT KHARWADE	10
16	GUNJANA GIRIDHAR WAILKAR	12
17	HIMANSHI MILIND MANKAR	10
18	HINA UDEBHAN NINAVE	10
19	ISHA LILADHARRAO GHARAD	14
20	JANHVI RAJESH TATTE	15
21	JANVI SUDHAKAR KAKDE	13
22	KHUSHALI MORESHWAR BHURE	10
23	KHUSHI BHUPENDRAGIRI GOSWAMI	14
24	MAHIMA GUNVANTA CHOUDHARI	10
25	MANISHA MANOJ BAGDE	09
26	MONIA DAMODHAR PARKHI	09

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RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

UNIT TEST ~~Internal Marks Sheet~~

Exam Name : FIFTH SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER II)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : Winter-2023

Sr. No.	STUDENT NAME	MARKS
27	MONALI PRAMOD DHOTARKAR	12
28	NEHA RAJU PERODIYE	08
29	NUTAN PURUSHOTTAM MOHOD	A
30	PRANJALI SANJAY KHANDATE	A
31	PRIYANKA GANESH SATIMESHRAM	A
32	PRIYANKA MAHESH BONDRE	10
33	RAKSHA SHRIRAM KOTHE	10
34	RESHMA VILAS DHOLE	12
35	RIYA DILIP BANGARE	14
36	RUCHIKA SUNIL DHAWALE	13
37	SAHILI ANANDRAO GAJBHIYE	A
38	SAKSHI ISHWAR NANDAGAYE	12
39	SAKSHI MANOHAR SURJUSE	13
40	SAKSHI PRABHAKAR DHOTE	14
41	SAKSHI SHRIRAM KALE	15
42	SANIA SHARFUDDIN SYED	A
43	SEJAL KAILAS WAHANE	A
44	SHITAL VIJAY REWATKAR	A
45	SHRADDHA GOPAL GORE	A
46	SHRUTI RAJENDRA BANSOD	10
47	SHRUTIKA PARSHURAM VALLORWAR	12
48	SHWETA HARISHCHANDRA MENDHE	13
49	UTKARSHA JAGDISH PANCHBHAI	A
50	VAISHNAVI KISNAJI CHOUDHARI	12
51	VAISHNAVI MORESHWAR TIKHE	A
52	VAISHNAVI SUDHAKAR WALKE	12

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B.Sc.- III SEMESTER - VI Examination

General Mammalian Physiology-II

(ZOOLOGY)

Time: 60 min Marks: 20

Q. 1. Describe the Ultrastructure of Striated Muscle and sliding filament theory of muscle contraction. [10]

Q. 2 a) Write a note on Counter Current Mechanism of Kidney. [05]

b) Explain the Elementary Idea of Dialysis. [05]

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Unit Internal Marks Sheet

Exam Name : SIXTH SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER I),
College Name : (325) NABIRA MAHAVIDYALAYA
Session : SUMMER-2024 Mr. Arvind Wankhede

Sr. No	STUDENT NAME	MARKS
01	ACHAL JANARDHAN MALODE	11
02	ACHAL SANJAY WATANE	11
03	AMISHA AMRUT DAMBHARE	—
04	ANAMIKA DAMODHAR ASOLE	12
05	ANKITA SUDHAKAR KHUSPARE	08
06	ASHWINI BANDUJI DHORE	09
07	ASHWINI SUDHODHAN RAKSHIT	—
08	AVANTIKA AVINASH KHARABE	06
09	BHAGYASHRI ANIL WANGAL	—
10	BHAGYASHRI SANJAY CHOUDHARI	06
11	CHAITALI ANIL ANTURKAR	12
12	DEEPALI HARICHANDRA THOMBRE	08
13	DNYANESHWARI ASHOK THAKRE	08
14	DURGA GURUCHANDRA WANKHEDE	08
15	EKTA LAXMIKANT KHARWADE	12
16	GUNJANA GIRIDHAR WAILKAR	11
17	HIMANSHI MILIND MANKAR	10
18	HINA UDEBHAN NINAVE	10
19	ISHA LILADHARRAO GHARAD	09
20	JANHVI RAJESH TATTE	10
21	JANVI SUDHAKAR KAKDE	12
22	KHUSHALI MORESHWAR BHURE	13
23	KHUSHI BHUPENDRAGIRI GOSWAMI	13
24	MAHIMA GUNVANTA CHOUDHARI	14
25	MANISHA MANOJ BAGDE	14
26	MONA DAMODHAR PARKHI	10

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UNIT TEST ~~Internal~~ Marks Sheet

Name : SIXTH SEMESTER BACHELOR OF SCIENCE (B.SC.)
ect Name : ZOOLOGY (PAPER I)
lege Name : (325) NABIRA MAHAVIDYALAYA
sion : SUMMER-2024

Sr. No	STUDENT NAME	MARKS
27	MONALI PRAMOD DHOTARKAR	11
28	NEHA RAJU PERODIYE	10
29	NUTAN PURUSHOTTAM MOHOD	10
30	PRANJALI SANJAY KHANDATE	15
31	PRIYANKA GANESH SATIMESHRAM	15
32	PRIYANKA MAHESH BONDRE	—
33	RAKSHA SHRIRAM KOTHE	10
34	RESHMA VILAS DHOLE	06
35	RIYA DILIP BANGARE	09
36	RUCHIKA SUNIL DHAWALE	—
37	SAHILI ANANDRAO GAJBHIYE	10
38	SAKSHI ISHWAR NANDAGAYE	10
39	SAKSHI MANOHAR SURJUSE	08
40	SAKSHI PRABHAKAR DHOTE	06
41	SAKSHI SHRIRAM KALE	—
42	SANIA SHARFUDDIN SYED	14
43	SEJAL KAILAS WAHANE	15
44	SHITAL VIJAY REWATKAR	14
45	SHRADDHA GOPAL GORE	12
46	SHRUTI RAJENDRA BANSOD	12
47	SHRUTIKA PARSHURAM VALLORWAR	11
48	SHWETA HARISHCHANDRA MENDHE	10
49	UTKARSHA JAGDISH PANCHBHAI	08
50	VAISHNAVI KISNAJI CHOUDHARI	06
51	VAISHNAVI MORESHWAR TIKHE	—
52	VAISHNAVI SUDHAKAR WALKE	08
53		10
		10

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RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR.

UNIT TEST ~~Internal~~ Marks Sheet

Exam Name : SIXTH SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER I)
College Name : (325) NABIRA MAHAVIDYALAYA
Session SUMMER-2024

Sr. No.	STUDENT NAME	MARKS
54	VEDINEE SANJAY TATHODE	10
55	HIMANSHU HARICHANDRA NAIK	12
56	JAY SANJAY POTPITE	14
57	PRATHMESH KESHAV PANDE	—
58	RUTIK YOGRAJ ZELGONDE	—
59	SAHIL VIJAYRAO MAHALLEY	14
60	SHUBHAM ASHOK BANSOD	10
61	TOSHAL DHANRAJ FULE	06
62	VEDANT VASANTRAO DHAGE	12

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B.Sc.- III SEMESTER -VI Examination

Applied Zoology-II

(ZOOLOGY)

Time: 60 min Marks: 20

Q. 1. Describe the concept of Recombinant DNA Technology and gene isolation method. [10]

Q. 2 a) Write a short on Bioinformatics databases. [05]

b) Write a short note on nucleotides sequence databases and protein databases. [05]

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Unit test Internal Marks Sheet

Exam Name : SIXTH SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER III)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : SUMMER-2024 Dr. V.G. Barbagade

Sr. No.	STUDENT NAME	MARKS
01	ACHAL JANARDHAN MALODE	12
02	ACHAL SANJAY WATANE	10
03	AMISHA AMRUT DAMBHARE	—
04	ANAMIKA DAMODHAR ASOLE	10
05	ANKITA SUDHAKAR KHUSPARE	10
06	ASHWINI BANDUJI DHORE	13
07	ASHWINI SUDHODHAN RAKSHIT	14
08	AVANTIKA AVINASH KHARABE	13
09	BHAGYASHRI ANIL WANGAL	08
10	BHAGYASHRI SANJAY CHOUDHARI	06
11	CHAITALI ANIL ANTURKAR	08
12	DEEPALI HARICHANDRA THOMBRE	—
13	DNYANESHWARI ASHOK THAKRE	—
14	DURGA GURUCHANDRA WANKHEDE	08
15	EKTA LAXMIKANT KHARWADE	—
16	GUNJANA GIRIDHAR WAILKAR	13
17	HIMANSHI MILIND MANKAR	12
18	HINA UDEBHAN NINAVE	10
19	ISHA LILADHARRAO GHARAD	10
20	JANHVI RAJESH TATTE	08
21	JANVI SUDHAKAR KAKDE	—
22	KHUSHALI MORESHWAR BHURE	—
23	KHUSHI BHUPENDRAGIRI GOSWAMI	12
24	MAHIMA GUNVANTA CHOUDHARI	12
25	MANISHA MANOJ BAGDE	13
26	MONA DAMODHAR PARKHI	11

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RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR

UNIT TEST ~~Internal Marks Sheet~~

am Name : SIXTH SEMESTER BACHELOR OF SCIENCE (B.SC.)
bject Name : ZOOLOGY (PAPER I)
llege Name : (325) NABIRA MAHAVIDYALAYA
sion : SUMMER 2024

Sr. No	STUDENT NAME	MARKS
27	MONALI PRAMOD DHOTARKAR	12
28	NEHA RAJU PERODIYE	10
29	NUTAN PURUSHOTTAM MOHOD	08
30	PRANJALI SANJAY KHANDATE	12
31	PRIYANKA GANESH SATIMESHRAM	11
32	PRIYANKA MAHESH BONDRE	12
33	RAKSHA SHRIRAM KOTHE	—
34	RESHMA VILAS DHOLE	—
35	RIYA DILIP BANGARE	12
36	RUCHIKA SUNIL DHAWALE	13
37	SAHILI ANANDRAO GAJBHIYE	—
38	SAKSHI ISHWAR NANDAGAYE	—
39	SAKSHI MANOHAR SURJUSE	06
40	SAKSHI PRABHAKAR DHOTE	06
41	SAKSHI SHRIRAM KALE	11
42	SANIA SHARFUDDIN SYED	12
43	SEJAL KAILAS WAHANE	13
44	SHITAL VIJAY REWATKAR	—
45	SHRADDHA GOPAL GORE	08
46	SHRUTI RAJENDRA BANSOD	09
47	SHRUTIKA PARSHURAM VALLORWAR	09
48	SHWETA HARISHCHANDRA MENDHE	10
49	UTKARSHA JAGDISH PANCHBHAI	—
50	VAISHNAVI KISNAJI CHOUDHARI	08
51	VAISHNAVI MORESHWAR TIKHE	12
52	VAISHNAVI SUDHAKAR WALKE	14
53		16
		11

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RASHTRASAT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,
NAGPUR

UNIT Test Internal Marks Sheet

Exam Name : SIXTH SEMESTER BACHELOR OF SCIENCE (B.SC.)
Subject Name : ZOOLOGY (PAPER I)
College Name : (325) NABIRA MAHAVIDYALAYA
Session : SUMMER-2024

Sr. No.	STUDENT NAME	MARKS
54	VEDINEE SANJAY TATHODE	12
55	HIMANSHU HARICHANDRA NAIK	—
56	JAY SANJAY POTPITE	08
57	PRATHMESH KESHAV PANDE	—
58	RUTIK YOGRAJ ZELGONDE	11
59	SAHIL VIJAYRAO MAHALLEY	12
60	SHUBHAM ASHOK BANSOD	10
61	TOSHAL DHANRAJ FULE	10
62	VEDANT VASANTRAO DHAGE	08

D.

Dr. V. G. Bassagade

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Department of Botany

Assignments were given to all the odd & even semester students & unit tests were taken for evaluation of University Theory Internal Marks.

Academic Session 2023-24

Department of Botany

Assignments

Academic Session

2022-23

Department of Botany, Nabira Mahavidyalaya, Katol.

NABIRA MAHAVIDYALAYA, KATOL

Subject - Botany

Session: 2023-22

Class B.Sc. 1st Year

Sem - I

Assignment Submission

Sr. No.	Name of student	Paper-I	Paper-II
		Date & Signature	Date & Signature
1	Achal Anil Lokhande	Achal. Lokhande	Achal. Lokhande
2	Aniket Sitaram Rathod		
3	Anjali Devidasji Sembekar	Anjali Sembekar	Anjali Sembekar.
4	Anushka Sunilrao Ingole	Anushka I	Anushka I.
5	Bharti Devidas Raut	Bharti Raut	Bharti Raut
6	Chanda Ravindra Rathod	C.R. Rathod	C.R. Rathod
7	Chetan Shantaram Rewatkar	Chetan.	Chetan.
8	Chetan Sureshrao Agarkar	C. Agarkar	C. Agarkar
9	Chetna Sunil Bondre	Chetna Bondre	Chetna Bondre
10	Dimple Hemraj Kalbande	Dimple Kalbande	Dimple Kalbande.
11	Dipali Dilip Mahatpure	D. D. Mahatpure	D. D. Mahatpure.
12	Farhatnaz Rasheed Sheikh	Farhatnaz Sheikh	Farhatnaz Sheikh.
13	Gayatri Pundlikrao Ghormade	gayatri Ghormade	gayatri Ghormade
14	Harshada Pramod Jagdale	Harshada J.	Harshada J.
15	Janhavi Wasudeo Gharad	Janhavi Gharad	Janhavi Gharad
16	Jayashri Nilesh Gund	Jayashri	Jayashri
17	Kapilansh Sanjay Mahurkar	Kapilansh Mahurkar	Kapilansh Mahurkar
18	Khushali Sahebrao Katlam	Khushali	Khushali

19	Khushbu Meghraj Zode	K.M. Zode	K.M. Zode
20	Khushi Girish Dhonde	K.G. Dhande.	K.G. Dohande
21	Komal Ramesh Chaudhari	Komal	Komal
22	Krunali Pramod Bodhale	Krunali	Krunali
23	Liteshwari Omkar Bangadkar	L.O. Bangadkar	L.O. Bangadkar
24	Monika Manohar Barai	Monika	Monika
25	Mrunali Chandrashekhar Nagmote	Mrunali Nagmote	Mrunali Nagmote
26	Naina Sajan Thosar	Naina Thosar	Naina Thosar
27	Neha Pramod Channe	Neha.	Neha.
28	Nikhil Sanjay Babulkar	Nikhil.B.Babulkar	Nikhil.B.Babulkar
29	Oshika Harinarayan Ghuguskar	Oshika Ghuguskar	Oshika Ghuguskar
30	Payal Vijay Shrirame	Payal Shrirame	Payal Shrirame
31	Payal Ramesh Taywade	Payal Taywade	Payal Taywade
32	Prachi Raju Nehare	P.R. Nehare	P.R. Nehare
33	Priya Govinda Sirsam	Priya	Priya
34	Rehan Hafeez Sheikh	Rehansheikh.	Rehansheikh
35	Riddhi Vijay Kalbande	Riyak	Riyak
36	Ruchika Dharmaraj Suryavanshi	R.D. Suryavanshi	R.D. Suryavanshi
37	Rudra Ajay Bisani	Rudra Bisani	Rudra Bisani
38	Rupali Manohar Kadwe		
39	Rushikesh Vinod Satpute	Rushikesh Satpute	Rushikesh Satpute
40	Rutuja Sudhirrao Dharme	Rutuja Dharme	Rutuja Dharme
41	Sakshi Narendra Fuse		

42	Sakshi Suryakant Vyawahare	Sakshi	Sakshi.
43	Saloni Janardhan Manmode	SaloniManmode	SaloniManmode
44	Saloni Suresh Siram	Soloni siram	soloni siram
45	Samruddhi Devendra Yeole	Samruddhi.	Samruddhi.
46	Sanakshi Ishwar Shende	sanakshi shende	sanakshi shende.
47	Sanskruti Dewanand Meshram	Sanskruti.	Sanskruti.
48	Sanskruti Pravin Dhote		
49	Shraddha Vijay Rewatkar	Shraddha	Shraddha
50	Snehal Udaram Ahake	Snehal Ahake	Snehal Ahake
51	Srushti Ratnakar Dhok	Srushti	Srushti
52	Sudhanshu Yuvraj Amale	Amle	Amle
53	Sumit Krushnaji Konghe	Sumit Konghe	Sumit Konghe
54	Swapnil Shankar Kohale	Swapnil kahale	Swapnil Kahale
55	Tanvi Gajanan Pande	Tanvi pande	Tanvi pande
56	Tejaswini Mohanrao Manmode	Manmode	Manmode
57	Trupti Niranjan Charde	Trupti	Trupti
58	Vaishali Ramesh Chavhan	Vaishali	Vaishali
59	Vishakha Mahesh Uke	Uke	Uke

30/10/23

Page No.

Date : / /

Department of Botany

Nabira Mahavidayalaya Katol

Name :- Dishika Narendra Ginadkar

Sub :- Botany (Sem-I) (I-Year)

Session - 2023-24

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Date : / /

Living & Non-living characteristics of viruses

Living characteristics	Non-living characteristics
1) Viruses have a protein coat or capsid.	1) They are non-cellular & don't have cell organeues.
2) Viruses exist in intracellular state.	2) viruses exist in extracellular state.
3) They can replicate by utilize host cell machines	3) They cannot reproduce by themeselve.
4) Viruses occurs in different strain.	4) They can crystallize & stone for a long time.
5) They can mutate.	5) They lack of enzyme activity.
6) It is infectious agent	6) They do not have metabolic activity of their own.

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Date : / /

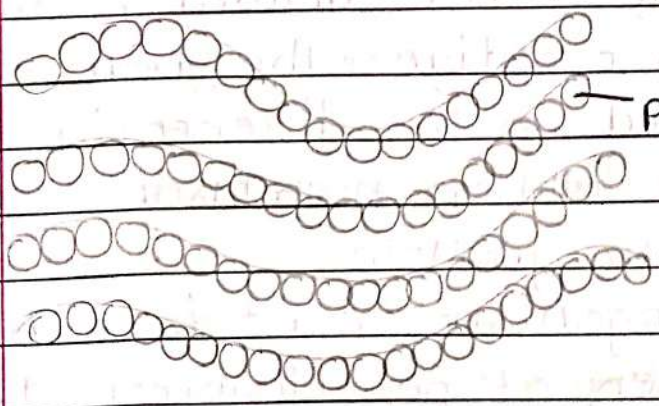
Compain ~~te~~ the cell wall of gram positive and gram Negative Bacteria.

	Gram Positive bacteria	Gram Negative bacteria
1)	The bacteria remain coloured with gram staining even after washing with alcohol or acetone.	1) The bacteria do not retain the stain when washed with alcohol or acetone.
2)	outer membrane is absent.	2) outer membrane is present
3)	cell wall is 20-30 nm thick.	3) cell wall 8-12 nm thick
4)	The wall is smooth	4) The wall is wavy and comes in contact with plasma membrane only at a few loci.
5)	The lipid containt in the wall is very low	5) The lipid content in the wall is 20-30%
6)	The wall contain 70-80% murein.	6) The wall contain 10-20% murein.
7)	~~Pto~~ Porin are absent.	7) Porins or hydrophilic channels occur in outer membrane

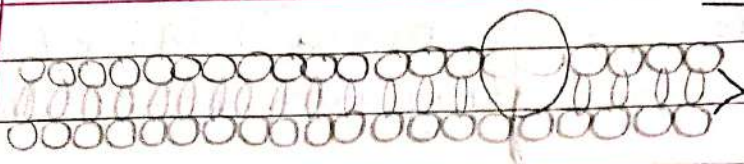
8)	Basal body of the flagellum contain two rings.	8) Basal body of the flagellum has four rings.
9)	Mesosomes are quite prominent	9) Mesosomes are less prominent.
10)	A few pathogenic bacteria belong to gram positive group.	10) Most of the pathogenic bacteria belong to gram negative group.
11)	cell wall contain teichoic acids.	11) Teichoic acids are absent
12)	Ex. Actinomyces, Bacillus, Nocardia, listeria, Lactobacillus, corynebacterium, streptococcus clostridium.	12) Escherichia coli, salmonella, shigella and other. Enterobacteriaceae.

① sketch & label - diagram

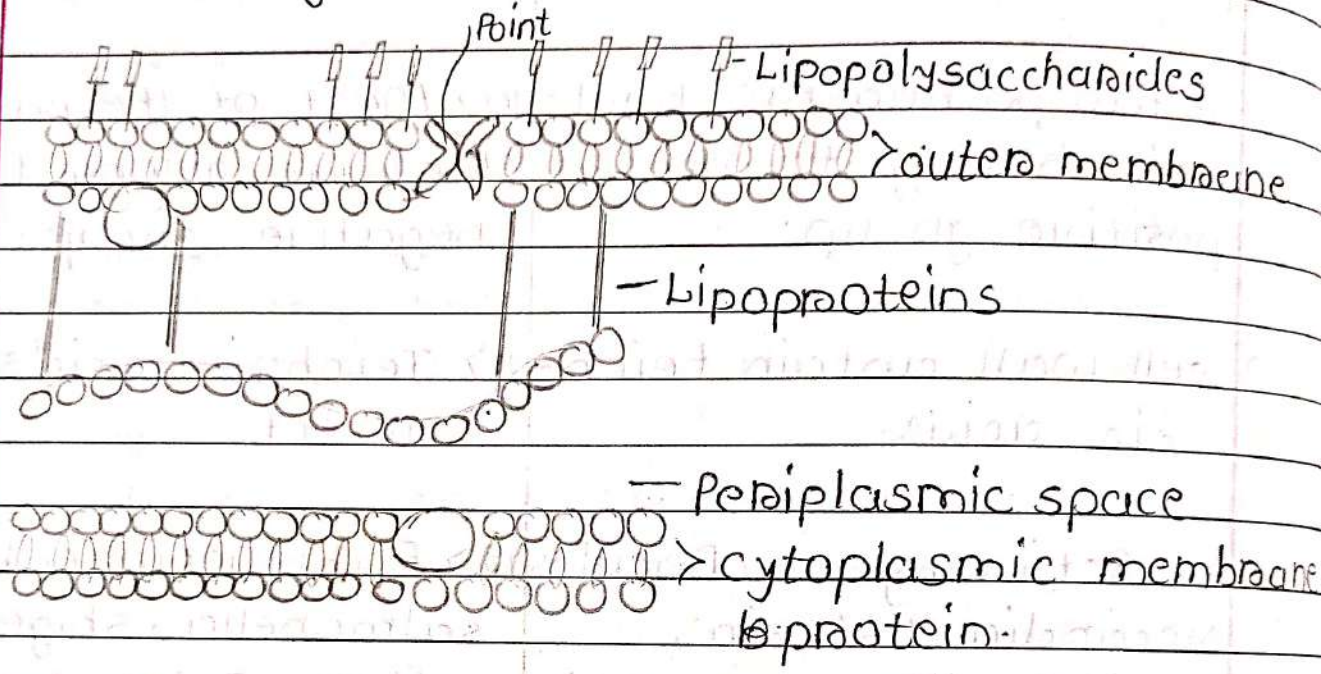
1) Gram - positive Bacteria



Date : / /



2) Gram - Negative Bacteria



★ Principle and procedure of gram staining

Principle of gram staining :-

The two major groups of bacteria can be divided in gram-positive and gram negative. The gram stain technique is based on the differential structure of the cellular membrane and cell walls of the two groups.

Gram-positive organisms contain a highly cross-linked layer of peptidoglycan that retain the primary dye, crystal violet (CV) following the application of the mordant.

iodine (1) The iodine and crystal violet from a complex within the peptidoglycon when decolonizer is applied to the cells. the cv-I complex remains within the cell, making it appear dark purple to blue.

The gram-negative organisms do not contain a thick cross-linked layer of peptidoglycan. The peptidoglycon is loosely distributed between the inner cell and the outer cell membrane following the application of the crystal violet and iodine. the cv-I complex are not trapped within the peptidoglycon, Application of the acid-alchohol decolonizer dehydrates in outer cellular membrane, leaving holes in the membrane and effive effective washing or removing the cv-complex from the cells. The cells appear colourless. To make the colorless cell visible a secondary stain: safranin is applied, leaving the gram-negative cell pinks.

Gram stain Reagents

1) Primary stain: 2g crystal ~~vot~~ violet 20ml 95% ethyl alchol, 0.8g ammonium oxalate and 100 ml distilled water.

2) Gram's iodine :- 2g potassium iodide, 1g iodine crystals, and 100 ml distilled water.

3) Decolonizer :- 50 ml acetone and 50 ml ethanol.

4) counterstain :- 4.0 g safranin, 200 ml ethanol and 800 ml distilled water.

* The procedure of gram staining :-

1) Prepare and fix the specimen to the microscope slide before staining.
2) cover the smear with crystal violet primary stain, for 20 seconds.
3) Gently rinse of the stain with water.
4) Cover the smear with Gram's iodines mordant, for 1 minute.
5) Pour off the excess Gram's iodine.
6) Run the acid-alchohol decolonized over the smear until the solution appears
7) Gently rinse with water.
8) cover the smear with safranin the second or counterstain, for 26 seconds.
9) Gently rinse the strain with water
10) Blot dry with bibulous paper.

Result interpretation of gram stain

- Gram-positive bacteria - Blue / purple colour
- Gram-Negative bacteria - Red/ pink colour.

Department of Botany, Nabira Mahavidyalaya, Katol.

NABIRA MAHAVIDYALAYA, KATOL

Subject - Botany

Session: 2023-22

Class B.Sc. 1st Year

Sem - II

Assignment Submission

Sr. No.	Name of student	Paper-I	Paper-II
		Date & Signature	Date & Signature
1	Achal Anil Lokhande	Achal. Lokhande.	Achal. Lokhande.
2	Aniket Sitaram Rathod		
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59	Vishakha Mahesh Uke	Uke	Uke

Name :- Kaloni J. Manmode

Sub :- Botany (paper I)

class :- CBZ (BSc 1st year)
Sem II

Date :- 25/04/2024 (2023-24)

UNIT [I]

Date
Page

① compression.

• This is the most common type of preservation. In these types, where much of the organic matter of the plant is preserved with the deep impression of the plant the fossile are referred as compressions.

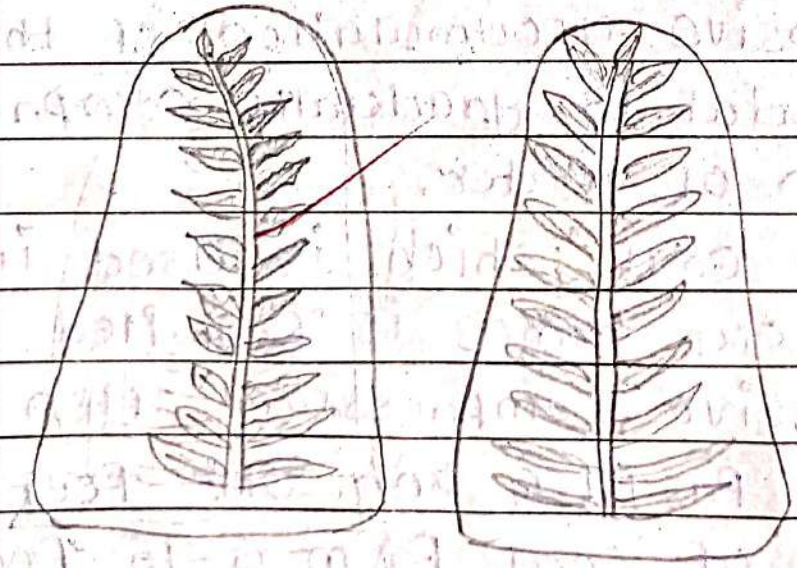
• compression are plant parts that have suffered physical deformation such that the 3 dimensional plant parts is compressed to more or less 2 dimensions.

• Coal is usually considered to be a complex type of compression. where an extensive accumulation of the plant material is gradually compressed in basin of water.

• The coal which is used in factory and our homes is resulted due to an excessive compression often as much as to produce only one feet thick layer of coal from a 15 feet thick half rotten three trunk, branches and

leaves.

- compression is excellent Records of external forms, especially for planar structures like leaves.
- compression preserve organic material and because of it carbon isotopic studies can be performed on compression.
- From these studies paleobotanis can sometimes recognize the biochemical signature of C3, C4 and CAM photosynthetical physiolog in extict species.



② Impression.

- This impression may be of the surface markings of the plant material or be the marking of the internal cavities in the plant material.
- They are the prints or actually duplicate copy of the plant material on thin soft clay of the soil.
- The surrounding muds get deposited on the surface of the plant material and gets into the cavity and their impression are left.
- During further process the soils turn into hard Rocks bearing the initial impressions prescribed on them by plant parts.
- These are much darker in colour than the surface of the Rock below because it very often Retains some of the organic material.
- Impression are 2 dimensional imprints of plant or their parts found, most commonly in fine grained sedim

ents such as silt or clay.

③ Glossopteris leaf.

1. Morphology of leaf.

• The leaves described under nam e Glossopteris were present in spiral or whorls probably on short shoot.

• For many years species of Glossop teris leaves were identified on the basis of external form and ven ation pattern.

• The important features of the lea f is presence of a single prominent midrib from which numerous fine veins pass out to the margi forming a network of dichotomous branching.

• Glossopteris leaves are simple, en tire, sessile or very shortly petiol ate, linear, lanceolate to spathulate ovate and with a very strong midri b, many species of such leaf fossils

are known the Indian lower Gondwana, viz; Gl. indica, communis, angustifolia, decipens, longicaulis, ampla, retifera, browiana, Staicta, tortuosa, Formosa, divergens, conspicua.

- The leaves are 3 to 40 cm long and in some species, whorls of such leaves have been found on thin stems.

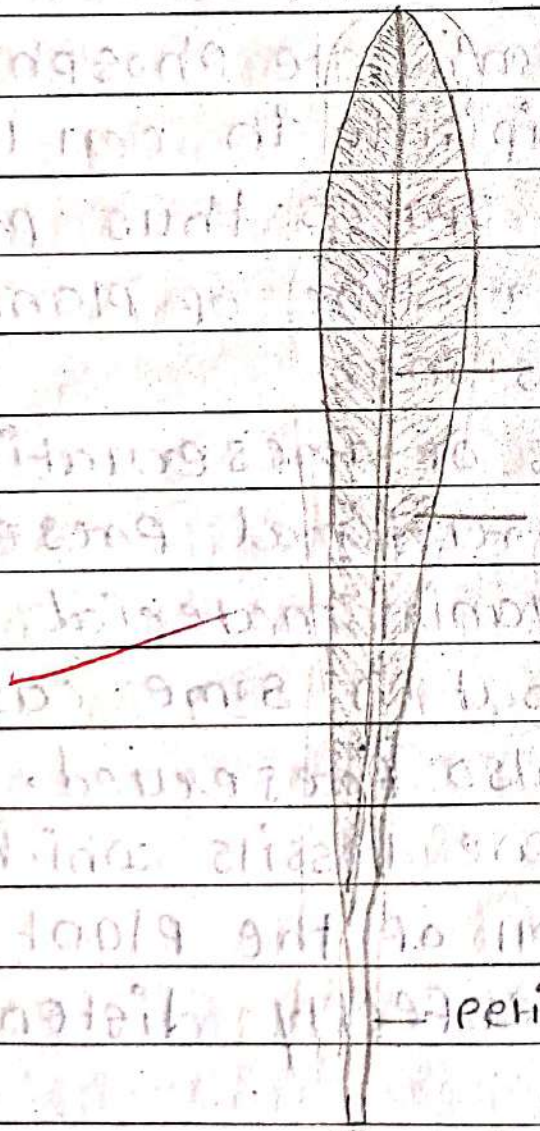
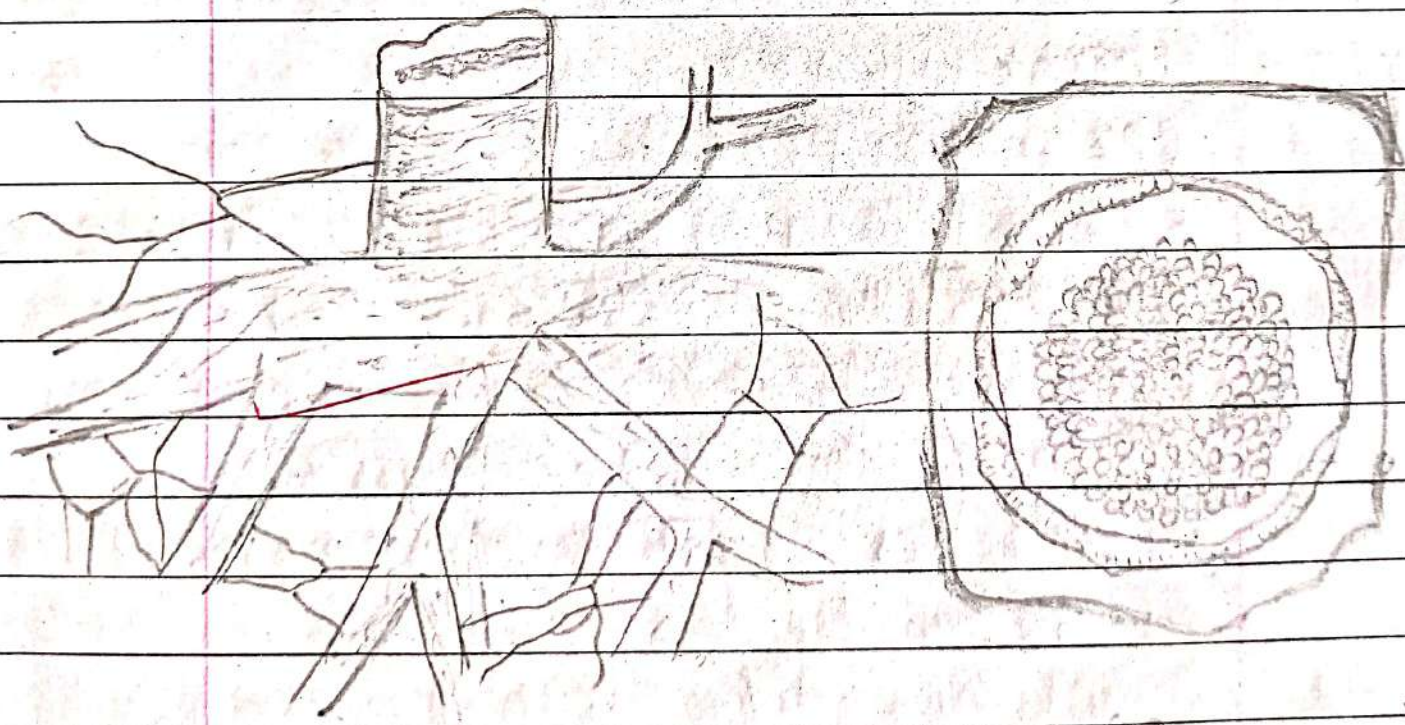


fig:- leaf of Gllossopteris tree.

(4) Petrification.

- This is important type of preservation because it gives the external morphology along with internal structure as to study the complete nature of the plant or plant parts.
- Petrification occurs when plant tissues are infiltered with mineral Rich solution. minerals common like silica, carbonate phosphates, sulphates precipitate in cell lumen or intercellular spaces. thus preserving internal structure of plant parts in 3 dimensions.
- This types of preservation is known as "structural preservation Because organic material not only cell walls but in some cases fine details is also preserved.
- So "these are fossils which preserve every cell of the plant tissue, each one perfectly distended as it in life."

• so "these are fossils which preserve every cell of the plant tissue, each one perfectly distended as it in life".
• In this type cell content get destroyed but original cell wall Remain in original form, so the complete structure becomes stone like.
• The fossil form can be studied by cutting its section for their internal details.



(A) (B)

Fig:- (A) Peterification showing external features (B) Internal structure of the peterified stem.

(5) Gllossopteris scutum.

A ovulate structure of Gllossopteri is called scutum. The ovulate structure borne on adaxial of a Gllossopteris leaf. In this fructification, the ovules are arranged on a dorsiventral structure called as capitellum or meghasporophyll or cupule

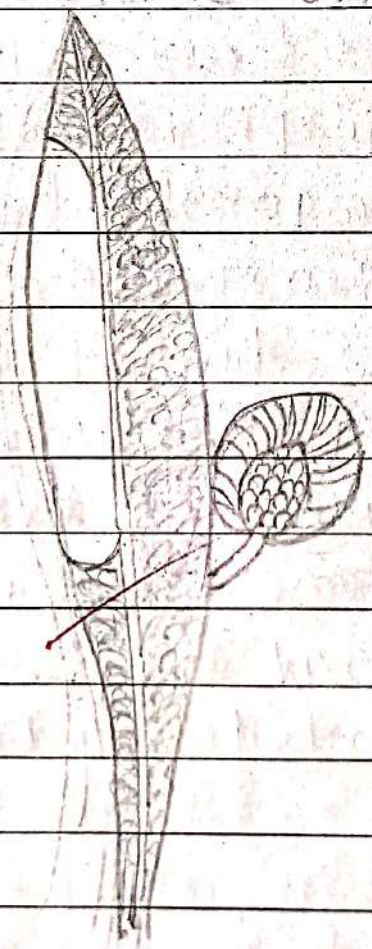


Fig:- Gllossopteris female fructification scutum.

⑥ Palaeozoic era.

- The ~~Precam~~ palaeozoic era is divide into 6 periods i.e. Permian, Carboniferous, Carboniferous, Devonian, Silurian, Ordovician and Cambrian.
- Cambrian was so named from Cambria, the latin name for wales, by Adam Sedgwick. He divided the Cambrian strata into three series: lower, middle and upper.
- Ordovician was named it after the tribe ordovices that had occupied northeen wales by Charles Lapworth (1879).
- Roderick Murchison described the strata below the old red standstone and labeled them silurian, after the tribe silurs ~~which~~ inhabited the southeen part of wales.
- Murchison and Sedgwick (1839) the Devonian system was Recognized on the basis of the strata exposed in Debonshire, England, from which the name Devonian was derived.

- The vegetation of this period includes both aquatic and land plants.
- The first fossils of land plants were found in the silurian and Devonian period of this era (225-350 million years ago).
- Rhynia, Horneophyton and psilophyton were some important genera of silurian and Devonian period.
- Members of lycopsida, sphenopsida and pteropsida formed dense forest in the carboniferous and permian period.
- Such habitat was unsuitable for woody vegetation and in the late Devonian period. The vegetation present on the earth was converted into coal due to geological events.

(7) Mesozoic era.

- Mesozoic era is divided into 3 period i.e. Triassic, Jurassic, and cretaceous periods.
- Triassic system was established by Abel (1834) the Rock strata consisting of Red sandstone and shale.
- Jurassic name is derived from the fine exposures of the Rock strata in the Jura mountains of France by William smith (1797-1815).
- Cretaceous were named by J. de omalius de Halloy (1822), these very peculiar Rock strata consist of chalk.
- The environment of the Triassic period of this era was very arid, thus unsuitable for the growth of plants Requiring humid climate. This era is also called as "age of Reptiles" dominated by dinosaurs and pterosaurs.
- Fossils Records, however, indicate the presence of many ferns, cycadophytes

and conifers in the Triassic period This period is also known as age of cycads.

- significant changes occurred in the vegetation of the Cretaceous period. It shows that angiosperms formed a considerable part of the Cretaceous vegetation.

(8) ~~palaeozoic and mesozoic era.~~

pseudo-Fossil

Sometimes it is also happened that a watery solution of various minerals seeped through the sediments; ultimately the sediments may be converted into hard stone or rock. The minerals solution leaves a sort of impression which indicates its path or way which is zig-zag like structures, which sometimes look like impressions of the plants and are often confused as Fossil. These are known

as ~~Sp~~ pseudo Fossil.

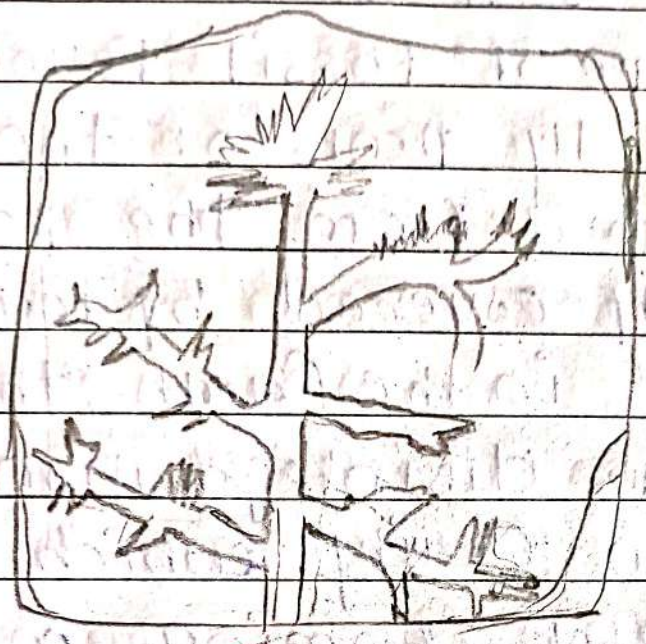
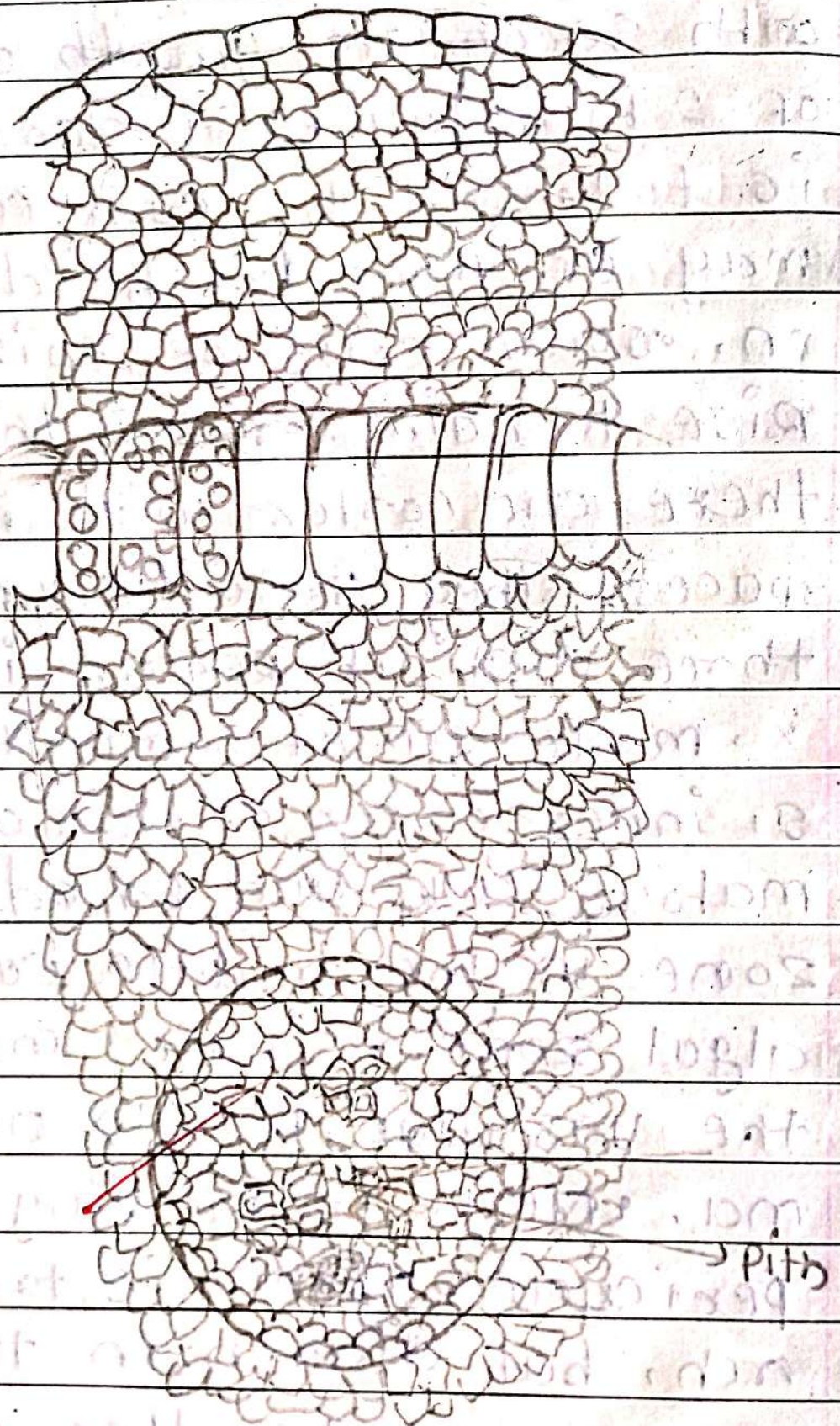


Fig:- pseudo fossil

(8) T.s of coralloid root of cycas.

• Epiblema is the outermost tissue with secondary growth and consist of 2 to 5 layers of dead cells. cork is followed by cork cambium which may or may not be distinct later on. • some cells of epiblema give rise to hairs. • Below the epiblema, there are cortex with inter cellular spaces. They are differentiated into three distinct regions, i.e., outer cortex, made-up of compact polygonal cells, inner cortex of thin walled parenchymatous cells and broad blue green zone in the middle cortex called the algal zone. • It lies midway between the vascular bundle and the epiblema. • Next is the single layered pericycle. • stele is triarch or tetrarch, but diarch in the young root. • The xylem bundles are exarch. That is Protoxylem towards the outside and metaxylem towards the centre.


Pith

(1) Composition of Soil.

⇒ A typical Soil is about 50% Solid (45% minerals 5% organic matter) and 50% voids of which half is occupied by water and half by gas. The biological influence on soil property are strongest near the surface, while the geochemical influences on soil properties increases with depth.

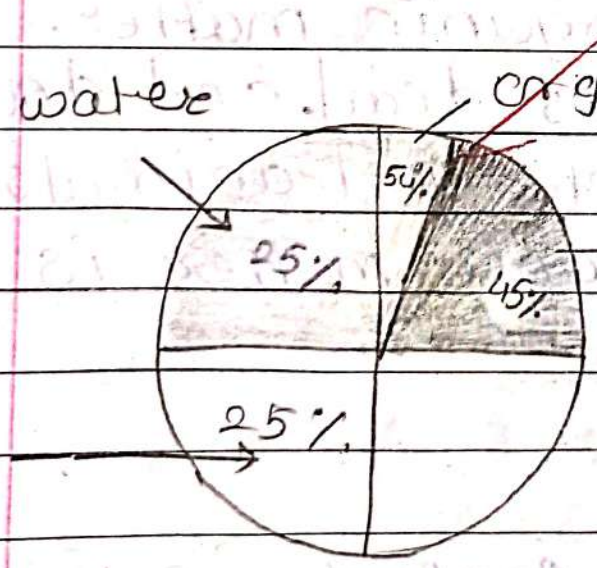
* (1) mineral matter :- The mineral matter is formed of soil particles formed by the weathering of Rocks

(2) ~~organ~~ organic matter.
It includes dead and decayed parts of plants and animals. The decayed organic matter is known a humans.

(3) Soil water.
The water present in the soil is called soil water.

(4) Soil Air.
Air present in soil pores is called soil Air.

(5) soil organism:- soil organisms refers to various living being inhabiting the soil and they take part in Breaking down of dead organic matter, Decomposition of dead organisms matter. Mineralization of organic matter loosening the soil.
Clay and humus are special parts of the soil.



- minerals
- Gravel
- Sand
- Silt
- Clay.

Fig:- composition of soil.

(2) Function of Soil.

⇒ Soil is a major component of the earth ecosystem, which is important for various, agricultural environmental nature protection landscape, architecture and airban applications. Soil can perform many functions and there include water ecosystem, agriculated and as bore for plants and buildings.

(1) Biomass Production:-

Soil acts an anchor for plant roots, Soil also functions by maintaining the quality of air by allowing CO_2 to escape and fresh O_2 to enter the root zone.

(2) Environmental Interaction.

Soil can filter, buffer and transform materials between the atmosphere the plants cover the water table. Soil interacts with environment waste materials into new materials.

(3) Biological habitat and gene pool:
Soil is environment in which seeds grow. They provide the heat nutrients and water that are available to use to nurture plant and animals. The assistance of soil in the decompositions of dead plants animals and organisms by transforming their can be utilized by other living thing.

(4) Sources of raw materials:
Soil provides raw materials for Human use and impact human health directly. The composition of human food reflects the nature of the soil in which it was growth. Soil is widely used into building materials, roads and highways. Since these structure rest on the soil factors such as its bearing strength. Compressibility stability and streangth need to be

Considering considered, also widely used in form of utensils, religious purpose, art, and craft, specialy type treatment / therapy etc.

(3) Factors affecting soil formation.

The soil formation is affected by the following factors.

(1) The porous rocks weather more rapidly than the non — porous rocks.

(2) Along the steeper slopers of rocks, rain water drains off - rapidaly and corrodes the rock rapidaly. But soil development does not take place the slopes because of erosion.

(3) Moderate rainfall favors for the translocation of minerals from the upper layer to the lower layers. The heavy rainfall causes erosion. The law rainfall is ineffective in minerals transaction.

(4) Law temperature acceleration the

growth of primitive plants on weathered rock particles and favors the humus formation. High temperature reduces the rate of humus formation.

(5) Soil development is more rapid, if the vegetative is luxuriant.

(6) High humidity favors the plant growth and humus formation.

(7) The soil development is more rapid, if the vegetative is luxuriant.

(8) Animales soil and favor for soil development.

(4) Sandly soil and silt soil.

(1) Sandly soil.

The first type of soil is sand. It consists of small particles of weathered Rock. Sandly soil are one of the poorest types of soil for growing plants. because it has

very low nutrients and poor water holding capacity, which makes it hard for the plants roots to absorb water. This type of soil is very good for the drainage system. Sandy soil is usually formed by the breaks down on fragmentation of rocks like granite, limestone and quartz.

② Silt soil.

Silt, which is known to have much smaller particles compared to sandy soil and made up rock and other mineral particles, which are smaller than sand and larger than clay. It is the smooth and fine quality of the soil that holds water better than sand. Silt is easily transported by moving currents and it is mainly found near the rive, lake and other water bodies. The silt soil is more fertile compared to the other three types

of soil. Therefore, it is also used in agricultural practices to improve soil fertility.

(5) Clay soil and loamy soil.

(i) clay soil.

Clay soil the smallest particle amongest the other two types of soil. The particles in this soil are tightly packed together with each other with very little or no air space. This soil has very good water storage qualities and makes it hard for moisture and air to penetrate into it. It is very sticky to the touch when wet, but smooth when dried. clay is the densest and heaviest type of soil which does not drain well or provide space for plant roots in flourish.

⑤ Loamy soil.

Loamy soil the fourth type of soil. It is a combination of sand, silt and clay such that the beneficial properties from each are included for instance. it has the ability to retain moisture and nutrients hence, it is more suitable for farming. This soil is also refereed to as an agricultural soil as it included an equilibrium of all three types of soil materials being sandy, clay, and silt and it also happens to have humans. Apart from these, it also has higher calcium and PH levels because of its inorganic origins.

⑥ Alluvial soil.

These soil cover the largest area in the country and occupy an estimated area of 50 m/ha in the Indo-Gangetic plain and the

Brahmaputra Valley.

- Alluvial soils of Indo-Gangetic plains is of Recent origin and derived from the deposition or erosion products brought and laid down by different river system.
- Soils are variable in colour depending upon the source of parent material & calcareousness. Texture ranges from very coarse to fine.
- Soil are usually neutral to alkaline in reaction but it may be acidic in reaction in high rainfall zones.
- The alluvium of the Great Plain of India is divided into newer or younger khadar and older bhanger soil because of variation Resulting from biological and Variations.
- They support more than 40% of the Indians population by

Providing the most productive agricultural land.
- They yield splendid crops of rice, wheat sugarcane tobacco cotton, jute, maize, oilseeds, vegetables and fruits.

⑦ Laterite Soil.

Laterite its usually Reddish or yellowish Red in colour and often has a vesicular structure and is commonly considered to have formed in tropical and subtropical climates having an alternative wet and dry season.

- Laterite soil are mostly end products of weathering.
- They are formed under condition of high temperature and heavy rainfall with alternate wet and dry periods.
- Laterite means brick in Latin.

The harden greatly on lossing moisture.

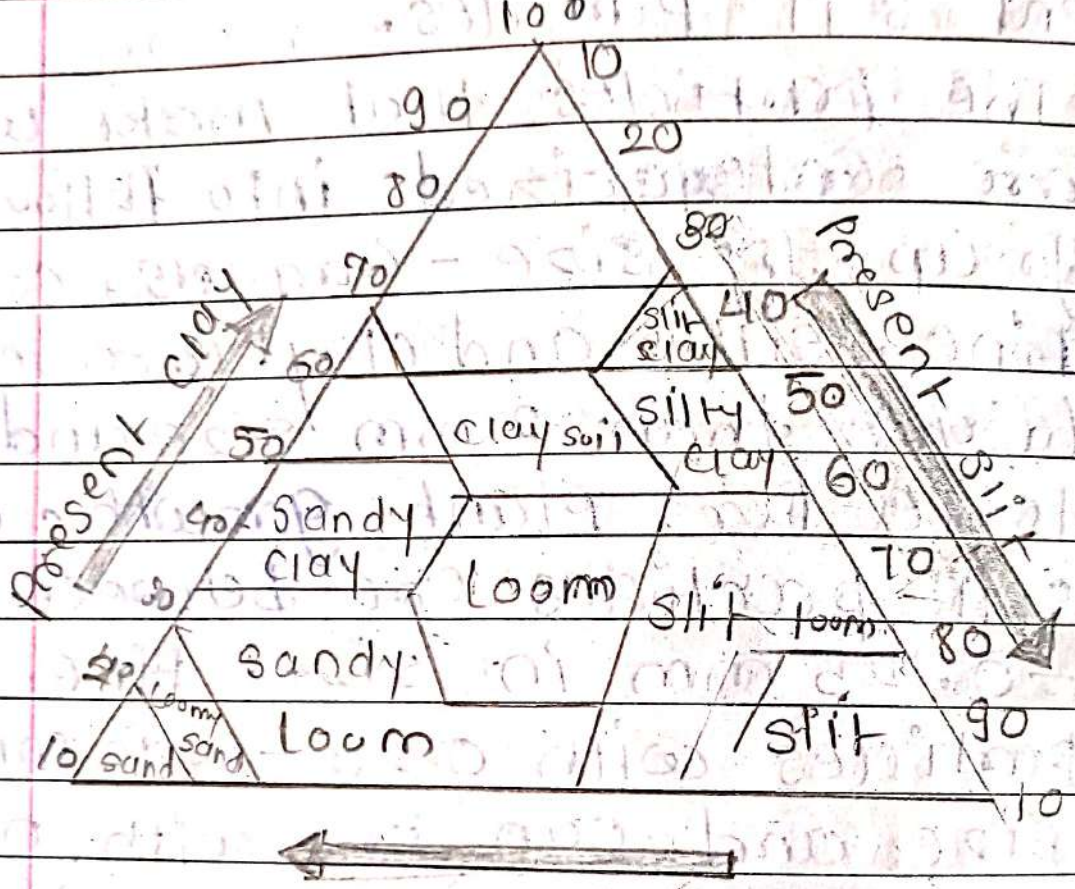
- Laterite soil composed of a mixture of the hydrate oxides of aluminium and iron with small amounts of manganese oxides.
- The soil are widely distributed and usually found in hill tops and plateau of orissa, maharashtra, and malabar hills, west Bengal Kerala, and Tamil Nadu and Assam.
- soil are deeply weathered, high clay content, low bases and silica content, accumulation of sesquioxides and low in organic matter content.

(8) Soil texture.

Soil texture refers to the sense one can feel to touch the soil. It depends upon the size constituent soil particles.

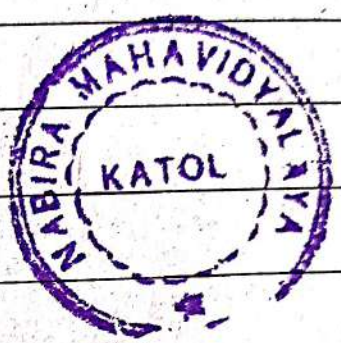
The particles that make up soil are categorized into following groups by size - Gravels, coarse, fine, silt, and clay. Gravels are larger than 2 mm size and unsuitable for plant growth. Coarse soil particles are between 2mm - 0.25 mm in size. Fine sand particles with 0.20 - 0.02 mm in size and can see with naked eye and it improves the diffusion of water and air through soil. Silt soil particles with 0.02 - 0.002 mm and it contains for plant growth. Clay in whom individual particles are less than 0.002 mm size and it gives plasticity and smoothness to the soil.

Soil texture affects soil behavior in particular its Retention capacity for nutrients and water.



(10) Available phosphorous (P):
Phosphorous is found in the soil in organic compounds and in minerals. The types of phosphorus compounds that exist in the soil are mostly determined by the soil are mostly determined by soil PH and by the type and amount of mineraly in the soil mineral compound of Phosphorus usually contain aluminum, iron, manganese or Calcium. soils with inherent pH values between 6 and 7.5 are idea for p-availability:
In acidic soils phosphorus tends to react with aluminum, iron and manganese, while in alkaline soil the dominant fixation in with calcium. Excess of Phosphorus mostly interferes with uptake of other elements, such as iron, manganese.

and zinc. symptoms of phosphorus deficiency include stunted growth and dark purple colour of older leaves, inhabition, of flowering and root system development.



Department of Botany, Nabira Mahavidyalaya, Katol.

NABIRA MAHAVIDYALAYA, KATOL

Subject - Botany

Session: 2023-22

Class B.Sc. 2nd Year

Sem - III

Assignment Submission

Sr. No.	Name of student	Paper-I	Paper-II
		Date & Signature	Date & Signature
1	Anjali Ramdas Dhongade	A.R. Dhongade	A.R. Dhongade
2	Aparna Gajanan Chinchmalatpur	A Chinchmalapur	A Chinchmalapur
3	Ashwini Yadavrao Kambale	A.Y. kambale	A.Y. kambale
4	Chhakuli Madhav Wadule	chhakuli.	chhakuli.
5	Dhanshri Sanjay Nanote	Dhanshri.N	Dhanshri.N
6	Disha Anilrao Giradkar	D. Giradkar	D. Giradkar
7	Hemlata Rameshwar Kale	Hemlata.kale	Hemlata kale
8	Jayshri Ashok Raut	Jayshri Raut	Jayshri Raut
9	Janhvi Namdev Mehar	Janhvi Meher	Janhvi Meher
10	Kalyani Chhagan Kalbande	Kalyanikalbande	Kalyanikalbande
11	Kalyani Bhaskar Babhulkwr	Kalyani.	Kalyani.
12	Khushali D. Thombre	K. D. Thombre	K. D. Thombre
13	Lakita Umesh Makde	Lakita makde	Lakita makde
15	Madhuri Maroti Sarware	Madhuri	Madhuri
16	Mayuri Pradip Putariya	MRPutaria	MPputaria
17	Mitali Mahadeo Gajbhiye	Mitali Gajbhiye	Mitali Gajbhiye
18	Neha Narendra Patil	N. Patil	N. Patil
19	Pooja Anil Dambhale	Pooja Dhambale	Pooja Dhambale

20	Prachi V. Dhopre	P.V.Dhopre	P.V.Dhopre
21	Pratiksha Dilip Fule		
22	Purva Sheshrao Kharpkar	P.Kharpkar	P.Kharpkar
23	Rajshree Rajendra Rewatkar	R.R.Rewatkar	R.R.Rewatkar
24	Rasika Anandrao Sirsam	R.A.Sirsam	R.A.Sirsam
25	Rasika Keshav Waghe	Rasika	Rasika
26	Ruchika Pramod Malvi	Malvi	Malvi
27	Rushali Ranjitrao Rampure	Rushali	Rushali
28	Sameer Sheshrao Atram	S.S.Atram	S.S.Atram
29	Samiksha Chandrashekhar Dongre	S.Dongre	S.Dongre
30	Sejal Narendra Wasule	S.N.Wasule	S.N.Wasule.
31	Sharwari R. Somkuwar	S.R.Somkuwar	S.R.Somkuwar
32	Shivani Prabhakar Mohankar	S.P.M	S.P.M
33	Shivprasad Pandharinath Surya	Shiv	Shiv
34	Tina Sandip Yelekar	T. Yelekar	T. Yelekar
35	Vaishnavi Liladhar Nibude	Vaishnavi	Vaishnavi

Page No.
Date : 30/10/2023

NABIRA MAHAVIDYALAYA KATOL

NAME - VAISHNAVI NIMBUDE

SUB - BOTANY

CLASS - CBZ (B.Sc - 2nd year
SEM - III)

2023 - 24

Semester III

Paper - I

Botany

Unit - I

1. Write on:

a) Benettitalean theory of angiosperm origin.

:- • Weiland (1906) and Arber and Parkin proposed the Bennettitales, the extinct group of gymnosperms related to Cycadophyta, to be the possible ancestors of angiosperms. It was furthur supported by Haller and Hutchinson (1959).

• This theory is also called as Anthostrobillus theory and according to this theory the angiosperm flower is interpreted as being derived from an unbranched bisexual strobilus bearing spirally arranged ovulate and pollen organs, similar to the bisexual reproductive structures of some extinct bennettitalean.

• The benettitales includes plants which were common throughout the Mesozoic.

• The fossil specimens reveal that the plant body resembled with living cycads, Some have stout trunks; but all crowned

with cycad-like leaves. The most remarkable structure is Strobilus (cone).

- The cones are borne on lateral shoots instead of the stem tip as among the cycads. Each cone or Strobilus consists of a central axis covered with megasporophylls (carpels), each bearing an ovule; around this is a whorl of compound microsporophylls (stamens); and around the whole is a covering of scaly leaf-like structures, perhaps the forerunners of calyx and corolla.
- The above arrangement of parts in the Strobilus is so much like that of the more primitive angiosperm flower that has suggested that bennettitales may be ancestral to the modern angiosperm.
- The resemblance of the flower of Mangnolia to the cone of Cycadoidea is close enough to make this conclusion plausible, but the vegetative bodies of the two groups are very unlike.
- Arber and Parkin suggested a theory based on hypothetical Cycadeoid flower. Cycadoidea had reproductive organs that were superficially like the flower

of an angiosperm, with an elongate receptacle bearing perianth-like bracts and a whorl of pollen-bearing microsporophylls below an oruliferous region. Comparison were drawn with the flower of Magnolia.

b) Sahanianthus flower.

:- • The form genus Sahanianthus combines characters of families Lythraceae and Sonneratiaceae of order Myrtales.
• It is petrified angiospermic flower.
• Age and locality of the fossil belonging to Pliocene epoch of the Tertiary period of Cenozoic era.
• It is obtained from the Deccan Intertrappean beds of Mohgaon kalan, Chhindwada district, Madhya Pradesh.
It has been described by Prof Shukla (1944) and Chitley (1950-1955)
• The name Sahanianthus given by Prof. Shukla in the memory of Prof. Birbal Sahani.

Description:

1. Flower: The flower was 7 to 10.5 mm long and 1.3 to 3 mm broad, actinomorphic, pedicillate, hypogynous, ebracteate and bisexual.

Date :

2. Pedicel : Flowers are pedicillate.
3. Calyx : 7-8 lobed, tubular, gibbous at the base, valvate aestivation.
4. Corolla : Not observed in original specimens but according to Paradkar and Senad petals are 7-8 lobed arising from between the sepal loked, valvate aestivation.
5. Androecium : 8-12 Stamen, epipetalous, dorsifixed attatchment, protandrous Stamen. Pollen grains were spherical 40 micron in diameter.
6. Flowers do not show heterostyle but the pistil is in different stages of development.
7. Gynoecium : They possess Syncarpous, Superior ovary with 6-12 locules, axile placentation, ovules present in two rows of each locules. Style is simple and long, broad and sticky Stigma Swollen papillose.
8. Nectary : A single Scale like Structure present in gibbous portion of the calyx tube at the base of the ovary Stalk.

9. Pollination: Entamophillous (by insect).
10. Fruit : Loculicidal, capsule.
11. Inflorescence: The flower borne on a branched pedicel.

3. Phytochemistry:

Phytochemistry means chemical based taxonomy. Data from chemistry of plant products is termed phytochemistry. Chemical systematic is the study of chemical variation in various organisms and their relationships. It is used in developing classifications or in solving taxonomic problems. It is also called chemotaxonomy, chemical plant taxonomy or plant chemotaxonomy.

The principles, procedures and results of investigations into chemical variation of plant groups are applied mainly for two purposes: first, to provide taxonomic characters which may improve existing plant classification, i.e. a strict taxonomic purpose, and second, to add to the knowledge of phylogeny or evolutionary relationship.

4. Indented and bracketed keys.

:- • Indented key:

1. Gynoecium of free carpels usually many
   2. Plants terrestrial.
      3. Leaves simple
         4. Leaves stipulate; sepals and petals usually coloured and imbricate fruit dry Magnoliaceae.
         4. Leaves exstipulate; sepals and petals usually green and valvate, fruit fleshy Annonaceae, Rosaceae, Nelumbonaceae.
      3. Leaves pinnately compound
   2. Plants aquatic
1. Gynoecium of united carpels or carpel solitary.

• Bracketed key

1. Gynoecium of free carpels; carpels usually many... Gynoecium of united carpels or carpels solitary
2. Plants terrestrial 3
   Plants aquatic Nelubonaceae
3. Leaves simple 4
   Leaves pinnately compound Rosaceae
4. Leaves stipulate; sepals and petals often coloured and imbricate.
   fruit dry Magnoliaceae
   leaves exstipulate; sepals and petals usually green and valvate;
   fruit fleshy Annonaceae

Date :

5. Cytotaxonomy

Cytotaxonomy means cytological based taxonomy. Cytotaxonomy is the utilization of cytological characters and phenomena for the elucidation of taxonomic problem. Solbrig (1968) discovered two aspects.

i) Number, Shape and size of chromosome

ii) The behaviour of chromosomes during meiosis, and to lesser extent, their behaviour during mitosis.

Chromosome number: The great diversity of chromosome numbers and their relative constancy within population and species provide an important characters for taxonomic groupings of large number of plants.

1) Constant number: Certain groups of vascular plants possess a constant number of chromosome in genera such as Pinus and Quercus have $n = 2$ chromosomes.

2) Euploidy: In the genus Taraxacum (Compositae), there are species with $2n = 16$, 24, 32, 40 and 48 chromosomes. Other examples are Malvaceae, Chlorophylum, Nasturtium officinale.

3) Aneuploidy: In nature, a large number of plant groups are known to exhibit

aneuploidy. Various species of Carex show a wide range of chromosome number from n=6 to 112 with multiples of 5, 6, 7 and 8. Other examples are Dahlia, Crepis, Fritillaria Allium, Nicotiana, Datura, Maize etc.

Chromosome Size: The chromosome size has been very useful in understanding relationship in several taxa. In most plants, the length of a chromosome varies from 0.5 to 30μ. Among monocots the members of Zingiberaceae possess small chromosomes, of Iridaceae: Small to medium sized, of Amaryllidaceae large-sized, while those of Liliaceae possess chromosome of varying sizes. Except Eleocharis and Fimbristylis, all the members of Cyperaceae possess extremely small chromosomes.

Structure of chromosome: Usually the chromosome are characterized as median, sub-median, sub-terminal or terminal with reference to their length and the position of the centromere. The centromere location marks the position of the primary constriction.

Additional constrictions are called secondary constrictions. Occasionally, a secondary constriction may be present near the terminal end of a chromosome, separating its small segment called satellite. The chromosome may be present near the terminal end of a chromosome, separating its small segment called satellite. The chromosome may be symmetrical or asymmetrical. Symmetrical ones possess two equal arms and a median centromere. Asymmetrical ones possess unequal arms and sub-terminal centromere. Relative length of the arms of the chromosome, position of the centromere, presence of satellite, etc. is some characters of taxonomic significance.

Behaviour of chromosome during meiosis:
These characters have been shown to be useful in taxonomy at all levels up to that of the family and even above, but most involve species and groups of species. Degree of sterility and occurence of hybridization are determined by the behaviour of chromosomes during meiosis.

6) Techniques of herbarium

A herbarium is a collection of preserved plant specimens and associated data used for scientific study.

The specimens may be whole plants or plant parts; these will usually be in dried form mounted on a sheet of paper but, depending upon the material, may also be stored in boxes or kept in alcohol or other preservatives. The specimens in a herbarium are often used as a reference material in describing plant taxa; some specimens may be types.

Matching with the need to identify the specimens, it is essential to include in a herbarium sheet as much of the plant as possible, or at least representative parts of them in the case of large specimens. To preserve their form and color, plants collected in the field are carefully arranged and spread flat between thin sheets, known as flimsies, and dried usually in a plant press, between blotters or absorbent paper.

1. Floral structure of Poaceae.

Inflorescence is terminate to the culm and its branched. The basic unit of the inflorescence is spikelet. Spikelet are sessile or pedicelled. Each spikelet consist of a very short or minute axis bearing two opposite rows of branches generally two lower bracts are sterile and are called as sterile glumes. The sterile glumes are followed by lemma or fertile flowering plants. A structure is present between fertile glume and rachilla called palea. Lemna and Palea bear a flower in their axil. Flowers are small, incospicous, bisexual or sometime unisexual. Perianth is highly modified. Androecium consists of three stamens. Filaments are and delicate, Dithecus.

Gynoecium: It is monocarpelary with superior ovary.

Fruit and seed: Fruit is mostly one-seeded, Caryopsis some time fruit is berry of nut type.

Pollination and dispersal: Grasses are self or wind pollinated. Large feathery stigmas. The seeds which are very small and light are usually distributed by wind.

Date :

b) Floral characters in Asclepiadaceae.

Flower : Bracteate, pedicellate, complete, actinomorphic, hermaphrodite, pentamerous, hypogynous and cyclic.
Calyx : Sepals 5, polysepalous, valvate.
Corolla : Petals 5, gamopetalous, petals are only basally connate, twisted and brightly coloured.
Androecium : Stamens 5, fused with stigma to form a pentangular gynoecium. Each stamen is represented by two pollina with their retinaculae. The pollinia of the with their retinaculate. The pollinia of the adjacent anthers are joined by their retinaculate to carpusculum in a groove, to form a unit known as translator. A coronary outgrowth is present at the back of the each stamen.
Gynoecium : Bicarpellary, ovaries superior and free, style and stigma are fused placentation marginal, ovules many per locule.
Fruit : Etario of follicle
Flower formula : Br, ⊕ ♀, K5, C(5), A(5) $\underline{G_2}$

c) Capitulum inflorescence.

A head (capitulum) is a short dense spike in which the flowers are borne directly on a broad, flat peduncle. giving the inflorescence the appearance of a single flower. as in dandelion.

e) Floral characters of Asteraceae.

Inflorescence is of racemose type. It is called head or capitulum inflorescence. It is surrounded by bracts. Head may be solitary or compound. Flowers are borne on flat receptacle. Flowers are florets. Two types of flowers are present outer flowers present on the border of receptacle called ray florets while rests of the flowers are called disc floret. The flowers are actinomorphic or zygomorphic, bisexual or unisexual, pentamerous epigynous. Calyx reduces to hair like structure called pappus. Petals 5 gamopetalous filaments free but anthers fused. Anthers bithecous introse. Gynoecium - carpels 2, ovary inferior unilocular with single basal anatropous ovule. Style bifid / bilobed.

Date :

f) Economic importance of Poaceae.

- Triticum aestivum : It is a principal staple food of man. The straw is fed to livestock, also used for paper making.
- Oryza Sativa : It is staple food for millions. The paddy husk is used as fuel, for making hardboard, for alcohol.
- Zea mays : It is used in more diversified ways than any other cereal grains used for livestock. as food.
- Hordeum vulgare : It is used mainly feed grain. Also used in manufacture of several alcoholic beverages.
- Sorghum vulgare : The grains mainly used for poultry and cattles.
- Bomboos : These are tall grasses used for variety of perposes.

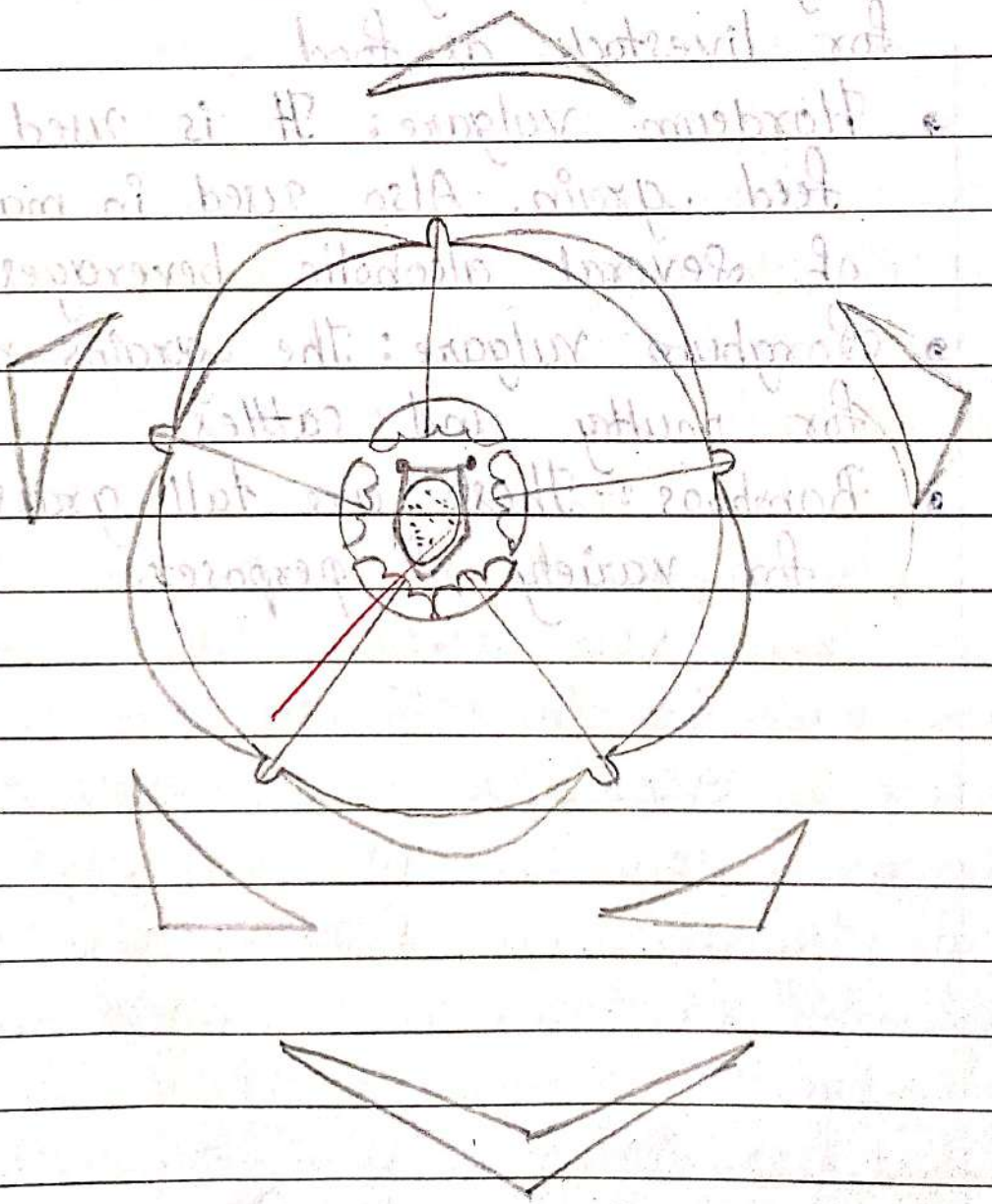
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Q. Write short notes on:

a) Floral formulae and floral diagrams in Asteraceae.

Floral formula :

$Br, \oplus, \varphi^{\nearrow}, K_5, K_{pappus}, \overbrace{C_{(5)}}\ A_{(5)}\ \bar{G}_2$



Floral Diagram

c) Economic importance of Asteraceae.

1) Lactusa Sativa: It is cultivated as a salad crop.

2) Helianthus tuberosus: Used as a food for man.

3) Helianthus annuus L.: (Sunflower) is cultivated for seeds which are source of edible oil.

4) Carthamas tinctorius L.: (Safflower kusum) is an important oil seed crop plant in India.

5) Tagets minuta: Yield a strong aromatic essential oil which is used as antiseptic, a fly repellent.

6) Crysanthemum: Yield a commercial insecticide pyrenthrum.

e) Spikelet inflorescence.

A Spikelet, in botany, describes the typical arrangement of the flowers of grasses, sedges and some other Monocots. Each Spikelet has one or more florets. The Spikelets are further grouped into panicles or spikes. The part of the spikelet that bears the florets is called the rachilla.

f) cyathium inflorescence.

A cyathium is one of the specialised pseudanthia forming the inflorescence of plants in the genus Euphorbia. A cyathium consists of : Five bracteoles. These are small, united bracts, which form a cup-like involucre. Their upper tips are free and in the beginning cover the opening of the involucre.

g) Economic importance of Poaceae.

- Triticum aestivum : It is a principal staple food of man. The straw is fed to livestock, also used for paper making.
- Oryza sativa : It is staple food for millions. The paddy husk is used as fuel for making hardboard for alcohol.
- Zea mays : It is used in more diversified ways than any other cereal grains used for livestock as food.
- Hordeum vulgare : It is used mainly feed grain.

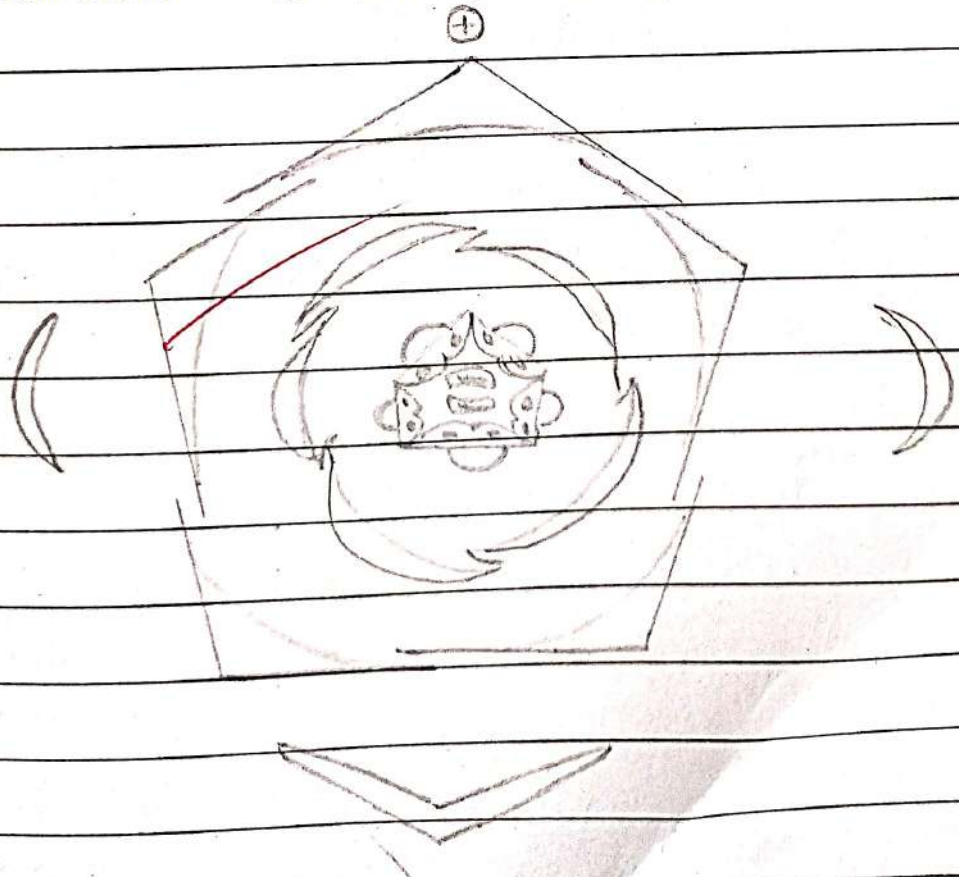
- Sorghum vulgare: The grains mainly used for poultry and cattles.
- Bomboos: These are tall grasses used for variety of perposes.

b) Pollinia

A coherent mass of pollen grains that is the product of each anther lobe of some flowers, especially orchids. Single or paired pollinia are often attatched to, and carried by pollinating insects.

i) Floral formula and floral diagram in Asclepideaceae.

Formula :- $Br, br_1, \oplus \, ♂ \, K_{(5)}, C_{(5)}, A_{(5)}, \underline{G_2}$



j) Disc floret.

Any of a number of small tubular and usually fertile florets that form the disc. In rayless plants such as the tansy the flower head is composed entirely of disc florets.

BK



Department of Botany, Nabira Mahavidyalaya, Katol.

NABIRA MAHAVIDYALAYA, KATOL

Subject - Botany

Session: 2023-22

Class B.Sc. 2nd Year

Sem - IV

Assignment Submission

Sr. No.	Name of student	Paper-I	Paper-II
		Date & Signature	Date & Signature
1	Anjali Ramdas Dhongade	A.R.Dhongade	A.R.Dhongade
2	Aparna Gajanan Chinchmalatpur	A.Chinchmalatpur	A.Chinchmalatpur
3	Ashwini Yadavrao Kambale	A.Y. kambale	A.Y. kambale
4	Chhakuli Madhav Wadule	Chhakuli.	Chhakuli.
5	Dhanshri Sanjay Nanote	Dhanashri.N	Dhanshri.N
6	Disha Anilrao Giradkar	D. Giradkar	D. Giradkar
7	Hemlata Rameshwar Kale	Hemlata kale	Hemlata kale
8	Jayshri Ashok Raut	Jayshri Raut	Jayshri Raut
9	Janhvi Namdev Mehar	Janhvi Meher	Janhvi Meher
10	Kalyani Chhagan Kalbande	KalyaniKalbande	Kalyanikalbande.
11	Kalyani Bhaskar Babhulkwr	Kalyani.	Kalyani.
12	Khushali D. Thombre	K.D Thombre	K. D Thombre
13	Lakita Umesh Makde	Lakitamakde	Lakitamakde
15	Madhuri Maroti Sarware	Madhuri	Madhuri
16	Mayuri Pradip Putariya	MPutariya	MPutaria
17	Mitali Mahadeo Gajbhiye	MitaliGajbhiye	MitaliGajbhiye
18	Neha Narendra Patil	N. Patil	N. Patil
19	Pooja Anil Dambhale	Poojadambhale	Pooja Dambale.

20	Prachi V. Dhopre	R. Dhopre	R. Dhopre.
21	Pratiksha Dilip Fule		
22	Purva Sheshrao Kharpkar	P. Kharpkar	P. Kharpkar
23	Rajshree Rajendra Rewatkar	R.R. Rewatkar	R.R. Rewatkar
24	Rasika Anandrao Sirsam	R.A. Sirsam	R.A. Sirsam
25	Rasika Keshav Waghe	Rasika	Rasika.
26	Ruchika Pramod Malvi	Malvi	Malvi
27	Rushali Ranjitrao Rampure	Rushali	Rushali
28	Sameer Sheshrao Atram	S.S. Atram	S.S. Atram
29	Samiksha Chandrashekhar Dongre	S. Dongre	S. Dongre
30	Sejal Narendra Wasule	S.N. Wasule	S.N. Wasule.
31	Sharwari R. Somkuwar	S.R. Somkuwar	S.R. Somkuwar
32	Shivani Prabhakar Mohankar	S.P.M	S.P.M
33	Shivprasad Pandharinath Surya	Shiv	Shiv
34	Tina Sandip Yelekar	T. Yelekar	T. Yelekar.
35	Vaishnavi Liladhar Nibude	Vaishnavi	Vaishnavi

INDEX

Name : Samiksha Chandrashekhar Dongare.

Std. : Bsc 2nd yr Div. : IV sem Roll No. :

Sub. : Botany

School / College : Nabira mahavidyalaya katol.

24/04/2024

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Assignment

UNIT-I CELL ORGANIZATION

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1) Endoplasmic reticulum :-

- Endoplasmic Reticulum is a network of membranous tubules present within the cytoplasm of a eukaryotic cell.
- The endoplasmic reticulum is a part of a transportation system of the eukaryotic cell.
- endoplasmic reticulum, a name derived from the fact that in the light microscope it looks like a "net in the cytoplasm"
- The name "endoplasmic reticulum" was coined in 1955 by Porter, who, in 1945 had observed it in electron micrographs of liver cells.
- Morphology :- Morphologically the endoplasmic reticulum is composed of following three kinds of structures.

(1) Cisternae :- The cisternae are long, flattened, sac like unbranched tubules having the diameter of 40 to 90 mu. They remain arranged parallel in bundles or stakes.

(2) Vesicles :- The vesicles are oval membrane bound vacuolar structure having the diameter of 2.08 to 5.30 mu. They often remain isolated in the cytoplasm and occur in most cells but specially abundant in the Pancreatic cells.

(3) Tubules :- The tubules are branched structures forming the reticular system along with the cisternae and vesicles. They usually have the diameter from 50 to 90 mu and occur almost in all cells.

- **Ultrastructure :-**

The cavities of cisternae, vesicles and tubules of the endoplasmic reticulum are bounded by a thin membrane of 50 to 60 A° thickness. The membrane of endoplasmic reticulum is trilaminer and has fluid mosaic configuration like the unit membrane of the plasma membrane. thus is composed of a bi layer of phospholipids in which "flat" Proteins of various sorts.

- The membrane of endoplasmic reticulum remains continous with the membranes of plasma membrane nuclear brane and Golgi complex. The cavity of the endoplasmic reticulum is well developed and acts as a passage for secretory products palad (1956) has observed secretory granules in the type of endoplasmic reticulum.

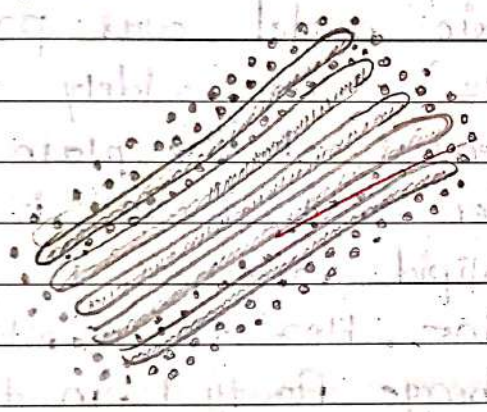
- **Type of endoplasmic reticulum :-**

There are two morphological types of ER - the rough or granular (Ergastoplasm) and the smooth or agranular to the presence of ribosome These are interconvertible.

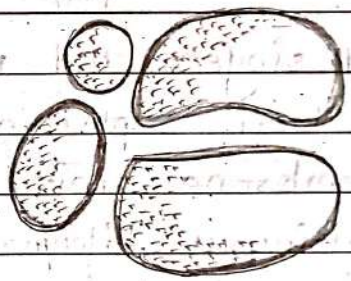
- **Function :-**

① The endoplasmic reticulum is the site of section of secretory Proteins. Proteins are synthesized on the ribosomes and enter the cisternae through channels in the membrane.

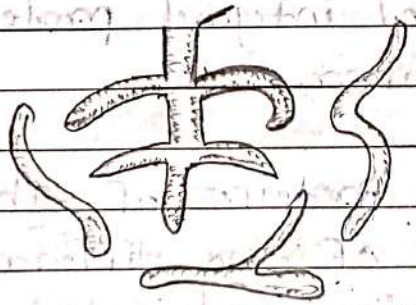
(2) It is also associated with the synthesis and break-down of fatty acids and glycogen.
(3) ER is the major site of synthesis of cholesterol and steroid hormones.
(4) It Provides additional mechanical support of Cytoplasm
(5) Exchange between the nucleus and cytoplasm takes place through nucleus openings which communicate with the endoplasmic reticulum (Watson 1959)
(6) The ER also provides an extensive internal surface for exchange of material between the matrix of cytoplasm and the lumen of cisternae.



Cisternae



Vesicles



Tubules

DATE / / /

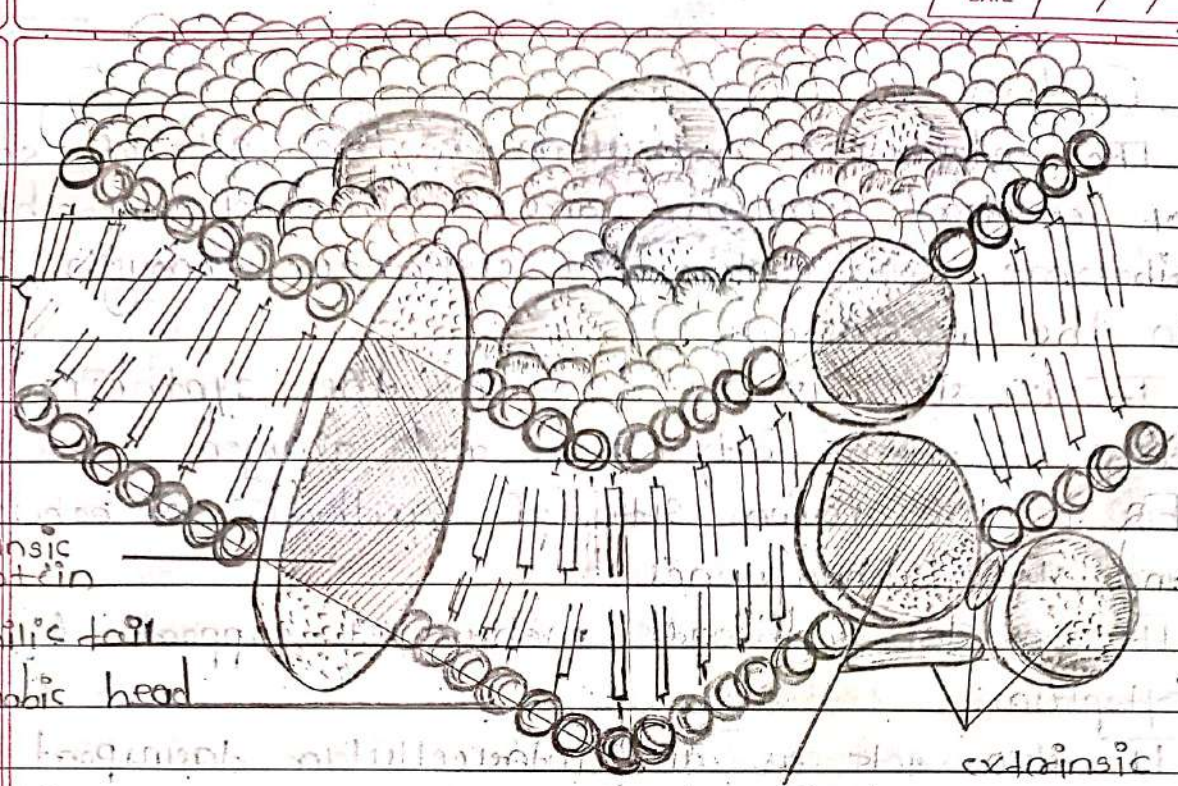
2) Fluid Mosaic Model :-

- The fluid mosaic model postulates (i) that the lipid and integral Proteins are disposed in a kind of mosaic arrangement and (ii) the biological membrane are quasi - fluid structures in which both the lipid and integral Proteins are able to perform translational movements within the overall bilayer. The fluidity of the membrane is the result of the hydrophobile interaction beteween lipids and Proteins.

The fluid mosaic model was propounded by singer and nicolson, (1972) is now widely accepted as best explaining the properties of the plasma membrane. This model assumes that there is a continuous bilayer of phospholipid molecules in which are embedded globular proteins. Here the Protein have been compared to iceberge floating in the sea of the Phospholipid bilayer. Thus the plasma membranes are considered to be quasifluid structure in which lipids and integral proteins are arranged in a mosaic manner.

- The globular Proteins of the membrane are considered to be of two different types. extrinsic (peripheral) proteins and intrinsic (integral) proteins.

- The peripheral Proteins are soluble readily dissociated from the plasma membrane and are entirely outside of the lipid layer.



The fluid mosaic model of plasma membrane

- The integral Proteins are relatively insoluble and penetrate either surface of the lipid bilayer.
- The integral Proteins are amphipathic with hy hydrophidic polar heads protrude from the surface of the membrane.
- Integral Proteins are capable of lateral diffusion in the lipid bilayer. The lipid bilayer has many dynamic motional properties - rapid internal motion involving flexing, lateral diffusion of the lipids transfer of lipid molecules from the one side of the bilayer to the other rotation about their axes.

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(3) Function of ER :-

(1) The endoplasmic reticulum is the site of secretion of secretory Proteins are synthesized on the ribosome and enter the cisternae through channels in the membrane.

(2) It is also associated with the synthesis and breakdown of fatty acids and glycogen.

(3) ER is the major site of synthesis of cholesterol and steroid hormones.

(4) It provides additional mechanical support to cytoplasm.

(5) It also acts as an intracellular transport system for various substances

(6) Exchange between the nucleus and cytoplasm takes place through nuclear openings which communicate with the endoplasmic reticulum.

(7) The ER also Provides an extensive internal surface for exchange of material between the ~~material between~~ the cytoplasm and the lumen of cisternae.

(4) Function of Plasma membrane

(1) The plasma membrane acts as a barrier which however permits the movements of certain substance in and out of the cell.

(2) cell membrane are selectively permeable rather than semi permiable

(3) Transport of molecules across the membrane may be active or passive thus the membrane regulates the passage of certain nutrients molecules into the cell the normal of waste

Products and the released of secretory product from cell.

④ It also protects various organelles of the cytoplasm and gives origin of certain cell organelles.

⑤ The cell membrane also contains receptors which recognize specific hormones molecules responding to a variety of stimuli and the site for cell recognization.

⑥ The plasma membrane of bacterial the electron transport chain which plays an important role in cell respiration.

⑦ It Provides the shape to the cell in different tissue.

⑧ It is flexible and hence allow cell to expand to a certain extent.

⑤ Ribosomes :-

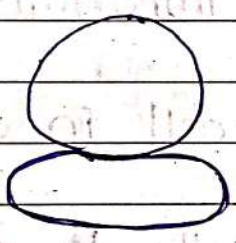
⇒ Ribosomes are one of the important cell constituents. first observed by Palad (1955) essencially involved in Protein synthesis. They are found both in Prokaryotes and eukaryotes. Ribosomes may be found either in the free state or attached to the outside of cytoplasmic membrane like the endoplasmic reticulum.

structure ⟶ Ribosomes are cytoplasmic non-membranous ribonucleic Protein granules of 150-200 A° diameter. They have a typical binary and constricted structure with the two units being unequal in size. The prokaryotic and eukaryotic ribosome are differentiated on the basis of the sedimentation coeficient.

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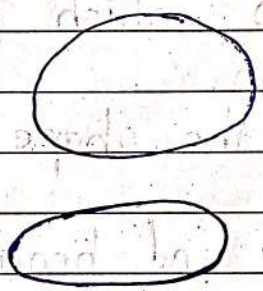
These are of two basis types 70s and 80s ribosomes found in Prokaryotes and eukaryotes respectively. The 's (svedberg unit) refers to sedimentation coeficient which shows how fast a cell organell sedimentation coefficient. 70s ribosome. of Prokaryotes are relatively smaller and consist of a large 50s subunit and a small 30s subunit

① Prokaryotes



70s ribosome

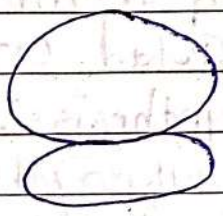
subunit



23 s rRNA
5 s rRNA
+
31 Proteins

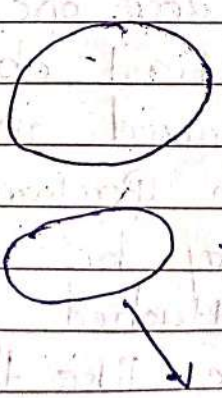
16s rRNA
21 Proteins

② Eukaryotes



80s Ribosome

subunit

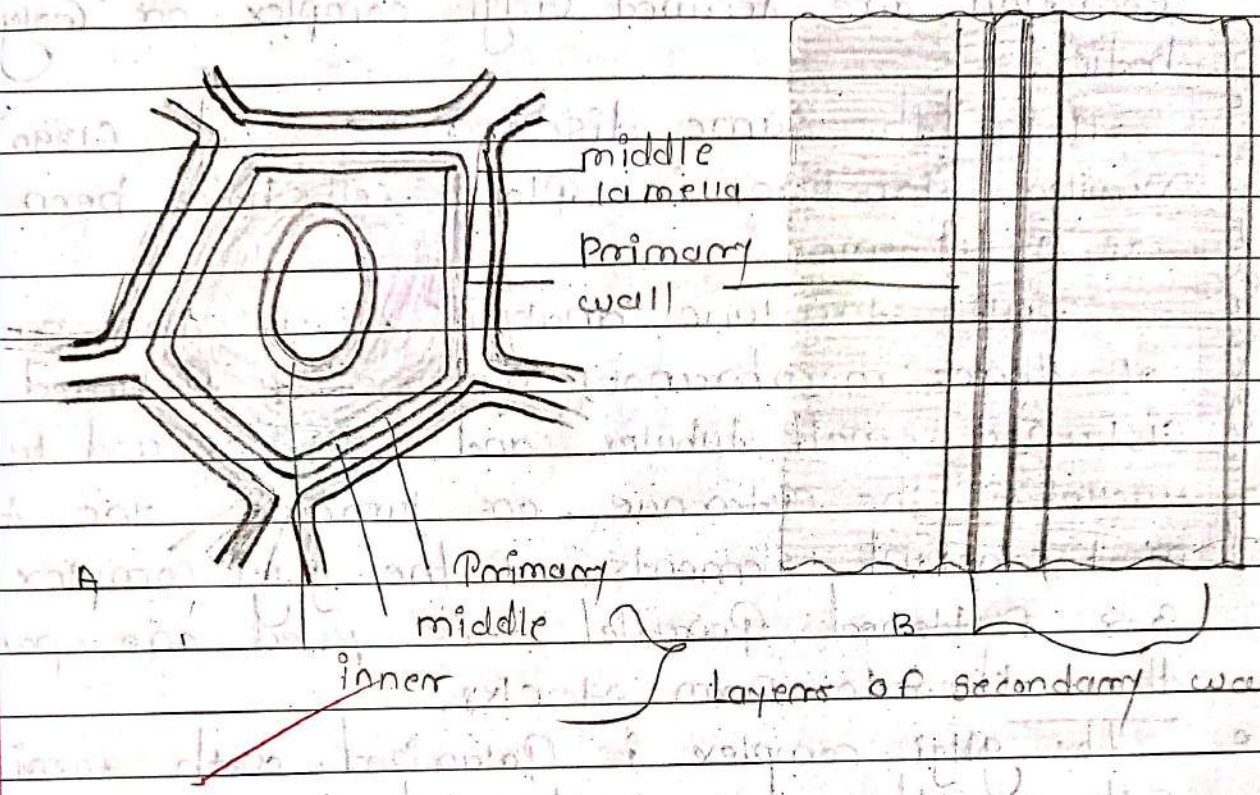


28 s. rRNA
5.8.s rRNA
5s RNA
49 + proteins.

18s rRNA
- 33 - Proteins

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⑥ Draw well labelled diagram of plant cell.



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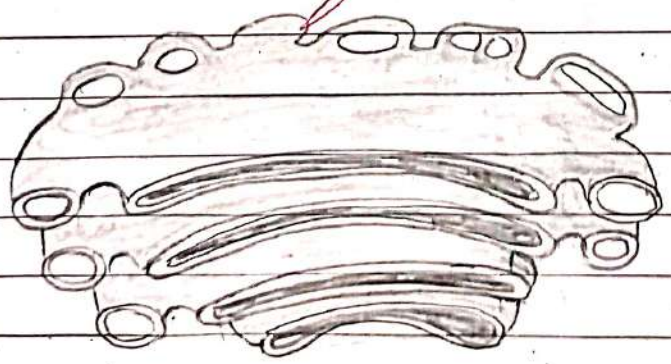
(7) Golgi complex

⟹ A stack of cytoplasmic tubules concerned with secretion are termed Golgi complex or Golgi bodies.

After the name discover C. Golgi (1890) Similar structure in plant cell have been termed as Dictyosome.

Ultrastructure analysis revels the presence of three membranous components. flattened sacs or cisternae, small tubules and vesicles and large vacuoles. The cisternae or lumellae are the most constant elements of the golgi complex. 3-8 flattened parallel sacs piled one upon the other to form stacks.

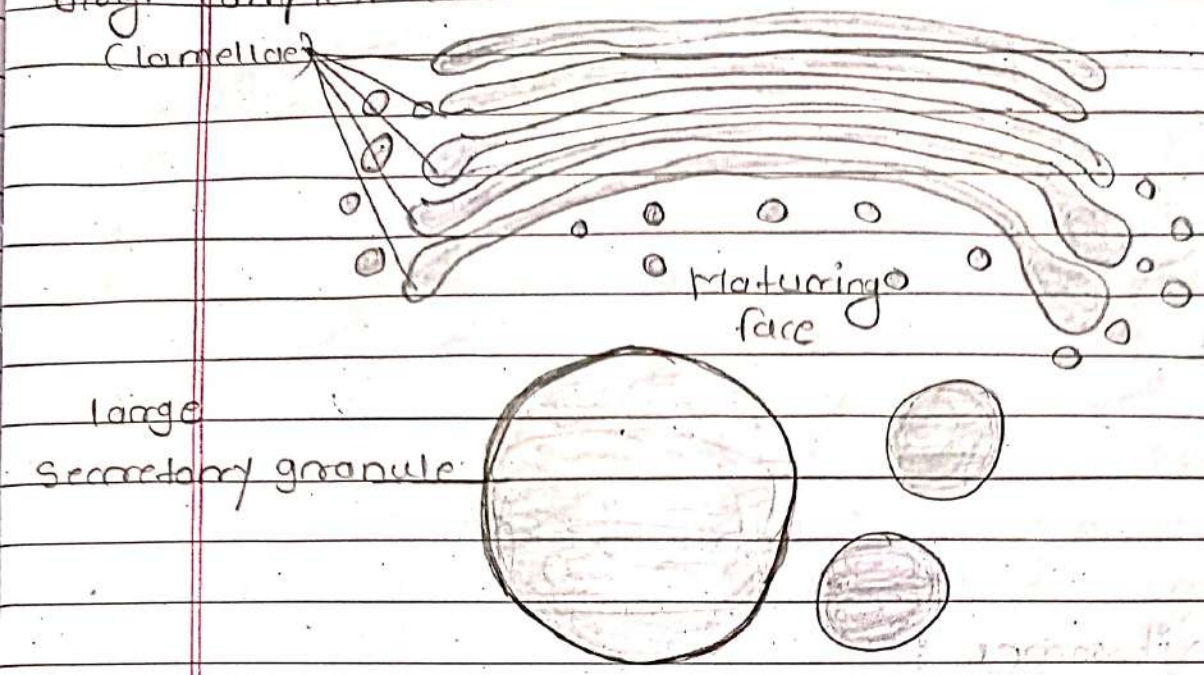
- The golgi complex is polarized with forming fall on the outer side and a maturing face on the opposite side.
- The small vesicles are 400 : 800 A° in diameter and are intimately associated with the cisternae. may show continuity with them.
- The large vacuoles are clear and lie at the edge of the complex.



289895

34

A. forming face



B

The golgi complex – Stereoscopic view B. section

(8) Vacuoles :-

⇒ As much as 90 Percent of the volume of many plant cells is occupied by a single membrane boound fluid filled central vacuole. These are conspicuous organalles of most plant cell.

- The apical meristem cells typically contain more number of small vacuoles during the maturation as the cell that small vacuoles coalesce into one or few vacuoles.
- The vacuoles are simple is structure incompressed by a thin membrane called tonoplast. The vacuoles of a mature plant cell is formed from the endargement and fusion of smaller vacuole present in meristematic cells. The vacuole store large variety of molecules including inorganic ions organic acids sugars enzymes storage Proteins and many other types of secondary metabolism.

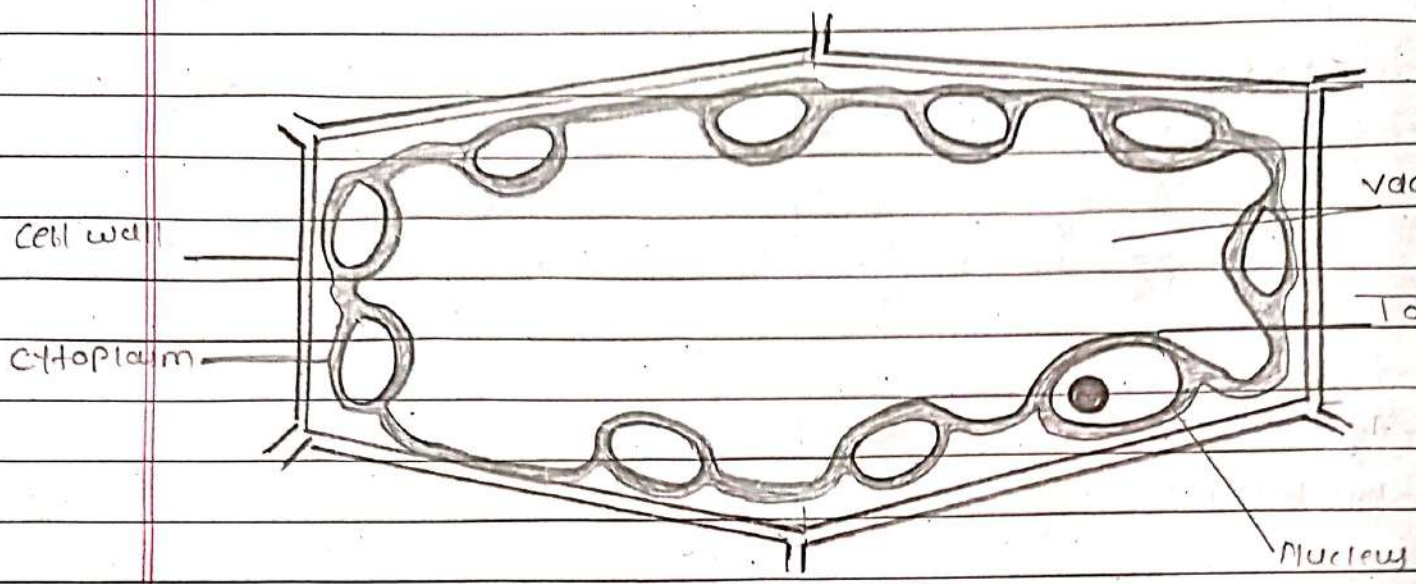


Fig Plant cell vacuoles

- ⑨ **70s Ribosomes :-**

The 70s ribosome of prokaryotes is relatively smaller and consists of a large 50s and small 30s subunit.

- Ribosome may occur in the free form in Prokaryotes and are then called monosomes may be associated with mRNA to form polysomes as in eukaryotes.
- The 30s such unit is oriented transversely to the centred protuberance of 50s subunit.

★ **Short answers :-**

1. **RER**

⇒ The rough structure of endoplasmic reticulum is due to presence of ribosomes on the membrane surface which the smooth ER are not covered with ribosomes.

2. **SER**

The smooth endoplasmic reticulum do not have attached ribosome on the membrane surface.

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3. Carrier Protein :-
Carrier Protein bind specific molecules to be transported on one side of the membrane.
The example of carrier Proteins include sodium potassium pump (Na^+ K^+ pump)

4. Cytology
The study of plant and animal cell including their structure function and formation.

5. Cell
The cell is the structural and functional unit of life.
- The plant body consists of a number of small microscopic box like compartments called cells
- Cells is also known as universal elementary units of organic structure.

6. Annulus :
Between the inner wall of plasmodesmata and the desmodubule is a cytosolic annulus through which molecules can pass.

7. Extrinsic Protein :-
The extrinsic or Peripheral Proteins are soluble readily dissociated from the plasma membran and are entirely outside the lipid bilayer

8. Intrinsic Protein
The intrinsic or integral proteins are

amphipathic with hydrophilic polar heads protrude from the surface of the membrane, while non-Polar regions are embedded in the interior of the membrane. The integral proteins are capable of lateral diffusion in the lipid bilayer.

9. Tonoplast

The vacuole bounded by single semi permeable membrane called tonoplast.

10. Vacuole

As much as 90 percent of the volume of many plant cells is occupied by a single membrane bound fluid filled central vacuole. The vacuole are simple in structure. The vacuole bounded by single membrane called tonoplast.

11. ATP :-

chemical energy produce by the mitochondria is stored in a small molecule called adenosine triphosphate (ATP).

12. Cisternae

The cisternae are long flattened sac-like unbranched tubule having the diameter of 40 to 50 mu. They remain arranged parallel in bundles or stalkes.

13. Secretory vesicles

The secretory vesicles form trans Golgi complex and they release their contents to the

cell exterior by exocytosis in response to extracellular signals.

14. **Functions of golgi complex :-**

Golgi bodies are involved in the synthesis packing and secretion of different substance

- Secretory products are found in the cisternae of the golgi lamellae while in others, the secretory product completely fill the cisternae.

15. **Plasmodesmata**

The cell wall of some plant cell hull some canal like apperteures these canal of cell wall are known as plasmodesmata.

* Very short answers questions :-

1) Scarification

=> The method employed in gafthing or weakening the seed coat is called scarification. The seed coat may be punctured or mechanically ruptured at one or more place as sufficient to breeak their dormancy.

2) Dicotyledonous exabbuminous seed.

Each seed is attached to the placental tissue on the fruit suture by a stalk called the funicle The funicle is narrow at the placental end but widens into a disc where it join the seed.

3) Dicotyledonous albuminous seed.

In this type of seed (ground plant) the food is not store in the two cotyledons of the embryo but in the endosperm external to the embryo.

4) Monocotyledonous exalbuminous seed.

Although all the common monocotyledonous seeds are albuminous there we a few of the exalbuminous type this type of seed is found in the Aroideae (e.g pathos and Amorphophallus Campanutus) and also widely is the families Hydrocharitaceae (e.g) vallisneria Alismaceae (e.g Alisma plantago) Najadaceae etc.

5) Monocotyledonous albuminous seeds :-

The large endosperm of the ereals is the most important source of starch, the principle food of all people. Rice (paddy) wheat and maize

may be taken as the types seed of this class the outermost layer of the endosperm is the aleurone layers which contains mainly Protein

(6) Stratification

This method is used to break the dormancy of seeds caused due to condition of the embryo In this process the seeds are exposed to well aerated moist conditions under low temperature (0 to 10°c) for weeks to months this treatment called stratification.

(7) Provenance :- It has already been stated that a number of factors operating before and during harvest can affect seed viability It is supposing then that samples of seed obtained from different sources may show differences in viability behaviour.

(8) Genetic erosion :-

loss of Genetic diversity (Genetic erosion) including the loss of individuals genes or particular combinations of genes and loss of varieties and crops occur rapidly in crops mainly because of traditional landraces by modern high yielding cultivatiors, natural catastropes and large destruction and modification of natural habits.

(9) Irrigations :- Irrigation can be important at planting for seed crops on dry soils to ensure good uniform (germination and adequate crop

stranads Excess moisture or prolonged drought adversely affects germination and frequently result in poor crop stands.

(10) Substrata

The substrata serves as a moisture reservior and acts as a medium for the seeds to germinate and the seedlings to grow. The common used substrata are paper and sand.

(11) farmer seed

The biodiverse agroecological food production systems used by small-scale farmers to provide most of the food require local varieties of seed that are adapted to local growing conditions test and cultured.

(12) Breeder seed :-

It is the seed or vegetative propagating material produced by the breeder who develops or envolves the particular variety. The seed is also produced by other agricultural universities under the direct supervision of the breeder of the concerned crop.

(13) foundation seed

foundation seed including 'select' in Canada is seed stock so handled as to most nearly maintain specific genetic identify and purity. and that may designated or distributed by an agricultural experiment station.

(14) Certified seed

Certified seed is produced from foundation seeds this seeds is certified by the state seed certificatio Agency established under the state governments Certified seed is produced by the national seeds distributed / sold to farmers.

(15) water impermeability

Hard seed coat prevent the entry of water into the seed, when seed are fully mature & placed in warm moist well aerated soil do not germinate due to the failure of water to penetrate trough the hard seed coat.

(16) Gas impermeability : Entry of gases particularly of oxygen is very essential for germination to begin fully mature many cases plant seed posses hand seed coat due to this prevent the exchanges is obstracted.

(17) Mechanical Resistance : In a number of plants the hardness of the seed coat also offers mechanical resistance for the emergence of the radical.

(18) Relative Humidity

Relative humadity and temperature by for are the most important factors determining the storage life of seeds. seed attain a rather specific and characteristics moisture content when subjected to given levels of atmospheric humidities.

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(19) Seed crate :- lower seed rates than usual for raising commercial crop are disirable because they facilitate rouging operations and inspection of seed crops.

(20) Rouging :- Adequate and timely rouging is extremely important in seed production Rouging in most of the field crops may be done at many of the following stages as per needs of the seed crop.

a. vegetative / preflowering stage.
b. flowering stage
c. Maturity stage.

(21) Normal seedlings :- seedling which shows the capacity for continued development into mature plant when grow under favourable conditions and having well developed root and the shoot system.

(22) Abnormal seedlings :- seedling with any abnormality in their root or shoot system thus which do not have the capacity to develop into a normal plant when grow.

(23) Hard seeds :- seed which remain hard at the end of the prescribed test period because of the non obsorpsoption of moistures due to the present of impermeable seedcoat.
usually hard seeds are in leguminous crops.

(24) Dead seed :-

The dead cells in plants are sclerenchyma cells The mature cells in the sclerenchyma are made of dead cells. The function of sclerenchyma cells is to provide mechanical support.

(25) Bulk isp, inspection :- for checking homogeni city of the bulk as compare with the sample inspected.

(26) sample inspection :-

for quality and to maintain genetic purity a tab test of prepresentive samplest drawn by the S.C.A for determing % of germination moisture content. dceed seed content admincation admixture and purity.

* Short answers questions :-

(1) Explain Structure of seed.

The various part of a seed may be easily studied after it has been soaked in water for a day or so varying according to the nature of the seeds. A mature seed conteins an embryonic plant (with a radicle and plumule) and is provide with reverse food meteriats and protective seed coats. A mature pod of peg (pisum sativum) has a number of seed arranged in two rows.

The seed are attached to the fruit wall by a small stalk, the funiculus. At maturity on one side of the seed coat a narrow, elongated scar representing the point of attachment of seed to its stalk is distinctly seen. this is the hilum. Close to the hilum situated at one seed end of its there is a minute pore micropyle during seed germination water is absorbed mainly through this pore and the radicles come out through it.

Continuous with the hilum there is sort of ridge in the seed coat the raphe. The seed is covered by two distinct seed coats; the outer within one is the testa. while the other inner thin hyaline and membranous covering is the tegmen. The seed coats given necessary protein to the embryo which lies within. The whitish fleshy body as seen after removing the seed coats is the embryo. IT consists of two fleshy cotyledons and a axis to which the cotyledons remain attached. The position of the axis lying outside the cotyledons bent inward and directed towards the micropyle is the radicle and the other position of the axis lying in between two cotyledons is the plumule.

The plumule is covered by some minute young leaves. The radicle gives rise to the root the plumule to the shoot and the cotyledons store up food material since the reserve food material is stored in the massive cotyledons and the seed lacks a special nutritive tissue, the endosperm.

The seeds which lack endosperm at maturity are called non-endospermous or exalbuminous

on the other hand is several other plants such as castor bean (Ricinus communis) coconut (cocos nucifera) and cereals food is stored in the endosperm.

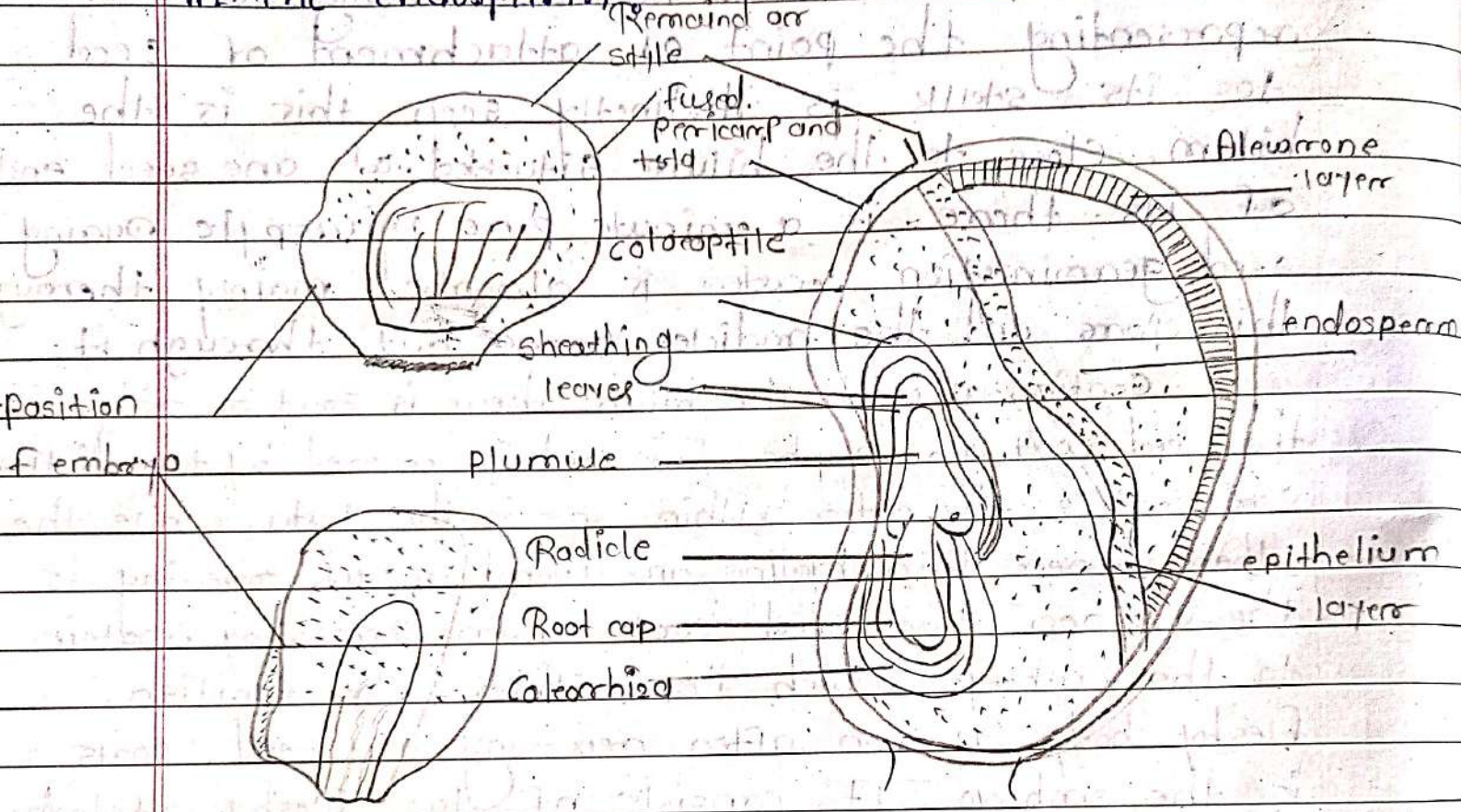


fig :- Structure of maize grain A grain illustrating of external characters B. grain as seen from lateral side C section of the grain showing its internal characters.

(2) Types of food

A seed is an embryonic plant enclosed in a protective outer covering. The formation of the is part of the process of reproduction in seed plants. the spermatophytes including the gymnosperm and angiosperm plants. They are as follows.

(1) Dicotyledonous seeds :- Two embryonic leaves or cotyledonous.

Monocotyledonous seed :- one embryonic leaves or cotyledons.

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★ Dicotyledonous Exalbuminous seeds. Each seed is attached to the placental tissue on the fruit suture by a stalk called the funicle is narrow at the placental end but coidens into a disc where it joins the seed. when the mature seed is detached the broad end of the funicle leaves a scar on the seed called the hilum next to the hilum is a pinhole opening on the seed coat which is the micropyle.

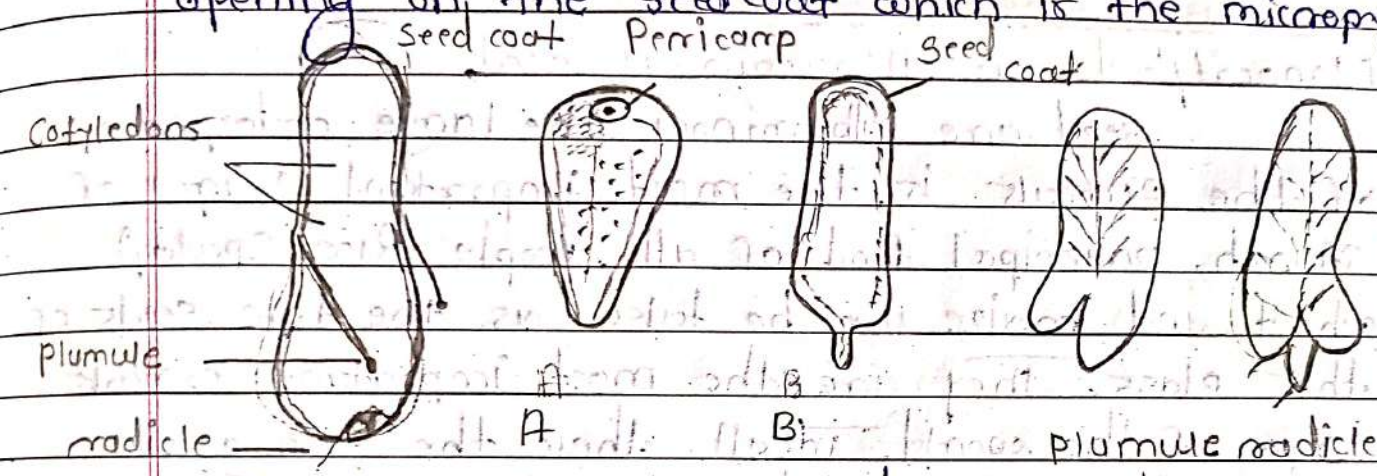


fig:- Dicotyledous exalbuminous seed, fig 39 l.sg of Tack-fruit seed Note unequal cotyledoos fig 34. sunflower seed A. fruit ⊖ enclosing single seed. B. kernel on breaking open the pericarp C. Dissected embryo

★ Dicotyledonous Albuminous seeds :- In this type of seeds (ground plan) the food is not stored in the two cotyledons of the embryo but in the endosperm external to the embryo. It will be seen later that all embryoes yet their food them endosperm which is its food form the nucellus of the ovule.

In the exalbuminous types of seed the embryo completely consumes the endosperm and nucellus that they are the no longer seen while the food is kept stored in the cotyledons which become swollen In the albuminous type of endosperm is still present and the cotyledons they are thin acting only as food sucking organs.

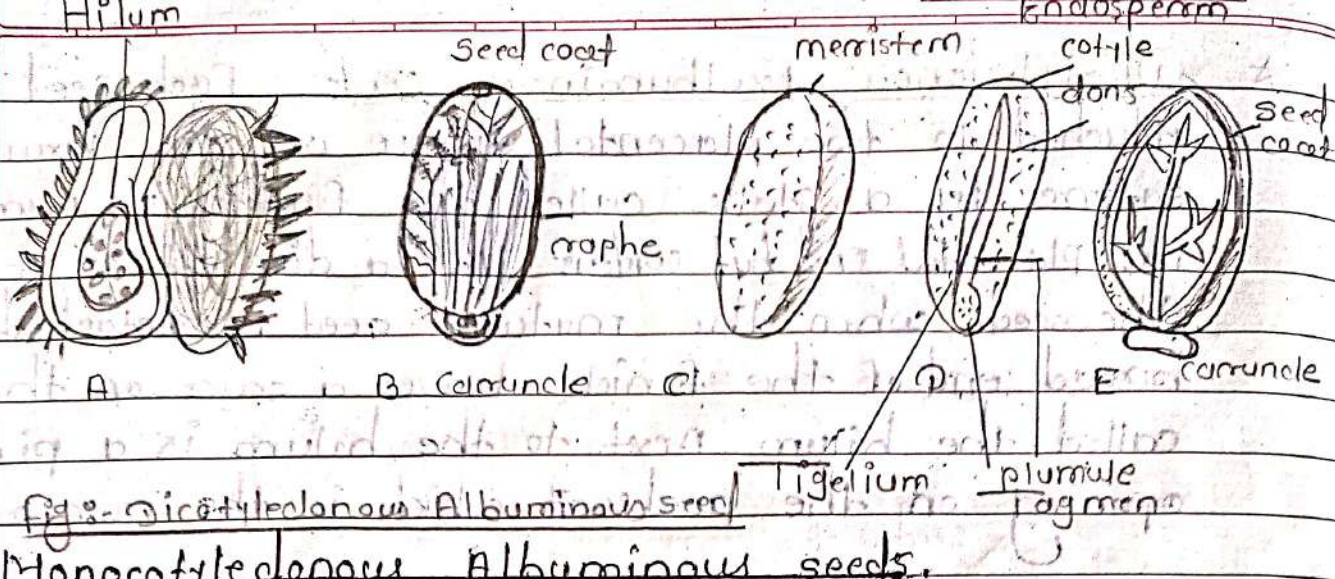


Fig:- Dicotyledonous Albuminous seed

* Monocotyledonous Albuminous seeds.

Seed are albuminous the large endosperm of the cereals is the most important source of starch. principal food of all People Rice (paddy) wheat and maize may be taken as the type seeds of this class. They are the most important cereals crops of the world. In all these the ~~mono~~ grain are actually fruit of the caryopsis type. The rice grain is tightly covered by the husks. in wheat the husks are loose while in maize the husks are loose. while in maize husks are short and loose so that the grains are exposed In all the three outer coating of the grain is formed by the fusion of the Pericarp and the seed coat

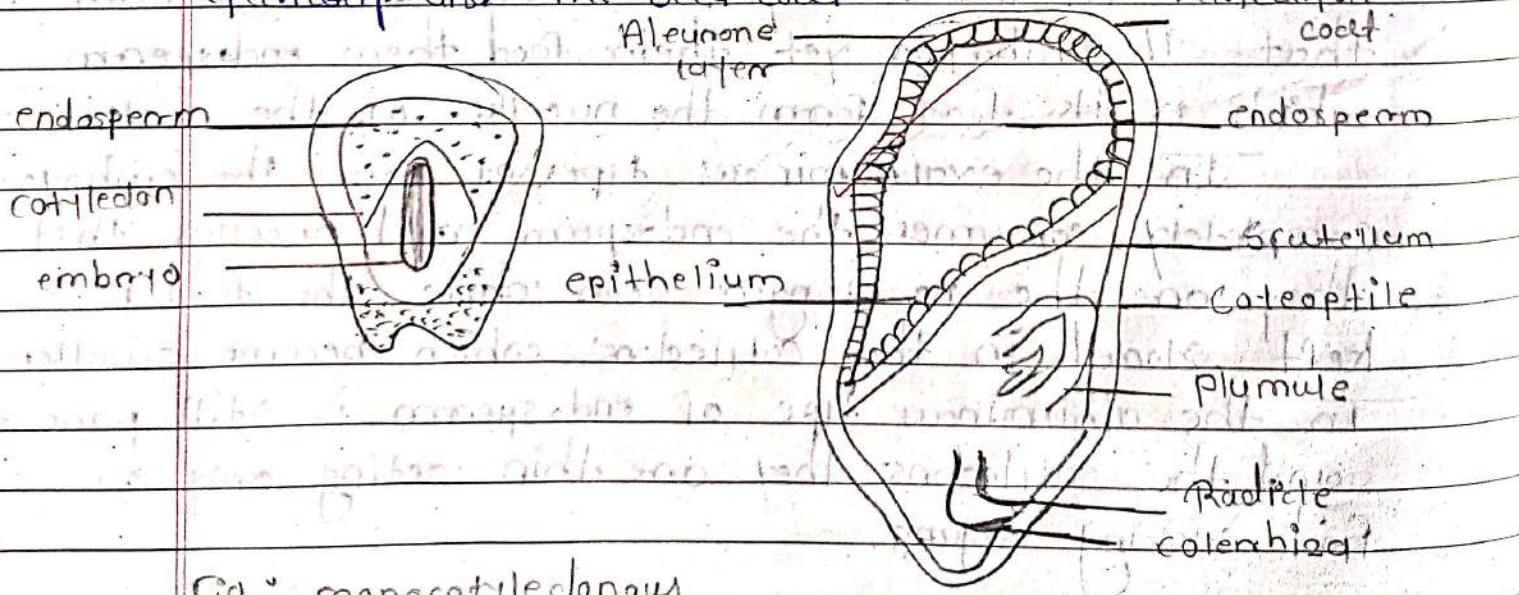


Fig:- monocotyledonous albuminous seed

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★ Monocotyledous Exalbuminous seeds :-

Although all the common monocotyledonous seeds are albuminous there are a few of the exalbuminous type. This type of seed is found in the Aroideae (e.g pathos and Amorphophallus campanulatus) and also widely in the families Hydrocharitaceae e.g vallisneria) Alismaceae (e.g Alisma plantago). Najadaceae etc.

The seed of Alisma shows a curved embryo with a radicle and a cotyledon as shown in the figure.

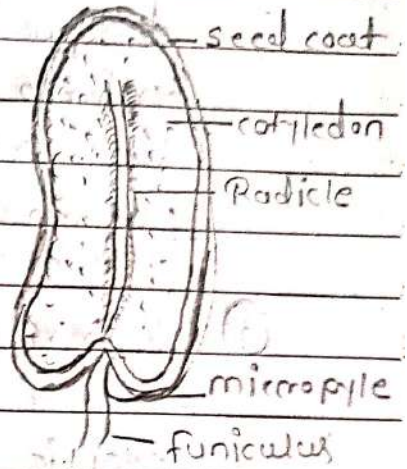


fig :- Monocotyledonous Exalbuminous seed

③ Causes of seed Dormancy

a) Dormancy due to hard seed coat :- seeds of many species such as these belonging to the family leguminasae & malvaceae posses hard seed coat such seed remain dormant. The presence of hard seed coat prevent the germination because of three season.

a) Water impermeability :- Hard seed coat prevent the entry of water into the seed when seed are fully mature & placed in warm moist wenarated soil seed do not germinate due to the failure of water to penetrate through hard seed coat.

b) Gas impermeability :- Entry of gases particularly of oxygen is very essential for germination, to begin many cases plant seed possess hard seed coat due to this prevent the exchange of gases - particularly the uptake of oxygen is obstructed.

c) Mechanical resistance :- In a number of plant

the hardness of the seed coat also effects also mechanical resistance for the emergence of the radical.

(2) Dormancy due to immature embryo :- The most of the plant when the seeds are shed from the Parents plant. The embryo inside the seed is fully developed In a few cases the development of embryo is incomplete when the seeds are dispersed As a result such seeds remain dormant & fail to germinate.

(3) Dormancy due to specific light condition :- The seed of some species like lettuce, tobacco etc. have a specific light requirement for germination It has been observed that the seed of lectaure may be simulated to germination by subjecting it to red light of wave length of 660 nm This a clear indication of the involvement of phytochrome Pigment germination Intensity of light is known to increase the rate of germination in Rumex

(4) Dormancy due to specific chilling It has already been mentioned that many temperature plant such as Peach, plumb etc require a specific chiling of their seed before they can germinate. To their plants neither provides the chilling requirement during winter and the seed germinate subsequently most suitable chilling temperature range is between 0 to 5°C

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(4) Method to break and the seed dormancy :-
The duration of period of dormancy varies from species to species there are various method of used for breaking the dormancy of seeds so that they may be germinate promptly method employed depends upon the cause of dormancy some common method employed are describe below.

1) Scarification :- The method employed in softening or weekening the seed coat is called scarification. The coat may be punctured or mechanically ruptured at one or more place as sufficient to break dormancy mechanical scarification is done by shaking the seeds with sand or by scraching or nicking the seed coat with knife.

2) Stratification :- This method caused due to condition of embryo. In this process the seeds are exposed to well aerated moist conditions under low temperature (0 to 10°c) for weeks to months. This treatment is called stratification.

(3) low temperature treatment :- In case where seed dormancy is result of physiological cause problems is overcome by the seed exposure to low temperature at 0 to 6°c for two or three months. Difference beth the low and high temperature should be about 10°c more favourable result are obtained in the low temperature than the high temperature.

(4) Alternating temperature :- In some cases subjecting the seed to alternating low and high temp also breaks the dormancy of embryo difference between the low and high temperature should be about 10°c more favourable results are obtained in the low temperature than the high temperature.

(5) Exposure to light :- Seed of the most species germinate if it is exposure to the light. In day condition seed exposure to light is ineffective.

(6) Pressure :- Subjecting the seed of some plant to high hydraulic pressure at medium temperature increase the permeability of seed of coat to water and there by greatly improved the germination of seeds Seed exposure to high H_2O pressure improve the percent of germination of seed.

(5) Write a note on seed storage :-

Purpose of seed storage :- The purpose of seed storage is to maintain the seed is good physical and physiological condition from the time they are harvested until the time they are planted. Stages of seed storage The seed are considered to be in storage from the moment they reach physiological maturity until they germinate, or until they are known dead because they are dead or otherwise worthless. The entire storage period can be conveniently divided into following stages.

(1) storage on plants (physiologically maturity until harvest
(2) Harvest until processed and store in a warehouse.
(3) In storages (warehouses)
(4) In transit (rail wagons, truck, carts, railway shed
(5) In retail store
(6) On the use's farm.

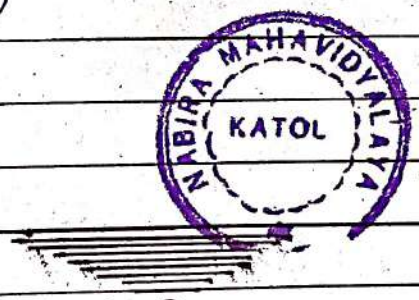
The seed quality i.e germination and vigours can be considerably effected at any of the stages mentioned above, unless sound principle involves in seed storage are practiced the seeds properly handled.

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General Principles of the seed storage :-

In view of the various factors affecting seed viability in storage, the following Principle emerge as necessary for good storage.

(a) Seed storage condition should be dry and cool.
(b) Effective storage pest control.
(c) Proper sanitation in seed stores.
(d) Before placing seed into storage they should be dried to safe moisture limits appropriate for the storage system.
(e) storing of high quality seed only i.e well cleaned treated as well as of high temperature germination with vigour and pre-storage history
(f) Determine seed storage needs in view of period or length of storage time and prevailing climate of the during storage period.



BK

Department of Botany, Nabira Mahavidyalaya, Katol.

NABIRA MAHAVIDYALAYA, KATOL

Subject - Botany

Session: 2023-22

Class B.Sc. 3rd Year

Sem - V

Assignment Submission

Sr. No.	Name of student	Paper-I	Paper-II
		Date & Signature	Date & Signature
1	Aadesh Dhanraj Dhengre	Aadesh	Aadesh
2	Achal Sanjayrao Watane	watane	watane
3	Akshay Suresh Mahant	A. mahant	A. mahant
4	Amisha Amrut Dambhare	A.A. Bambhare	A.A. Dambhare
5	Ashwini Shudhodhan Rakshit	A. rakshit	A. rakshit
6	Bhagyashri Sanjay Choudhari	B. chaudhari	B. chaudhari
7	Bhagyshri Anil Wangal	B.A. wangal	B.A. wangal
8	Deepali Harichandra Thombre	DHT	DHT
9	Durga Guruchandra Wankhede	durga..	durga..
10	Himanshu Harichandra Naik	h. naik	h. naik
11	Hina Udebhan Ninave	hina	hina
12	Isha Liladharrao Gharad	I. L. Gharad	I. L. Gharad
13	Janhvi Rajesh Tatte	J. Tatte	J. Tatte
15	Janvi Sudhakar Kakde	Janhvi. K	Janvi. K
16	Jay Sanjay Potpite	Jay	Jay
17	Jayashri Naresh Barai	Jayashri. Barai	Jayashri Barai
18	Khushi Bhupendragiri Goswami	Khushi. G	Khushi. G

19	Mahima Gunvanta Choudhari	Mahima	Mahima
20	Mona Damodhar Parkhi	MParkhi	MParkhi
21	Priyanka Mahesh Bondre	P.M. Bondre	P.M. Bondre
22	Rahul Sahebrao Balpande	RSBalpande	RSBalpande
23	Raksha Shriram Kothe	Raksha	Raksha
24	Riya Diliprao Bangare	RBangare	RBangare
25	Ruchika Sunil Dhawale	RBhanjare	RBhandare
26	Sahili Anandrao Gajbhiye	Sahili.	Sahili.
27	Sakshi Prabhakar Dhote	Sakshi	Sakshi
28	Sakshi Shriram Kale	SKale	SKale
29	Sejal Kailas Wahane	SKW	SKW
30	Shital Vijay Rewatkar	SRewatkar	SRewatkar
31	Shraddha Gopal Gore	Sgore	Sgore
32	Swati Maroti Wankhede	S.M.Wankhede	S.M wankhede
33	Toshal Dhanraj Fule	ToshuFule	Toshu Fule.
34	Vaishanavi Kisanaji Choudhari	Chaudhari	Chaudhari
35	Vaishanavi Sudhakr Walke	VSwalke	VSwalke
36	Vedinee Sanjay Tathode	Vedis Tathode	Vedis Thathode

Page No.

Date 30/10/2023

Name - JAY POTPITE

class - B.Sc (III rd year V - Sem)

Sub - Botany

School - Nabira Mahavidyalaya
Kadol.

Session - 2023-24

Unit - I

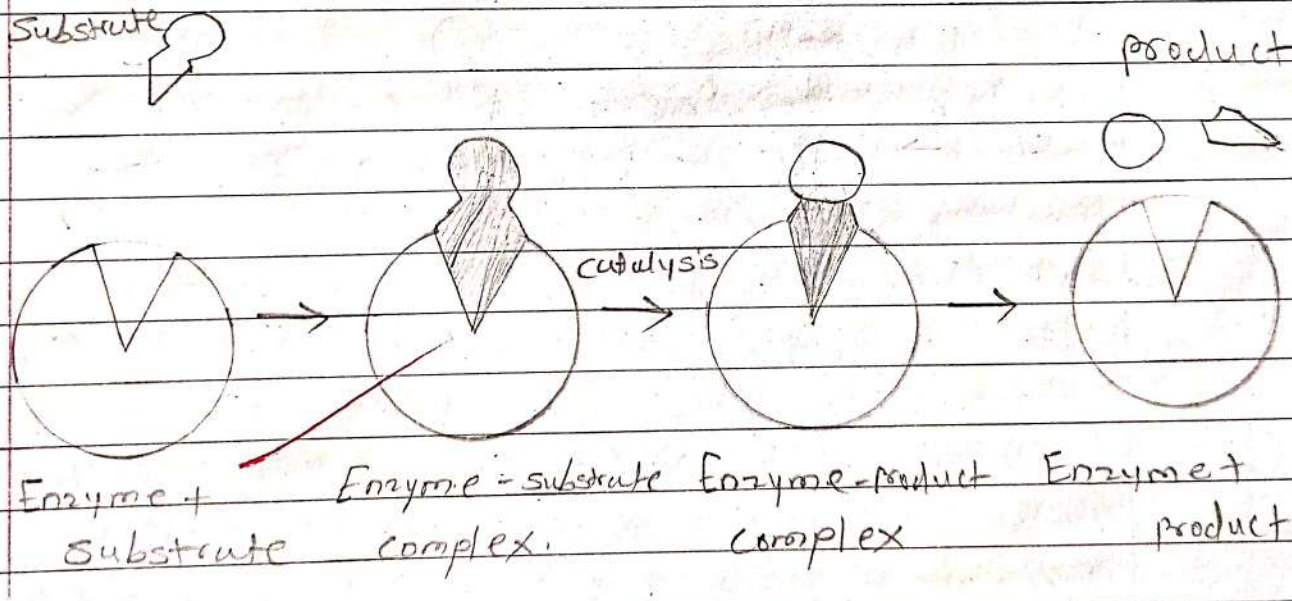
1. Write on :-

a) Lock and key and induced fit model of enzyme-action.

Ans :-

The lock and key model

According to the lock and key model, the enzyme's active site complements the substrate precisely. The substrate fits a particular active site like a key fits into a particular lock. This theory of enzyme - substrate interaction explains how enzymes exhibit specificity for a particular substrate.

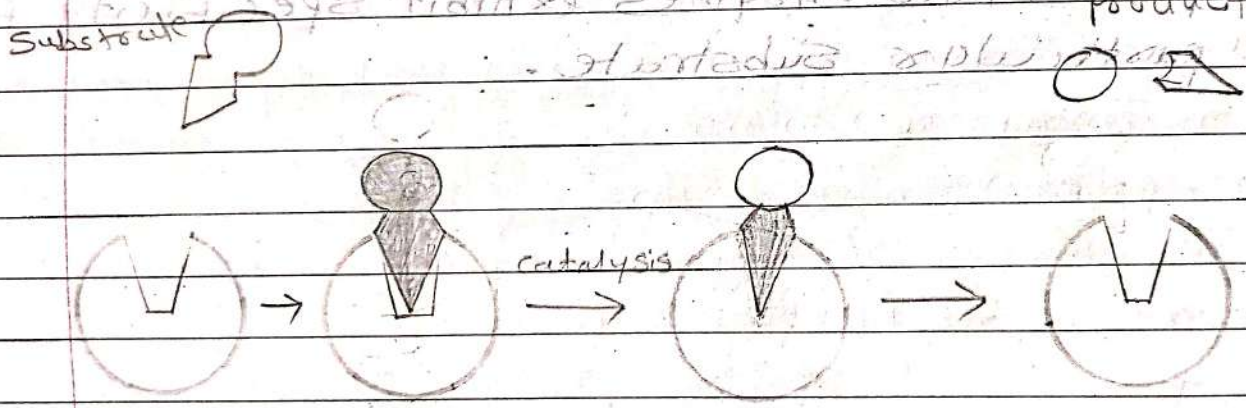


The induced Fit Model

According to the induced fit model, the enzyme's active site is not a completely rigid fit for the substrate. Instead, the active site

will undergo a conformational change when exposed to a substrate to improve binding. This theory of enzyme-substrate interactions has two advantages compared to the lock and key model:

- It explains how enzymes may exhibit broad specificity (e.g. lipase can bind to a variety of lipids).
- It explains how catalysis may occur (the conformational change stresses bonds in the substrate, increasing reactivity).



b) Nomenclature of enzymes.

Ans ⇒ An enzyme will interact with only one type of substance or group of substances, called the substrate, to catalyze a certain kind of reaction. Because of this specificity, enzymes often have been named by adding the suffix "-ase" to the substrate's name (as in urease, which catalyzes the breakdown of urea). Not all enzymes have been named in this manner, however, and to ease the confusion surrounding enzyme nomenclature, a classification system has been developed based on the type of reaction the enzyme catalyzes. There are six ~~principle~~ principal categories and their reactions.

1) Oxidoreductases, which are involved in ~~electron~~ electron transfer;

2) Transferases, which tranfer a chemical group from one substance to another.

3) hydrolases, which cleave the substrate by uptake of a water molecule (hydrolysis);

4) lyases, which form double bonds by adding or removing a chemical group.

5) Isomarases, which transfer a group within a molecule to form an isomer;

6) ligases or synthetases, which couple the formation of various the chemical bonds to the breakdown of a pyrophosphate bond in adenosine triphosphate or a similar nucleotide.

c) Factors affecting enzyme activite activity.

Ans ⇒ Enzymes are biological catalysts that are proteinaceous in nature.

The factors affecting the enzyme active activity are listed below:

1) Substrate concentration:

The activity of an enzyme also increases with the increase in substrate concentration. If the the substrate concentration increases, then the availability of the active site would decrease. This will affect the activity of an enzyme and limit the reaction rate.

2) pH

Each enzyme has its optimal pH in which they work. For example pepsin and trypsin work on acidic pH. The enzymes are globular proteinaceous structure, form by the interaction of the hydrogen bond between the side chains of the protein. Any change in the cause deionization of side chain which results in the denaturation of the enzyme.

3) Temperature :
Each enzyme works on its optimal temperature. Any alteration in temperature affects the activity of an enzyme, and it also leads to denaturation of an enzyme.

4) Enzyme cofactor and coenzyme :
Each enzyme requires cofactors (inorganic ion or protein organic molecules) for their work. The non-availability of these cofactors decreases the activity of an enzyme.

5) Enzyme inhibitors :
The inhibitors of an enzyme bind to the active site which affects the activity of an enzyme.

(d) Properties and role of fatty acids.
Properties of fatty acids :
- Fatty acids undergo the some reactions as other carboxylic acids, such as esterification and acid-base reactions.
- The acidities of fatty acids do not vary greatly, as indicated by their pKa values.
- The solubility of fatty acids in water decrease as chain length increases so that longer-chain fatty acids have little effect on the pH of an aqueous solution.
- Fatty acids exist at their conjugated bases

such as oleate, near neutral pH.

- Auto-oxidation occurs when unsaturated fatty acids undergo a chemical change. The presence of ~~heat~~ trace metals speeds up the process, which requires oxygen (air).

- Ozonolysis - ozone is capable of degrading unsaturated fatty acids. This reaction is used in the synthesis of azelaic acid from oleic acid.

~~Roles of~~ Fatty acids have important roles in:

1) Signal-transduction pathways;
2) Cellular fuel sources;
3) the composition of hormones and lipids
4) the modification of proteins;
5) energy storage within adipose tissue (specialized fat cells) in the form of triacylglycerols.

(F) Properties and role of carbohydrates

Ans⇒ There are Two type of properties

1) Physical
2) Chemical

1) Physical properties of carbohydrates.

- Stereoisomerism - Compounds having the same structural formula but they differ in spatial configuration. Example: Glucose

has two isomers with respect to the penultimate carbon atom. They are D-glucose and L-glucose.

- Optical Activity - It is the rotational of plane -polarized light forming (+) glucose and (-) glucose
- Diastereo isomers — It the configurational changes with regard to C2, C3 or C4 in glucose. Example: Mannose, galactose.
- Annomerism — It is the spatial configuration with respect to the first carbon atom in aldoses and the second carbon atom in ketoses.

2) Chemical Properties of carbohydrates

- Osazone formation : Osazone are carbohydrate derivatives when sugars are reacted with an excess of phenylhydrazine. eg. Glucosazone
- Benedict's test : Reducing sugars when heated in the presence of an alkali gets converted to powerful reducing species known as enediols. When Benedict's reagent solution and reducing sugars are heated together, the solution changes its colour to orange-red / brick red.
- Oxidation : Monosaccharides are reducing sugars if their carbonyl groups oxidize to give carboxylic acids. In Benedict's test, D-glucose is oxidized to D-gluconic acid thus, glucose is considered a reducing sugar.
- Reduction to alcohols : The C=O groups in open-chain forms of carbohydrates can be reduced to alcohols by sodium borohydride,

$NaBH_4$, or catalytic hydrogenation (H_2, Ni, EtOH/H_2O). The products are known as "alditols".

role of carbohydrates

Carbohydrates, also known as carbs, are vital at every stage of life - They're the body's primary source of energy and the brain's preferred energy source. Carbs are broken down by the body into glucose — a type of sugar. Glucose is used as fuel by your body's cells, tissues, and organs. When your body doesn't get adequate carbohydrates, it looks for another energy source, breaking down the protein in your muscles and body fat to use as energy. Glucose is significant for the brain, which can't easily use other fuel sources like fat or protein for energy.

While carbohydrates are most known for providing energy, some carbs can also help promote digestive health. The microbiome is an enormous collection of microbial organisms that live on and in your body, most of them within the gastrointestinal tract or the gut. Many of the microbes within the gut are healthy bacteria that help support immune and digestive health. Certain carbohydrates — like fiber —

act as food for the good bacterice in the gut and promote their growth. Eating foods high in fiber, like fruits, vegetables and whole grains, can also help with regular bowel movements, minimize constipation-related issues and may help lower ~~chto~~ cholesterol and blood sugar.

Write short notes on :-

a) Structure of glucose molecule.

Ans) Glucose is a salt of carbon, hydrogen, and oxygen with the formula $C_6H_{12}O_6$. It is a six-carbon sugar molecule. Glucose occurs naturally in the human body.

Structure of Glucose

- Open-chain form: Glucose has a backbone that is not open or branched, and it is made of six carbon atoms in its open chain form.
- Molecular formula :- The molecular formula of glucose is $C_6H_{12}O_6$ based on the analysis of elements in glucose and the molecular weight of glucose.
- Presence of a 6-carbon unbranched chain: Glucose has an unbranched six-carbon chain

proven by the fact that it totally reduces when combined with concentrated hydrogen iodide and red phosphorus to produce n-hexane.

- Presence of 5 OH groups : Pentadactyl derivatives are formed when glucose reacts with acetic anhydride, indicating five hydroxyl groups. As glucose is a stable molecule, it is impossible for any two OH groups to bind to the same carbon. Thus five OH groups are present on various carbons. An oxime is formed when glucose interacts with hydroxylamine, proving the presence of carbonyl group.

- Presence of terminal CHO function : Upon being mildly oxidised with bromine water, the glucose molecule transforms to gluconic acid, which is then reduced with a large amount of HI to produce hexanoic acid.

- Because glucose contains a straight 6-carbon chain with a terminal CHO, the five OH grops can be placed on each of the remaining five carbons to form an open-chain glucose structure. This meets the four valencies of the carbon atom by delivering hydrogen atoms to these carbon atoms.

b) Enzyme - substrate complex theory.

Ans=) The enzyme substrate complex is a ~~tempe~~ ~~tempe~~ temporary molecule formed when an enzyme comes into perfect contact with its substrate. Without its substrate an ~~e~~ enzyme is a slightly different shape. The substrate causes a conformational change, or shape change, when the substrate enters the active site. The active site is the area of the enzyme capable of forming weak bonds with the substrate. This shape change can force two or more substrate molecules together, or split individual molecules into smaller parts. Most reactions that cells use to stay alive require the actions of enzymes to happen fast enough to be useful. These enzymes are ~~etc~~ directly coded for in the DNA of the organism.

The enzyme substrate complex is extremely important for a number of reasons. ~~e~~ First, the ~~enzyme~~ substrate complex is only temporary. This means that once the substrate has changed, it can no longer bind to the enzyme The products are released and the enzyme is ready for another substrate molecule. A single enzyme can operate repeatedly millions of times, meaning only a small amount of enzyme is needed in each cell.

c) Properties and role of lipids.

Ans ⇒ Properties of lipids:

* Lipids may may be either liquids or non-crystalline solids at room temperature.
* Pure fats and oils are colourless, odorless, and tasteless.
* They are energy-rich organic molecules
* Insoluble in water.
* Soluble in organic solvents like alcohol, chloroform, acetone, benzene, etc.
* No ionic charges
* Solid triglycerols (fats) have high proportions of saturated fatty acids.
* Liquid triglycerols (oils) have high proportions of unsaturated fatty acids.

Role of lipids

It is established that lipids play extremely important roles in the normal functions of a cell. Not only do lipids serve as highly reduced storage forms of energy, but they also play an intimate role in the structure

of cell membrane and organellar membranes. Lipids perform many functions, such as:

1) Energy Storage
2) making Biological membranes
3) Insulation
4) Protection - e.g. Protecting plant leaves from drying up.
5) Buoyancy
6) Acting as hormones
7) Act as the structural component of the body and provide the hydrophobic barrier that permits partitioning of the aqueous contents of the cell and subcellular structures.
8) Lipids are major sources of energy in animals and high lipid-containing seeds.
9) Activators of enzymes, eg. glucose-6-phosphatase Stearyl CoA desaturase and ω-monooxygenase and β-hydroxybutyric dehydrogenase (a mitochondrial enzyme) require phosphatidylcholine micelles for activation.

d) Monosaccharides

Ans => They are ~~generally~~ usually colourless, water-soluble and crystalline solids. Contrary to their name (sugars), only some monosaccharides have a sweet taste. Most monosaccharides have the formula $C_nH_{2n}O_n$ (though not all molecules with this formula are monosaccharides).

Examples of monosaccharides include glucose (dextrose), fructose (levulose) & galactose. Monosaccharides are the building blocks of disaccharides (such as sucrose and lactose) & polysaccharides (such as cellulose and starch). The table sugar used in everyday vernacular is itself a disaccharide sucrose comprising one molecule of each of the two monosaccharide - D - glucose & D - fructose

Each carbon atom that supports a hydroxyl group is chiral, except those at the end of the chain. This gives rise to a number of isomeric forms ~~forms~~, all with the same chemical formula For instance, galactose and glucose are both aldohexoses, but have different physical ~~Struc~~ structures and chemical properties.

The monosaccharide glucose plays a pivotal role in metabolism, where the chemical energy is extracted through glycolysis and the citric acid cycle to provide energy to living organisms.

e) Role of lipids

Ans:) It is established that lipids play extremely important roles in the normal functions of a cell. Not only do lipids serve as highly reduced storage forms of energy, but they also play an

intimate role in the structure of cell membrane and organellar membranes. Lipids perform many functions, such as:

1) Energy Storage
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7) Act as the structural component of the body and poovide the hydrophobic barrier that permits pertitioning of the aqueous contents of the cell and subcellular structures.
8) Lipids are major sources of energy in animals and high lipid-containing seeds.

F) Peptide bond

Ans ⇒ A peptide bond also sometimes called eupepthde bond is a chemical bond that is formed by joining the carboxyl group of one amino acid to the amino group of another. A peptide bond is basically an amide-type of covalent chemical bond. This bond links two consecutive alpha-amino acids from C1 (carbon number one) of one alpha-amino acid and N2 (Nitrogen number two) of another. This linkage is found along a peptide or protein chain.

During the formation of this bond, there

is a release of water (H_2O) molecules. A peptide bond is usually a covalent bond (CO-NH bond) and since the water molecule is eliminated it is considered as a dehydration process. Generally, this process occurs mostly between amino groups.

Meanwhile a peptide is a Greek word that means "digested". A peptide is a short polymer of amino acid monomers linked by an amide bond.

g) Induced fit model

Ans⇒ The induced-fit model is a model for enzyme - substrate interaction to described that the substrate is capable of inducing the proper alignment of the active site of the enzyme causing the latter to subsequently perform its catalytic function.

It is opposite to the lock-and-key model that is also used to described the enzyme - substrate interaction. In the induced fit model, both the substrate and the active site of the enzyme change in conformation until the substrate is completely bound to the enzyme at which point the final shape and charge is determined. This activities activates the enzyme into performing its catalytic function.

The induced-fit-model was suggested by Daniel Koshland in 1958. It is the more

accepted model for enzyme-substrate complex than the lock-and-key model. In the lock-and-key model, the interaction of the substrate and the enzyme is ~~linked~~ likened to a key (the substrate) ~~that~~ is highly specific to the lock (the active site of the enzyme). It depicts a rather static and rigid form of interaction. Unlike the lock-and-key model, the induced fit model shows that enzymes are rather flexible structures in which the active site ~~continuously~~ continually reshapes by its interactions with the substrate until the time the substrate is completely bound to it.

h) Lock and key model

Ans:- Lock and key model is a theory of enzyme action hypothesized by Emil fischer in ~~1894~~ 1899. ~~Acco~~ According to fischer, enzymes exhibit a high degree of specificity ~~that~~ to the substances they react with. He proposed that this is dye to the shape of the enzyme fitting the shape of the substrate, similar to how a lock only fits a specific key. Using this analogy, the enzyme represents the lock and the substrate represent the key. The order in which the lock and ~~key~~ key model works is as follows:-

1) The substrate (s) bind to the enzyme at the active site, forming an enzyme-substrate complex.

2) The enzyme facilitates the chemical reaction. This reaction can be a synthesis reaction (building by forming bonds) or digestion (breaking bonds to form new substances).

3) The enzyme releases the product (s) of the reaction. Once an enzyme completes a reaction, it can be reused.

i) Disaccharides.

Ans ⇒ Disaccharide, also called double sugar, any substance that is composed of two molecules of simple sugars (monosaccharides) linked to each other. Disaccharides are crystalline water-soluble compounds. The monosaccharides within them are linked by a glycosidic bond (or glycosidic linkage), the position of which may be disignated α- or β- or a combination of the two (α-iβ-). Glycosidic bonds are cleaved by enzymes known as glycosidases. The three major disaccharides are sucrose, lactose, and maltose.

Sucrose, which is formed following photosynthesis in green plants, consists of one molecule of glucose and one of fructose bonded via an α-iβ-linkage. Lactose (milk sugar), found in the milk of all mammals, consists of glucose and galactose connected

by a β-linkage. Maltose, a product of the breakdown of starches during digestion, consists of two molecules of glucose connected via an α-linkage. Another important disaccharide trehalose, which is found in single-celled organisms and in many insects, also consists of two molecules of glucose and an α-linkage, but the linkage is distinct from the one found in maltose.

j) Role of carbohydrate

Ans ⇒ Functions of carbohydrates

Carbohydrates are widely distributed molecules in plant and animal tissues. In plants and arthropods, carbohydrates from the skeletal structures, they also serve as food reserves in plants and animals. They are important energy sources required for various metabolic activities, the energy is derived by oxidation.

Some of their major functions include

* Living organisms use carbohydrates as accessible energy to fuel cellular reactions. They are the most abundent dietary source of energy (4 kcal/gram) for all living beings.

* Carbohydrates along with being the cheif energy sources of energy. Glucose is broken down by glycolysis / Kreb's cycle to yield ATP.

K) Properties of enzymes

Ans ⇒ Properties of Enzyme can be classified into :-

1) Physical properties
2) chemical properties
3) General properties

Physical properties of Enzymes

* Physically enzymes act as colloids or as high-molecular-weight compounds.

* At a temperature below the boiling point of the water, enzymes are killed or inactivated.

* Most enzymes in the liquid medium are inactive at 60°C.

* Extracting dried enzymes can withstand temperatures of 100 degrees Celsius to 120 °C or even higher. Enzyme are, therefore, thermos-labile.

* The Optimum activity of each enzyme is always at a particular temperature, which typically varies from 25 °C to 45 °C. At 37 °C, enzyme action is strongest and as temperature rise above 60°C enzyme become inactive.

Chemical properties of enzymes

* Catalytic properties :- Biological catalysts are enzymes. The greater amounts of compound are catalyzed by a small number of enzymes. This means that enzymes are highly capable of turning giant amounts of the substrate into a substance. Enzymes improve the reaction rate and remain unaffected by the reaction they catalyze.

* Enzyme specificity : Enzymes are extremely variable in nature, which means that a specific enzyme can catalyze a specific reaction. for example, only sucrose hydrolysis can be catalyzed by Enzyme sucrase.

General properties of Enzymes

* Enzymes initiate the biochemical reaction rate and accelerate it.

* The reaction in either direction can be accelerated by enzymes.

* Both enzymes have active sites involved in biochemical reactions.

* Enzymes, often Soluble in water, dilute glycerol, Nacl, and diluted alcohol, are very unstable compounds.

* At the optimum temperature, enzymes work aggressively.

* In nature, all enzymes are proteins, but all proteins may not be enzymes.

1) Holoenzyme

Ans ⇒ Holoenzyme is a complete, functional enzyme which is catalytically active. Holoenzyme consists of an apoenzyme together with its cofactors. Holoenzyme contains all the subunit required for the functioning of an enzyme e.g. DNA polymerase III, RNA polymerase.

Holoenzyme = Apoenzyme + cofactor.

Holoenzyme is also known as a conjugate enzyme. The apoenzyme is the protein part of the enzyme, which is enzymatically inactive without cofactors.

A cofactor is the non-protein part of the holoenzyme, which is essential for its activity. Cofactors can be metal ions (Mg^{2+}, Fe^{3+}, Zn^{2+}) or organic molecules called coenzymes.

Most of the coenzymes are derived from vitamins. They act as a transient carrier of groups and transfer these groups in a biochemical reaction. Examples include:

* Coenzyme A (CoA) - It is derived from compounds such as pantothenic acid, etc. & carries acyl groups.

* Flavin adenine dinucleotide (FAD) - It is derived from ~~compounds such as pantothenic acid, etc~~ and ~~carries acyl groups~~. Vitamin B2 (Riboflavin) and carries electrons.

* ~~Nicotinamide~~

* Nicotinamide adenine ~~dinu~~ dinucleotide (NAD) - Derived from nicotinic acid (Niacin) and carries hydride ions.

m) Structure of starch

Ans=) As mentioned earlier, it is a polymer of glucose molecules. It is present in plants in the form of starch granules. Starch is made up two components both of which have different structures;

- Amylose
- Amylopectin

~~A~~ Amylose

It is also sometimes called amylose starch. It is a polysaccharide made up of alpha-D-glucose monomers. Amylose makes around 20-30% of starch. It is an unbranched compound having linear chains of glucose molecules. These glucose molecules are

linked via alpha 1-4 glycosidic bonds.

Amylose starch is a linear chain of alpha D-glucose subunits that usually contains around 300 to 3000 glucosyl residues or even more.

This amylose chain can exist in one of the three forms;

* Disordered amorphous chain
* A or B forms
* V form.

The A and B forms are helical or spiral in appearance. Both these forms have similar structures. These are the left-handed helices having around six glucose molecules in each turn. The term left handed means that when the spiral is rotated clockwise, it turns towards the observer. These spiral helices of amylose can also wind around each other forming a double helix.

The V form of amylose is formed when it interacts with some hydrophobic or non-polar compounds like fatty acids, lipids, iodine or amlopectin.

Amylose in starch is present in V-form after interacting with amylo-pectin.

Amylopectin

It is also called as amylopectin starch. Amylopectin makes around 70-80% of starch. It is a branched polymer of alpha D-glucose subunits that are linked via the same 1-4 glycosidic bonds as in amylose. However, amylopectin also has alpha 1-6 glycosidic bonds among the glucose molecules at the it branch points.

Amylopectin shows branching after each 24 to 30 glucose subunits. Each branch also contains around the same number of glucose subunits. All the glucose subunits in a single branch are attached via alpha 1-4 glycosidic bonds except the first one. The first glucose subunit of each branch is linked to the parent chain via alpha 1-6 glycosidic bond.

Within the starch granules, amylopectin interacts with amylose in its V-form.

Starch molecules in plants are present in the form of semi-crystalline granules. The size of starch granules varies from one species to other. For example, the starch granules in rice are around 2 micrometers while those present in potatoes are up to 100 micrometers.

Write in 2 to 3 lines only (any Ten)

2) Phospholipids

Ans⇒ A phospholipid is a type of liquid molecule that is the main component of the cell membrane. Lipids are molecules that include fats, waxes, and some vitamins, among others. Each phospholipid is made up of two fatty acids, a phosphate group, and a glycerol molecules.

3) Peptide bond

Ans⇒ A peptide bond is an amide type of covalent chemical bond linking two consecutive alpha-amino acids from C of one alpha-amino acid and N_2 of another, along a peptide or protein chain.

4) D.D.P.D.

Ans⇒ The value of wall pressure at any moment is equal to the turgor pressure and it tends to force the water out of the cell against the osmotic entry of water into the cell. The net force with which water is drown in the cell is the difference between the osmotic pressure of the cell and the wall pressure (or turgor pressure). This force is called suction pressure or diffusion pressure deficit. (DPD).

5) Imbibition

Ans⇒ A adsorption of water by the dry hydrophilic colloids is called imbibition. It is a physical process which is involved in the movement of water. This is also a type of diffusion which is performed like osmosis. ~~In this~~

6) Osmotic potential

Ans⇒ osmotic potential is defined as the ability of a solution to suck water in if it was separated from another solution by a semipermeable (meaning water gets through, but not the solution) membrane. Osmosis is always ~~reff~~ referred to living cells.

7) R.Q.

Ans⇒ The ratio of the volume of CO_2 released to the volume of O_2 taken in respiration is called as respiratory quotient and it is denoted by as R.Q.

$$\text{Respiratory Quotient (R.Q)} = \frac{\text{The volume of } CO_2 \text{ liberated}}{\text{The volume of } O_2 \text{ used}}$$

It can be fined out through respiratory quotient that which food materials is being oxidized during respiration. because the different food materials (carbohydrate, fats, protein etc.)

25) Turgor pressure

Ans=) When the plant cell is placed in the hypotonic solution, water enters the cell as the result of osmosis, which results in a hydrostatic pressure called the turgor pressure (TP), which presses on the cell wall.

27) Fermentation

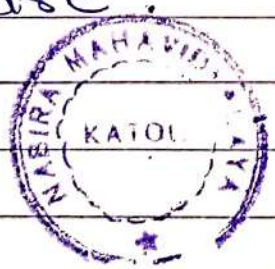
Ans⇒ Anaerobic breakdown of carbohydrates and other organic compounds with the help of enzymes secreted by microorganisms is called fermentation. The term fermentation is coined by Cruickshank in 1897.

34) Transpiration

Ans⇒ Loss of excess water in the form of vapours from the surface of the aerial parts of the plant is known as transpiration

35) Root Pressure

Ans⇒ The pressure developed in the Xylem cells by the absorption of water through root hairs is called root pressure. The water ascends in the Xylem vessels and tracheids due to root pressure.



BK

Department of Botany, Nabira Mahavidyalaya, Katol.

NABIRA MAHAVIDYALAYA, KATOL

Subject - Botany

Session: 2023-22

Class B.Sc. 3rd Year

Sem - VI

Assignment Submission

Sr. No.	Name of student	Paper-I	Paper-II
		Date & Signature	Date & Signature
1	Aadesh Dhanraj Dhengre	Aadesh	Aadesh
2	Achal Sanjayrao Watane	watane	watane
3	Akshay Suresh Mahant	A.mahant	A.mahant
4	Amisha Amrut Dambhare	A.A.Dambhare	A.A. Dambhare
5	Ashwini Shudhodhan Rakshit	A.rakshit	A.rakshit
6	Bhagyashri Sanjay Choudhari	B.Choudhari	B.Choudhari
7	Bhagyshri Anil Wangal	B.A.wangal	B.A.wangal
8	Deepali Harichandra Thombre	DHT	DHT
9	Durga Guruchandra Wankhede	durga..	durga..
10	Himanshu Harichandra Naik	h.naik	h.naik
11	Hina Udebhan Ninave	hina	hina
12	Isha Liladharrao Gharad	I.L.Gharad	I.L.Gharad
13	Janhvi Rajesh Tatte	J.Tatte	J.Tatte
15	Janvi Sudhakar Kakde	Janvi.k	Janvi.k
16	Jay Sanjay Potpite	Jay	Jay
17	Jayashri Naresh Barai	Jayashri Barai	Jayashri.Barai
18	Khushi Bhupendragiri Goswami	khushi.G	khushi.G

19	Mahima Gunvanta Choudhari	Mahima	Mahima.
20	Mona Damodhar Parkhi	MParkhi.	MParkhi
21	Priyanka Mahesh Bondre	P. M. Bondre	P. M. Bondre
22	Rahul Sahebrao Balpande	RSBalpande	RS Balpande
23	Raksha Shriram Kothe	Raksha	Raksha
24	Riya Diliprao Bangare	RBangare	RBangare
25	Ruchika Sunil Dhawale	R.D Dhawale	R.D Dhawale.
26	Sahili Anandrao Gajbhiye	Sahili.	Sahili.
27	Sakshi Prabhakar Dhote	Sakshi	Sakshi
28	Sakshi Shriram Kale	SKale.	SKale.
29	Sejal Kailas Wahane	SKW	SKW
30	Shital Vijay Rewatkar	SRewatkar	SRewatkar
31	Shraddha Gopal Gore	Sgore	Sgore
32	Swati Maroti Wankhede	S. M. Wankhede	S. M. Wankhede.
33	Toshal Dhanraj Fule	ToshuFule	ToshuFule
34	Vaishanavi Kisanaji Choudhari	Choudhari	Choudhari
35	Vaishanavi Sudhakr Walke	VSwalke	VSwalke.
36	Vedinee Sanjay Tathode	vedistathode	Vedistathode

Collage :- Nabira Mahavidhalaya Katol.

Class :- BSC III rd Year (CBZ)

Sem - VI

Sub :- Botany Paper - I

Assignment

Year :- 2023-24

Name :- Janvi. S. Kakde

Introduction of Genetic Engineering

- The manipulation of genetic makeu of living cells by inserting desired genes through a DNA vector, is called as "genetic engineering."
- Genetic engineering has been gaining important over the last few years.
- It will become more important in the current century as genetic diseases become more prevalent and agricultural area is reduced.
- Genetic engineering plays significan role in the production of medicine
- Genetic Engeering is the artificial manipulation & alteration of genes.

History of Genetic Engineering.

- **1973 :-** Genetic engineering is the science of manipulating genetic material of an organism. The first artificial genetic modification accomplished using biotechnology was transgenesis. the process of transferring gene from one organism to another, first accomplished by Herber Boyer and Stanley Cohen in 1973.
- **1974 :-** The first genetically modified animal was a mouse created in 1974. by Rudolf Jaenisch.
- **1976 :-** In 1976 the technology was commercialised, with the technology was commercialised, with the advent of genetically modified bacteria that produced somatostatin followed by insulin in 1978.

History of Genetic Engineering

- **1983 :-** In 1983 an antibiotic resistan gene was inserted into tabacco, leadin gene of the genetically engineered plant.
- **1992 :-** Advances followed that allowe scientists to manipulate and add genes to a variety of different organisms an induced a range of different effects plants were first commercialized with virus resistant tabacco release in china in 1992.
- **1994 :-** The first genetically modified food was the flavr savr tamato marketed in 1994.
- **2000 :-** In 2000 a paper published in science introduced golden rice, the first food develop with increased nutrient value.

Milestone of Genetic Engineering

- 1928 :- Freid crifth provides evidance for a genetic transformation factor (DNA)
- 1944 :- Avery, macteod and macarty DNA is the genetic material.
- 1952 :- Hersley and chese also determine that DNA is the genetic material.
- 1953 :- Waltson and chrick determine the stucture of DNA.
- 1970 :- first restriction endonuclease Isolated.
- 1973 :- Beirds and cohen estiblish Recombinant DNA Technology.
- 1976 :- DNA sequencing technique developed.

Date

- 1980 :- U.S. Supreme court rules that genetically modified micro-organisms can be patented.

- 1976 :- Walterfires was the first to estiblished the complete nucleotid sequence of a viral RNA comprised the first pair only.

- 1983 :- Polymerase chain Reaction, invented by Kary, mulls revolutionized DNA genetic manipulation.

- 1996 :- Dolly the sheep, the first clon mammal, showcased the potential of reproductive cloning.

- 2003 :- The mapping of the entire human genome laid and the groundwork for understanding genetic compaints and disease.

- 2012 :- Jannifer Doudna and Emmanuella charpentiers breakthrough in gene editing technology made precise.

- **2017 :-** CRISPR-based gene therapies began showing promise in treating genetic disorders, opening new medical possibilities.
- **2020 :-** Advances in synthetic biology allowed the creation in artificial DNA and the design of organism with specific functions.
-

Recombinant DNA

Defination :-

"DNA that has been formed artifica by combining constituents from different organism." is called. Recombinant DNA.

"Recombinant refers to the DNA whic is obtained by joining DNA from differe source.

History Recombinant DNA :-

The first recombinant DNA (rDNA) molec were generated in 1973 by paul Berg, Herbert Boyer, Annie chang, and Stanle cohen of Stanford university and universi of California San francisco.

Stanley cohen and Herbert Boyer's historic experiment used technique to c and paste DNA to create the first custom-made organism containing recombinant or recombinant DNA.

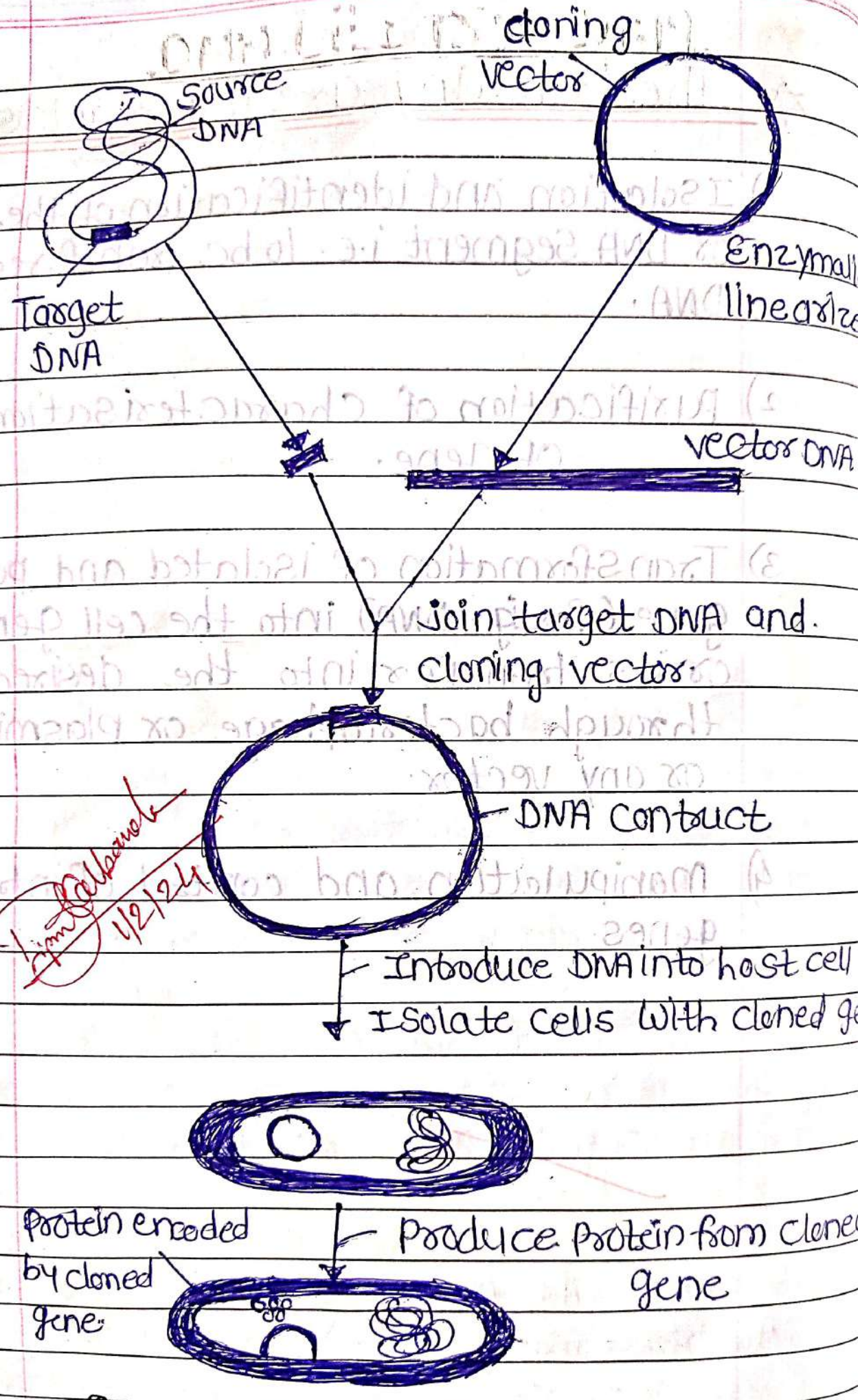
Recombinant DNA technology is popularly known as genetic engineering. The recombinant DNA technology emerged with the discovery of restriction enzyme in the 1968 by swiss microbiologist Werner Arber, Inserting the desired gene into the genome of the host is not as easy as it sound.

Milestone of DNA (rDNA) technology

- 1970 :- Identification of enzymes that can cut DNA at specific sequences enabling gene splicing.
- 1972 :- Introduction of circular DNA molecules (plasmids) as carries for foreign genes, aiding gene cloning.
- 1973 :- Creation of the first recombinant DNA molecule by splicing a gene into a plasmid.

- 1977 :- Sanger Sequencing revolutionized the ability to read DNA sequence, crucial for understanding gene structure.
- 1978 :- Successful expression of foregin genes in bacteria, a crucial step for producing proteins through genetic engineering.
- 1983 :- Invention of PCR by Kary mullis allowed amplification of DNA a break through for cloning and.
- 1990 :- Initiatives like the Human Genome project marked the beginning of comprehensive genome sequencing efforts.
- 2012 :- Emergence of the technology of revolutionary CRISPR-Cas9 gene editing tool allowing precise and efficiant manipulation of gene.

These milestones collectively shaped the field of rDNA technology, contributing to advancements in medicine, agriculture and various other scientific domains



Recombinant DNA cloning Procedure

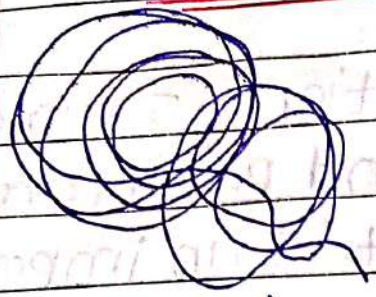
Plasmid Isolation

- A plasmid preparation is a method of DNA extraction and purification for plasmid DNA, it is an important step in many molecule biology experimen and is essential for the successful use of plasmids in research and biotechnology many methods have been developed to purify plasmid DNA from.

Alkaline lysis is the core plasmid isolation principle. Lysis is the process of breaking down a cell membrane. Alkaline refers to the PH of the solution used to Lyse the cell membrane. Alkaline lysis is chemical Lysist that uses high PH reagents to disrupt the proteins in the cell membrane.

The procedure are based on the fact that plasmids usually occur in the covalently closed circular (super coiled) ccc configeration with in the host cells. After gentle cell lysis all intracellular macromolecules have to be eliminated.

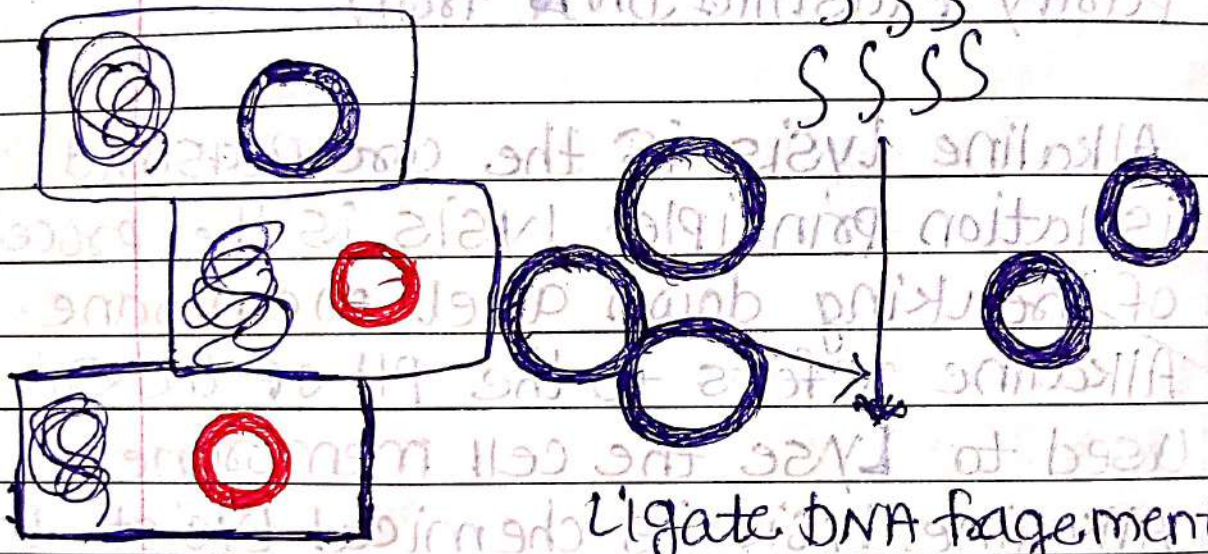
DNA Library Diagram



Genomic DNA

fragment using restriction enzyme

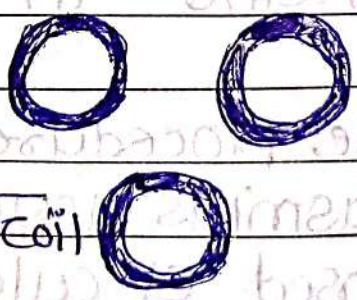
making a DNA library



Ligate DNA fragement into Plasmid Vectors.

E.coil cells with recombinant plasmid.

Transform into E-coil



Making a DNA Library

26/08/24

Department of Botany

Unit Tests

Academic Session

2023-24

PAGE No.
DATE 26/02/24

Department of Botany

"B.Sc. Sem - II P-II"

"Unit Test on Unit - I"

Q:1) Differentiate Between Tap Root & Adventitious Root System. (5)

Q:2) Define types of modifications in tap root system. (5)

Q:3) Define types of modifications in adventitious root system. (5)

Dr. B. B. Kalbande
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26/02/2024 Sem-II : P-II : U-I

Unit Test Presenty

DATE : / / PAGE No :

Botany

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3) Tina. Mahoriya — Rmahoriya
4) komal Chaudhari — Chaudhari
5) Chanda R. Rathod — C. Rathod
6) Sakshi S. Vyawahare — S.S. Vyawahare
7) Khushbu M. Zode — Rode
8) Trupti N. Charde — Charde
9) Sudhanshu g. Amale — ~~Amal~~
10) Kapilansh S. Mahurkar — ~~Mahurkar~~
11) Jahnavi W. Gharad — Gharad
12) Tanvi G. Pande — Pande
13) Srushti R. Dhok — Dhok
14) Sakshi N. Fuse — S. Fuse
15) Rutuja S. Phageme — ~~R S Phageme~~
16) Oshika H. Ghugushkar — PGhugushkar
17) Khushi G. Dhonde. — K.G. Dhonde
18) Sanskruti. D. Meshram — S.D. Meshram
19) Dipali D. Mahalpure. — ~~D. Mahalpure~~
20) Priya G. Sirsam — P. Sirsam
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22) Krunali P. Bodhale — K Bodhale
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Name: Kapilansh .S. Mahorkar. 7/15

apsara

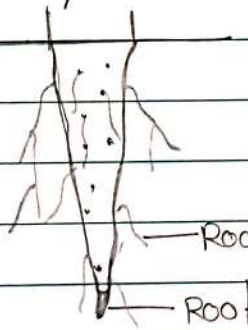
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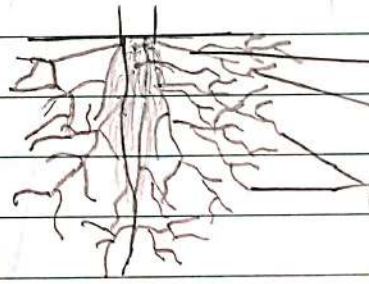
Class: BSc 1st yes Sem-II (CBZ)

Q.1.

Tap root	Advantetious root.
i) Occurs in dicots	i) occures in monocots.
ii) It is long, penetrate ~~int~~ deep into the soil.	ii) It is Branched.
iii) It developed from radicals.	iii) It developed from node or internode.
iv) Example: ~~the~~ Mango, Banyan trees.	iv) Example: Wheat plants.
v) It has root cap	v) It has not root cap.

(3)





Q.2. dicot ~~monocot~~

→ i) It go mainly occors in ~~dicot~~ ~~monocot~~

ii) It is long, cylindrical & ~~go~~ goes deeper into the soil.

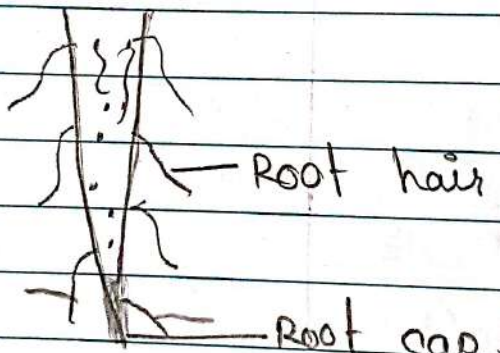
iii) It + developed from radicals.

iv) It has root cap for protection root end.

v) Because of that, It stronger than advantitious root.

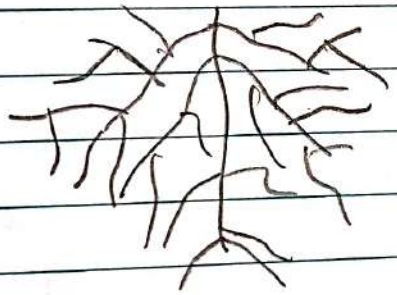
vi) It developed directly from embryo.

Examples: Mango trees



3.
→ i) It mainly occurs in monocots plants.
ii) It is branched & not goes deeper in soil.
iii) It developed from ~~no~~ either node or internode or both.
iv) It has no root cap.
v) Therefore, It is weeker than tap root.
vi) It holds more soil than tap root.

Example: Wheat plants.



4/15

PAGE No.
DATE / /

* Name :- Vishakha Mahesh Uke
* College : Nabira Mahavidhyalaya Katol
* Class :- Bsc 1st year (CBZ)

---

① Differentiate between tap root & adventitious root system

1) tap root

① roots are growth of secondary & tertiary growth system of the root.
② roots are generally tap roots system are used.
③ nutrients and minerals of proteins in the plant.
④ taping the root in the soil.
⑤ roots are absorb the water and plant growth are highally
⑥ roots are modification of the plant.
⑦ ~~prote~~ plants protecte the root system.

2) adventitious root system

①

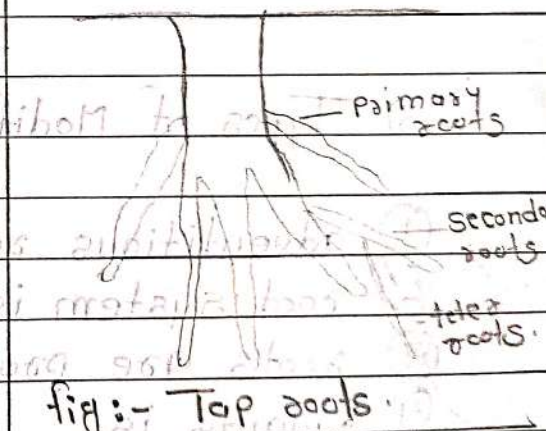


fig :- Tap roots.

PAGE No.
DATE / /

2) Types of Modification in tap root system

(1) Modification of tap roots system in the plants.
(2) tap roots are proteins and minerals is plant.
(3) roots are protecte the plants system.
(4) roots are develops in the radicals
(5) roots are under the soil and plants are protecte of roots.
(6) plant growth of high ~~reason~~ resenes roots are protective system.

3) Types of Modification in adventitious root system.

(1) adventitious root are very great.
(2) root system is the strong of plants
(3) roots are protected the plant and plant growth.
(4) plants is

Date 27/02/2024

"Department of Botany"

B.Sc. Sem-IV : P-II : U-I

Unit Test

Q:1) Explain with example "Law of Segregation". (10)

Q:2) Explain with example "Law of Independent Assestment". (10)

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Botany

B.Sc. IV sem. P-II. U-I

Date :- 27/02/24

1) Lakita U. Makde
2) Tina S. Yelekar
3) Khushali D. Thombre
4) Anjali R. Dhongade
5) Purva S. Kharpkar
6) Vaishnavi L. Nibude
7) Janhavi N. Mehar
8) Kalyani B. Babhulkar
9) Mitali M. Gajbhiye
10) Aparna G. Chinchmalatpure
11) Dhanshri S. Nanote
12) Pooja A. Dambhale
13) Neha N. Patil
14) Jayashri A. Raut
15) pratiksha D. Pule
16) Ruchika P. Malvi
17) Chhakuli M. Wadule
Sejal N. Wasule
Sameer S. Ansari

Name:- Chhakuli Madhav Wadule.

Class:- BSc 2nd year.

Page No.
Date: / /

14/15

Que. 1] Laws of segregation:-

Laws of segregation can be explained with the help of Monohybrid cross: In this cross their are one characters cross with each others.

Parents :- Tall × Dwarf (Phenotypic ratio)

Gametes :- TT × tt (Genotypic ratio)

02

F1 generation :- [TT] × [tt]

[Tt]

all tall plant.

Gametes :- [T] [t]

↓ selfing

F2 generation.

♀ \ ♂	T	t
T	TT	Tt
t	Tt	tt

Page No.
Date : / /

Phenotypic ratio :- 3 : 1
Genotypic ratio :- 1 : 2 : 1

Number of individuals	Phenotypic	genotypic
3	Tall	TT, Tt, tT
1	Dwarf	tt



2) Law of Independent Assortment.

This law can be explained with the help of Dihybrid cross; In this cross their are two plant characters cross with each other. We gets a one character of a colour. Dominant colour is yellow and Reccessive colour is green and another with a charact of shape Dominant is Round and recessiv is wrinkled.

Colour :- YY yy
Yellow Green.

Shape : RR rr
Round wrinkled.

Page No.
Date: / /

Parents : YYRR × yyrr. Genotypic.
yellow Green Phenotypic
Round wrinkled.

Gametes :- YYRR × yyrr.

F1 generation :- YYRR × yyrr.

(YR) (Yr) (yR) (yr)

(5) gametes :- YR Yr yR yr.

F2 generation :- ↓ selfing.

♀ \ ♂	YR	Yr	yR	yr
YR	YYRR yellow round	YYRr yellow round	YyRR yellow round	YyRr yellow round.
Yr	YYRr yellow round	YYrr yellow wrinkled	YyRr yellow Round.	Yyrr yellow wrinkled
yR	YyRR yellow round	YyRr yellow round	yyRR green round	yyRr green Round.
yr	YyRr yellow Round	Yyrr yellow wrinkled	yyRr green round	yyrr green wrinkled

Phenotypic Ratio :- 9 : 3 : 3 : 1
Genotypic Ratio :- 1 : 2 : 2 : 4 : 1 : 2 : 1 : 2 : 1

Number of individuals	Phenotypic	genotypic
9	Yellow Round	1 YYRR
		2 YYRr
		2 YyRR
		4 YyRr
3	yellow wrinkled	1 YYrr
		2 Yyrr
3	green Round	1 yyRR
		2 yyRr
1	green wrinkled	1 yyrr

(V)

Phenotypic Ratio — 9 : 3 : 3 : 1

Yellow Round : yellow wrinkled : green round : green wrinkled

Genotypic Ratio ↓

1 : 2 : 2 : 4 : 1 : 2 : 1 : 2 : 1

27-2-2024

Date
Page

05/15

ame :- Mitali Mahadeo Gajbhiye
ubject :- Botany - II
lass :- B.Sc 2nd year (CBZ)

Q-1 :- Monohybrid cross

→ Gametes TT × tt
Tall dwarf

Cross

F1 generation Tt

T t

Pigment Table :- ~~TT Tt tt tt~~

♀ / ♂	T	t
T	TT Tall	Tt Tall
t	Tt Tall	tt dwarf

(2)

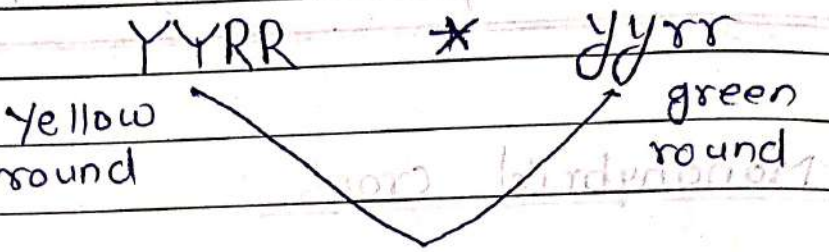
TT : Tt : Tt : tt

Phynotype ratio :- 3 : 1
Tall dwarf

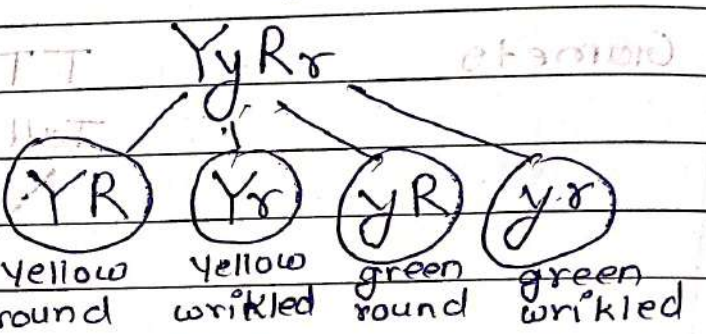
Genotype
~~Phynotype~~ ratio :- 1 : 2 : 1
TT : Tt : tt

• Dihybrid cross

→ Gamets –



F1 generation



Pigment Table :-

♀ \ ♂	YR	Yr	yR	yr
YR	YYRR Yellow round	YYRr Yellow round	YyRR Yellow round	YyRr Yellow round
Yr	YYRr Yellow round	YYrr ~~Yellow~~ green wrikled	YyRr ~~Yellow~~ green wrikled	Yyrr ~~Yellow~~ green wrikled
yR	YyRR Yellow round	YyRr ~~Yellow~~ green wrikled	yyRR Yellow round	yyRr Yellow round
yr	YyRr Yellow round	Yyrr Yellow round	yyRr Yellow round	yyrr ~~Yellow~~ green wrikled

YR : Yr : yR : yr

Genotype ratio :- 1 : 2 : 2 : 4 : 1 : 2 : 2 : 1

Phynotype ratio :- 3 : 3 : 1

"B.Sc. Sem-VI"
UNIT TEST

19/04/24
Saturday.

UNIT II

Q. Write a short note on the following.

1. Another culture
2. Shoot tip culture.
3. Callus culture.
4. protoplast culture.
5. Give at least two applications of each technique mentioned above (Compulsory

Sr No.	Name of student	Sign.
1)	Deepali H. Thombre	D.H. Thombre
2)	Amisha A Dambhare.	A Dambhare.
3)	Ruchika S. Dhawale	Dhawale
4)	Mahima G. chaudhari	Chaudhari
5)	Bhagyashri S. chaudhari	Chaudhari
6)	Bhagyashri A. Wangal	B Wangal
7)	Sakshi P. Dhote.	S.P. Dhote
8)	Khushi. B. Goswami	K.B Goswami
9)	Janhvi · R· Tatte	Janhvi.
10)	Isha · L· Gharad	Isha.
11)	Jay . S . Potpite	JPotpite

Unit Test - Unit - II 13-04-24
Botany P-I
→ Khushi. B. Goswami

04/10

Q.1) Write a short note on the following.

i) Anther culture :-
- Anther culture is a technique in which the developing the anther at precise and critical stage are excised from unopened flower bud and cultured on a nutrient medium.
- The culture anther developed into calus tissue or embryonic that give to haploid plathlet through organogenesis. 02

ii) Shoot tip culture :-
- Shoot tip culture is a technique in which the developing the small piece of shoot of meristem can lead to formation of organised shoot which can be rooted.
- In this technique apical shoot meristem are cultured. Apical shoot meristem are differ from shoot apex in apical meristem.
- It is also known as meristem cultured meristem cultured involve the development of already existing shoot meristem which ultimately developed adventitious root.

iii) Callus culture :-

→ Callus ~~culture~~ has been artificiaily developed through tissue cultured technique. During callus culture 2-3 mm sterilized piece of explant is transferred into nutrient medium and incubated at 25-28°C in a alternate light and dark period of 12 hours. abnormal growth of calles has potentiaily developed roots.

iv) protoplast culture :-

→ In protoplast culture. protoplast is the biological active and most significantly material of cells. when cell wall is mechanically or enzymaticaiy removed the isolated protoplast is known as naked Plant cell. on which most of recent reserched are based.

06/10

Unit TEST

Name:- Mahima H. Choudhari

Class:- B.Sc. III ed. year (CB2)

1. Anathee culture

Ans:- Anathee culture is ~~techq~~ technique by which the developing anthee at a precise and from unopened flowee bud and aee cultureed on a nutrient medium where the microscope within the culture anather developed callus tissue or embeyonic that give rise to haploid plant-let either through oeganogenesis or embeyogenesis. Anather and pollen grain aee cultureed to produce haploid plants the anathee contain diploid (2n) number of chromosome (2)

2] Shoot tip culture-

Ans:- A small piece of shoot of meristem can lead formation of oeganised of shoot which can be rooted. In shoot culture apical shoot meristem. aee cultured Apical shoot meristem (2) aee differe from shoot aper in apical meristem and few leaf peemodia

- Because in these cultured meristem is used.
- It is also known as meristem culture

Meristem cultured involved the development of already existing shoot meristem which ultimatey development adventitious shoot from development shoot.

3] callus culture

callus culture may beep artificially developed through tissue culture techque during callus culture 2-3 mm sterilized piece of explant is transferred into nutrient medium and inaculated at 25°-28°C in an alternal light and dark period of 12 hour

4] protoplast culture

Ans- protoplast culture

NABIRA MAHAVIDYALAYA, KATOL

SESSION 2023-24

SEM-I . BOTANY

Date: 03/11/2023

Que 1: (a) Sexual Reproduction in Albugo.

(b) General characteristics of fungi

OR

(c) Gametangia in Mucor

(d) Harmful characters of fungi.

(e) Asexual reproduction in Cercospora.

(f) Teliospore in puccinia

Q2: a) Economic importance of Lichen.

b) Types of Lichens.

OR

(c) Red rot of sugarcane

(d) Leaf curl of papaya

(e) ~~Fruticose~~ V.S. apothecium of Lichen (diagram only)
vegetative reproduction

(f) ~~Importance~~ of Lichen

Q3: (a) Antheridiophore in Marchantia

(b) sporophyte of Funaria.

OR

(c) L.S. Anthoceros sporophyte (diagram only

(d) L.S. Male gametophores in Funaria

Zygospore

NABIRA MAHAVIDYALAYA, KATOL

BSc sem - I

Session 2023-24

Test

Attendance Sheet

Date: 03/11/2023

S. No.	Student Name	Signature
1.	Sakshi Suryakant Vyawahare	S.S.Vyawahare
2.	Vishakha Mahesh Uke	V.M.Uke
3.	Ruchika Dharmraj Suryawanshi	Ruchika
4.	Sudhanshu Yuvraj Amale	Amale
5.	kapilansh. sanjay. Mahurkar.	Mahurkar
6.	Nikhil. Sanjiv Babulkar	Babulkar
7.	Chetan. Sureshrao Agarkar	Agarkar
8.	Komal Ramesh Chaudhari	Chaudhari
9)	Saloni Janardhan Manmode	Manmode.
10]	Gayatri pundlikrao Gharmade	Gharmade
11]	Tanvi Gajanan Pande	Pande
12]	Samruddhi Devendra Yeole	Yeole
13]	Riddhi Vijay Kalbande	Kalbande
14]	Janhavi Wasudeo Gharad	Janhavi
15]	Vaishali Ramesh Chavhan	Chavhan
16]	Dimpal Hemraj Kalbande	Dimpal
17]	Chetna. Sunil. Bondre	Bondre.
18)	Srushti Ratnakar Dhok	Dhok
19)	Sakshi Narendra Fuse	Fuse
20)	Dipali. Dilip. Mahapure.	Mahapure.
21)	Saloni Suresh Siram.	Siram
22)	Priya Govinda Sirsam	Sirsam
23)	Payal Vijay Shriramе	Shriramе
24)	Chetan Shantaram Rewatkar	Rewatkar
25]	Rehan Hafeez Sheikh	
26]	Trupti Niranjan Charde	Charde
27]	Bharti. D. Raut	Raut
28]	Khushali S. Kathan.	Kathan
29)	Sanskruti. D. Meshram	S.D.Meshram

S.NO.	student Name	signature
30)	Farhat Naz Sheikh Rasheed	Farhat.
31)	Sanakshi. Ishwar. shende	Shende
32)	Manikel Manohar Barai	Barai

Dr. R.S. Meshram

नबीरा महाविद्यालय, काटोल

10/50

परीक्षा

नांव Sudhanshu Yuvraj Amale

वर्ग Bsc-I year. विषय Botany रोल नं.

	1	2	3	4	5	एकूण
गुण						
	6.	7	8	9	10	
गुण						

तारीख 03 / 11 /२०२३ परीक्षकाची सही

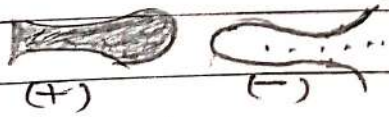
टिप : १) उत्तर पत्रिकेच्या पहिल्या पानापासूनच सुरु करावे.
२) उत्तर पत्रिकेच्या दोन्ही बाजूचा उपयोग करावा.
३) उत्तर पत्रिकेत चित्र किंवा अयोग्य असा कोणताही प्रकार लिहू नये.
केल्यास दंडास पात्र होईल.

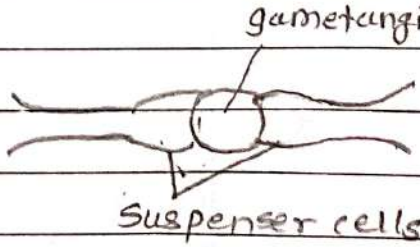
Que:- 1(a) Sexual Reproduction In Albuge.

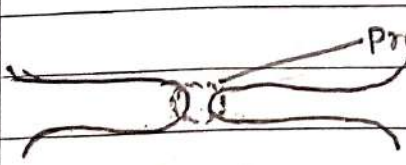
Ans:-

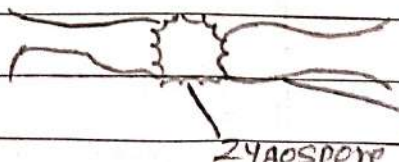
(C) Gametangia in Mucor.

Ans:- 1) when two heterocious hyphaes of Mucor close to each other it forms gametangia.
2) (+)Strain of hyphe and (−) strain of hyphe ovelaps head to head, and the form progametangia.
2) When the pro gametangia is forme it develops into gametangia. The nucleus of each strain fused.
3) after fertilization zygote is develope and develope in zygo spore.









(f) Teliospores in Puccinia

1) Teliospores are develope in Telial stage of puccinia.

1/2 Teliospores are binucleate septate spores.

Ans:- i) Haustorium :- It is the outgrowth of hyphae inside host cell to absorb nutrition from them called Haustorium.

Ans:- ii) Disjuncture :- Disjuncter are the cells present in intercalary of conidia. they joints conidia to each other.

Ans:- iii) Tikka disease :- The disease cause by the genus of Cercospora. In which the black, brown spot appears on leaf.

Ans:- (iv) Rhizines :- The root like structure present in the lichens for attachment called rhizines.

Ans:- (vii) Gemmae :- The '8' (eight) shaped vegetative body produce by Marchantia inside the gemma cup.

Ans:- (x) poisonous mushroom :- The mushroom that are not edible to eat and they are poisonous to the health is called poisonous mushroom.

Ans:- (v) ~~Perigynium~~ :- Symbiosis :- The benifital association of algae or fungi is known as symbiosis.

NABIRA MAHAVIDYALAYA, KATOL

50 marks.

SESSION 2023-24

Sem III UNIT TEST

4/11/2023

Q1: (a) Benthitalian theory or concept.

(b) Phyto chemistry in relation to taxonomy.

OR

(c) Herbarium

(d) Enigmocarpon fruit

(e) Sahnianthes flowers.

(f) Bracketed key.

Q2: (a) Discuss Bentham and Hooker's system of classification along with its merits and demerits of the system.

(b) Floral characters of Malvaceae

OR

(c) Merit's and demerits of Engler & Prantl's system.

(d) Economic importance of Malvaceae

(e) Floral characters of Asclepiadaceae.

(f) Economic importance of poaceae.

Q3: (a) Describe the types of pollination.

(b) Development of polygonum type of embryo sac.

OR

(c) T. S. anther (diagram only)

(d) Onagrad type of embryo

(e) Adaptations for self pollination.

(f) Female gametophyte.

Q4: (a) Landscaping. Explain the role of landscaping.

(b) Explain the factors required for growing house plant.

OR

(c) Scope of landscaping at industrial premises.

(d) Explain how to grow and maintain Coleus blumei

(e) Explain how to grow care Dendrobium orchid.

(f) How to grow Rieger Begonias from seed.

Q5. (Any 10)

(i) ICBN

(ii) Cytotaxonomy

(iii) Floras

(iv) Polypetalae

(v) Bicarpellate

(vi) Curvembryeal

(vii) Exine

(viii) Double fertilization

(ix) Pericarp

(x) USDA

(xi) Areca palm

(xii) Ventilation.

Dr. R.S. Meshram
Dept. of Botany
NMV, Katol

NABIRA MAHAVIDYALAYA, KATOL

SESSION 2023-24

Sem-III BOTANY 4/11/2023

Sr.NO	Students name	Signature
1)	Rajshree Rajendra Rewatkar	Rewatkar
2)	Lakita Umesh makde	Umakde
3)	Tina Sandip Yelekar	Tyelekar
4)	Janhvi Namdev mehar	J.Nmehar
5)	Disha Anilrao Giradkar	D.A.Giradkar
6)	Anjali Ramdasji Dhongade	ADhongade
7)	Ashwini Yadavrao Kambale	Akambale
8)	Purva S. Khapekar.	SKhapV
9)	Hemlata R. Kale	H.R.Kale
10)	Neha . N. Patil	Nehapatil
11)	Mayuri . P. Putarojya.	
12)	Jayashri . A . Raut	Raut
13)	Shivani P. Mohankar	PMohankar
14)	Rasika A. Sirsam	RSirsam
15)	Kalyani B. Babhulkar	Bbabh
16)	Vaishnavi L. Nibude	Vaishney
17)	Samer S. Aram	Samer S. Aram
18)	Aparna G. Chinchmalatpure	AGhinchpure
19)	Mitali M. Gajbhiye	Majbhiye
20)	Sejal N. Wasule	Swasule
21)	Kamiksha C. Dongare	KDongare
22)	Shivprasad . P . Suryawanshi	Suryawanshi
23)	Chhakuli Madhav Wadule	Cmwadule
24)	Ruchika Pramodrao Malvi	Rpmalvi

Dr. R. S. Mishram.

Date:- 04/11/2023

Date .....
Page .....
3½/50

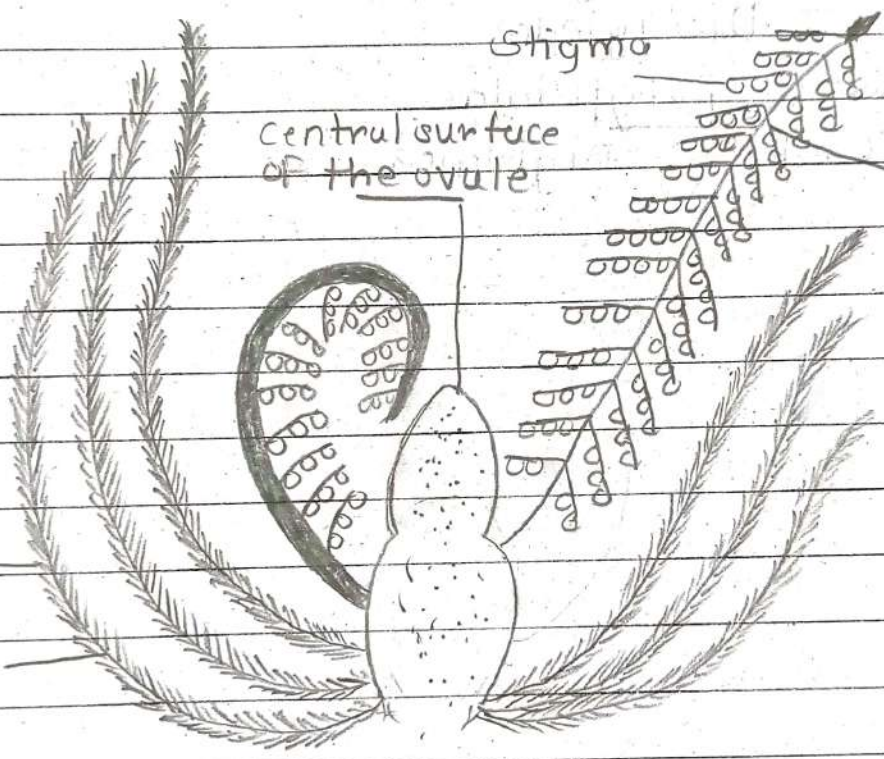
Name:- Chhakuli Madhavraji Wadule.

Class:- BSc 2d yr. (CBZ) Sub:- Botany (T)

Q. 1

Benettitalian theory.

(a)



The Cycadeoidea flower

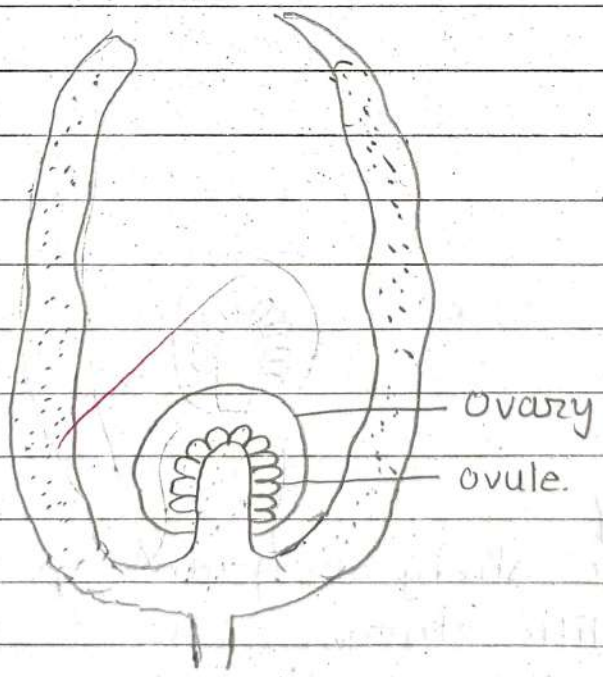
- Taxonomy
- It is the study of plant specimens by the use of scientific study.
- It is a the scientist Waliand (1904) The scientist.

Q. 1

(e) Sahanianthus flower.

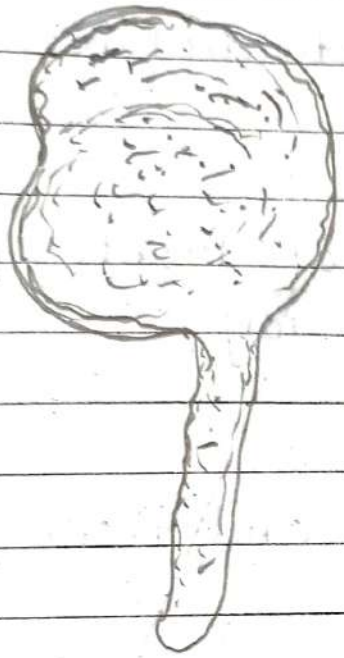
Division:- Spermatophyta.
Sub-Division:- Gymnospermae.
Class:- Dicotyledoae.
Sub-class - Polypetalae.
~~from~~ Order - Myrtales

1/2

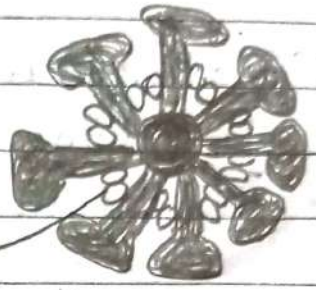


Sahanianthus flower.

(d) Enignocarpon fruit



(A)



(B)

1/2

Q(3) Describe the types of pollination.

- Self pollination:- It is a type of pollination The anthers and stigma are occurs same plants are called self pollination.
  e.g sunflower maize.

1/2

- Cross Pollination.
  It is a types of pollination the anthers and stigma are occurs different plants called cross pollination
  e.g Cucurbita.

Q. 5

(i) ICBN
International Code of Botanical Nomenclature.

(ii) Cytotaxonomy.
It mean the study of plant specimens of the cell. by the scientific study.

(iii) Floras.
The study of flower and their classification.

(iv) Polypetalae
The free petalls of a flowers is called. Polypetalae.

(vii) Exine
It is the outermost layer of cells.

Page No.
Date :

05/50

नबीरा महाविद्यालय, काटोल

परीक्षा _____

नांव Sameer S. Atram

वर्ग BSc III-Sem विषय Botany - I रोल नं. _____

	1	2	3	4	5	एकूण
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	6	7	8	9	10	
गुण						

तारीख : 4 / 11 /२०२३

परीक्षकाची सही

टिप:-
१) उत्तर पत्रिकेच्या पहिल्या पानापासूनच सुरु करावे.
२) उत्तर पत्रिकेच्या दोन्ही बाजूचा उपयोग करावा.
३) उत्तर पत्रिकेत चित्र किंवा अयोग्य असा कोणताही प्रकार लिहू नये. केल्यास दंडास पात्र होईल.

Q.1 → (e) · Sahaniantnus · flower :-

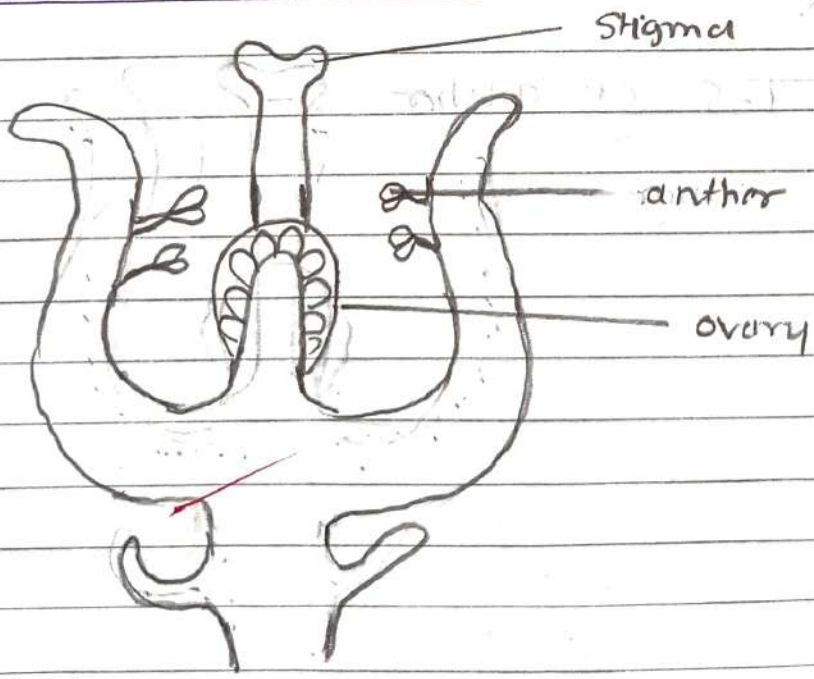


fig. Sahanianthus. flower

Q.1 (d) Enigmocarpon fruit :-



fig. Enigmocarpon fruit

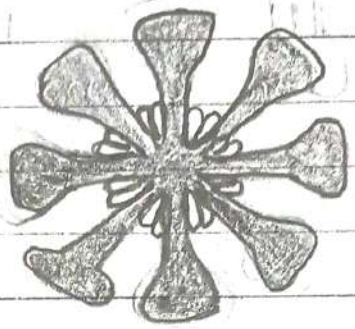
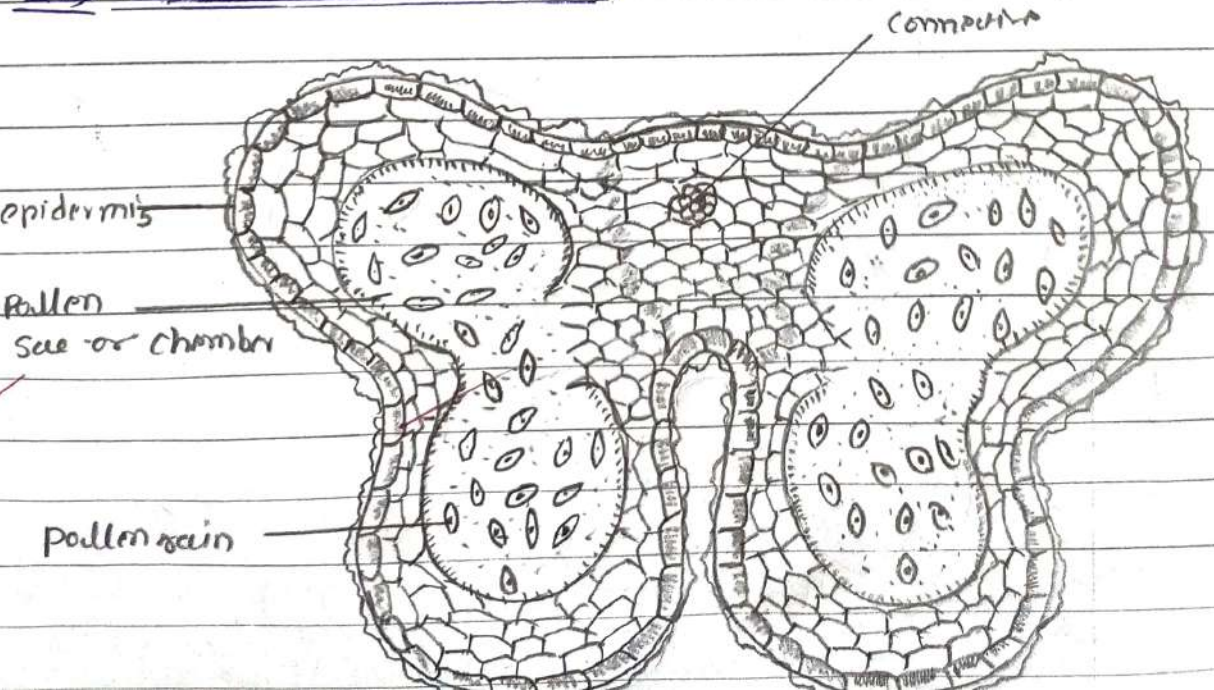


fig. ovule of Enigmocarpon fru

Q.1 (c) Herbarium :-

- Herbarium is a method of preservation of species.
- Herbarium is used to preserve plant material

Q.2 (c) T.S. of anther :-



Q.4 (a) Landscaping :-

- The landscaping is very important.
- In specific area to planted attractive or useful plants is known as landscaping.
- It is used in decreasing air pollution.

Q.5 (i) ICBN

International code of botanical Nomenclature

(ii) Cytotaxonomy :-

Cytotaxonomy is advance study or detailed study of plant plants

(iii) Floras

Floras is study of plants in specific area or location

(iv) Polypetalae :-

- polypetalae means ; petals are free.

(v) Bicarpellate :-

- More are two carpal present in plants flowers ;

(vii) Exine :-

Exine is outer layer of pollen grain

(viii) Double fertilization :-

Double fertilization is occurin angiosperm plants in angiosperm flour after pollination, the pollen grain germinate pollen tube; and the pollen tube contain two male gametes and one vegetative nucleus, the male gametes fuse with egg and vegetative nucleus fuse with two polar nuclei this type of fertilization is called Double fertilization.

NABIRA MAHAVIDYALAYA, KATOL

SESSION - 2023-24

Sem V UNIT TEST

Date: 04/11/23

Q1: (a) Munch mass flow hypothesis

(b) Explain Active absorption of Mineral with reference to carrier concept.

OR

(c) K^+ malate hypothesis.

(d) Diffusion

(e) Significance of osmosis

(f) Types of transpiration.

Q2: (a) Hatch-slack pathway.

(b) Non-cyclic photophasphorylation.

OR

(c) C_3 cycle (diagrammatic)

(d) Red drop mechanism.

(e) Photosynthetic pigments.

(f) TCA cycle (diagrammatic)

Q3: (a) Explain the mechanism of Biological N_2 fixation

(b) What is plant movement? Explain tropic movement

OR

(c) Circadian Rhythm

(d) Biological clock

(e) Seismonastic movement

(f) Photomorphism

Q4: (a) Explain the role and deficiency symptoms of Nitrogen, phosphorus, potassium and calcium.

(b) Define Hydroponics and explain the types of hydroponic system.

OR

(c) Disadvantages of hydroponics.

(d) Hydroponic Farming of tomato.

(e) Nutrient film technique.

(f) Hydroponic farming of cabbage.

Q5: (ANY 10)

(i) osmosis

(ii) Turgor pressure

(iii) Imbibition

(iv) photolysis.

(v) Photon.

(vi) Nitrate reductase.

(vii) ~~Nitrogenase~~ presentation time

(viii) Sun dial.

(ix) ~~Hydro~~ Hydrotropism

(x) Hydroculture

(xi) NPK

(xii) LED

Dr. R.S. Meshram

Sem V

4/11/2023

Sr.No	Name of the student	Signature
1	Vedinee Sanjay Tathode	Tathode.
2.	Vaishnavi Sudhakare Walke	Walke.
3.	Sahili Anand Kalbhiye	Kalbhiye.
4.	Ruchika Sunil Dhawale	Dhawale
5.	Mona Damodhar Parkhi	Parkhi
6.	Sakshi Shriram Kale	Kale
7.	Janvi. S. Kakade.	Kakade
8.	Shraddha G. Gore	Gore
9)	Jay. S. Potbite	Potbite
10)	Himanshu. H. Naik	Naik
11)	Hina. N. Ninave.	Ninave
12)	Ashwini -s. Rakshit	Rakshit
13]	Sejal K. Wahane	Sejal
14)	Janhvi R. Tatte	Janhvi.
15)	Isha L. Gharad	Isha
16)	Riya D. Bangre	Riya
17]	Mahima G. Choudhari	Choudhari
18]	Amisha A. Dambhare.	Dambhare.
19]	Bhagyashri S. choudhari	Bhoudhari
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24)	Raksha S. Kothe.	Raksha

Dr. R. S. Meshram

नबीरा महाविद्यालय, काटोल

1

20/50

परीक्षा Unit Test

नांव Tanhvi Rajesh Tatte

वर्ग B.S.C Sem 5 विषय Botany Paper-2 रोल नं.

	1	2	3	4	5	एकूण
गुण						
	6	7	8	9	10	
गुण						

तारीख : 04 / 11 /2023

टिप:- १) उत्तर पत्रिकेच्या पहिल्या पानापासूनच सुरु करावे. परीक्षकाची सही

२) उत्तर पत्रिकेच्या दोन्ही बाजूचा उपयोग करावा.

३) उत्तर पत्रिकेत चित्र किंवा अयोग्य असा कोणताही प्रकार लिहू नये. केल्यास दंडास पात्र होईल.

Q1(c) K^+ Malate hypothesis.

→ According to Levitt, the malic acid is produced in mesophyll cells of leaves. in guard cell.

→ The malic acid is weak acid, it dissociates into malate and H^+ ion.

→ ~~The~~ H^+ and pot The H^+ ion excret out of cell and potassium ion enter the guard cell from endodermis.

→ As the results, osmotic pressure of guard cells increases and stomata opens in during day.

→ In dark, the H^+ and potassium ion exchange takes places.

→ Then Again H^+ enter into the cell and potassium ion excret out of cell.

→ As the result the stomata is closed.

2

Q1(d) Diffusion.

→ The diffusion of solvent solid, liquid and gases from higher concentration to lower concentration is called Diffusion.

eg. O_2 in atmosphere, smell of agarbattis in room, blowing of baloon.

→ This is happen not by kinetic energy. takes place in

→ The energy exerted by diffusion is called diffusion pressure.

Suppose, a copper crystal is kept in a beaker containing water. The copper crystal after sometime it dissolves and diffuses in water slowly.

2 1/2

* Factors affecting Diffusion :-

1. Temprature

→ As the temprature increases the rate of diffusion increases.

2. Density medium.

→ The Diffusion pressure is inversely proportional to square root of Density medium.

$$\frac{r_1}{r_2} = \sqrt{\frac{d_2}{d_1}}$$

* Importance of Diffusion :-

→ The diffusion plays an important role in O_2 and CO_2 in atmosphere.

Q1e) Significance of Osmosis :-

1. Osmosis plays important role in dehiscence of fruit.
2. The movement of water from ~~more~~ non-living parts to living part xylem. 1.5
3. Plays role in absorption of water in roots.
4.

Q1f) Types of Transpiration :-

→ Transpiration

The loss of water in form of vapours from aerial parts of plants is called Transpiration. 2.5

→ It can be demonstrated by putting a potted plant in bell jar.

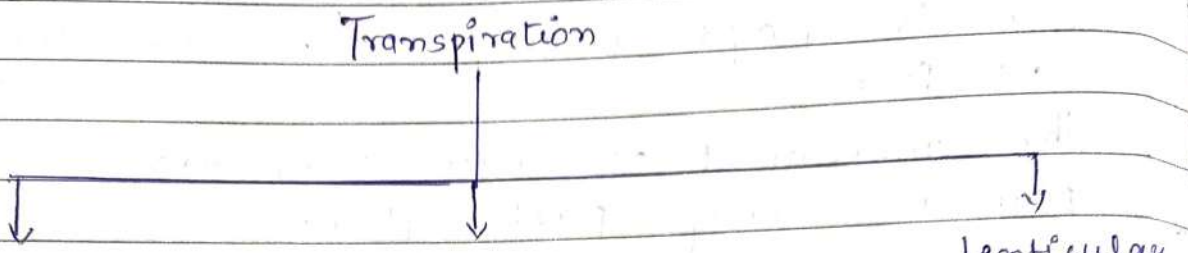
→ Water the soil in pot. and tie it with rubber sheet.

→ After some time the vapours or drops of water are seen at inner layer of bell jar.



fig transpiration.

Q There are three types of transpiration



1. **Stomatal Transpiration :-**

→ The transpiration takes place in low- stomata of leaves is called stomatal Transpiration.

→ The stomata present in abundance at lower part of leaves.

→ In monotot grasses stomatas are present in across leaves.

→ In aquatic plants, floating leaves the stomata are present at upper side in direction of sun.

2. **Cuticular Transpiration :-**

→ The transpiration takes place in cuticle is called is cuticular Transpiration.

3. **Lenticular Transpiration :-**

→ The transpiration takes plac in lenticles is called lenticular transpiration.

Q26) Non- cyclic phosphorylation.

→ In Non- cyclic phosphorylation both the systems are involved. i.e PS- I and PS- II.
→ The cycle undergoes series of transfer of electron in zig- zag manner so called as non- cyclic or Z- scheme.
→ The photon of P680 of PS- II in form of chloro- a is excited and eject an electron.
→ The ejected electron is accepted by unknown compound Q. This unknown compound Q has 2- forms Q_A and Q_B.
→ From Q the electron is transferred to ~~Ferrodoxin~~. cytochrome - b_6
→ From ~~Ferrodoxin~~ cytochrome b_6 the electron transfered to plastoquinone, then cytochrome - f.
→ From cytochrome - f electron is transferred to plastocyanin.
→ In this process, phosphorylation between cytochrome f and plastocyanin, 2 ATP molecules are formed.

Reaction in PS- I :-

→ The electron coming from PS- II is accepted by PS- I.
→ The electron from PS- I is transferred to ferrodoxin.
→ From Ferrodoxin is transferred to fo reduce NADH.
→ The hole in PS- I is fulfilled by the electron coming from PS- II.

Q → The hole in PS-II is fulfilled by photolysis of water.

→ The non-cyclic electron transport, the electron from PS II is not cycled back to and transfer to PS-I. and from PS-I the electron is not cycle back and used in reduce NADH.

→ Therefore, the cycle is known as non-cyclic electron transport or non-cyclic phosphorylation.

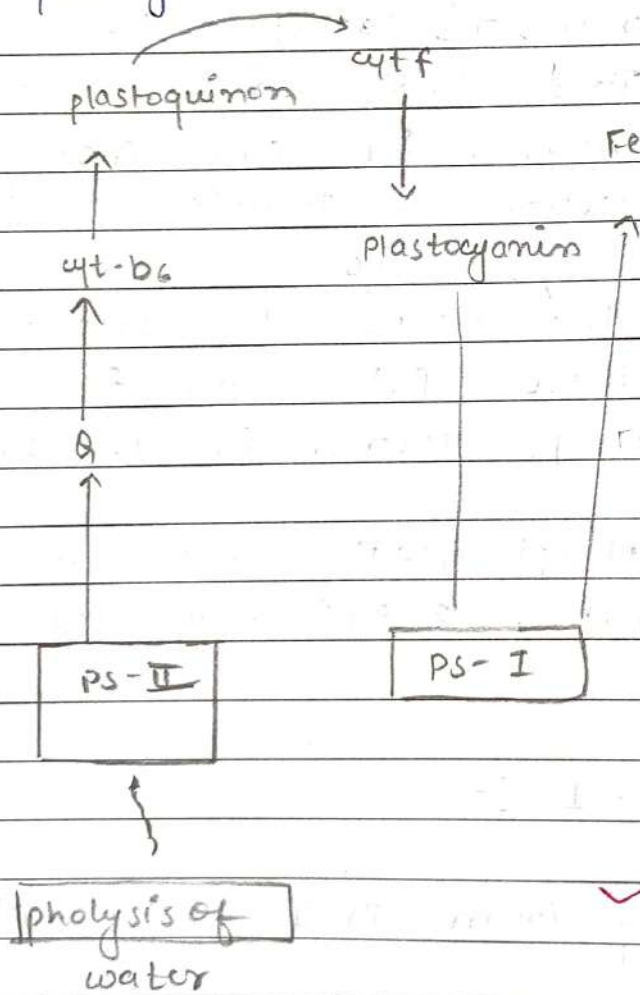


Fig. Non-cyclic phosphorylation

Q2C C_3 - cycle.

→ The C_3 - cycle is also known as calvin cycle.

→ The calvin cycle is divided into 3 - distinct phases :-
1) Carboxylation phase.
2) Reduction phase.
3) Regeneration phase.

~~The calvin cycle~~ i
There are various steps involved in calvin cycle :-

1. Carboxylation phase :-

→ The CO_2

Q2(C) C_3 - cycle :-

→ The C_3 cycle is divided into 3 distinct phases :-

1. Carboxylation Phase :-
→ In this phase CO_2 accepted by RUBP after hydrolysis converted into 3- phosphoglyceric acid.

2½

2. Reduction Phase :-
→ The 3 - phosphoglyceric acid is converted into 3-phosphoglyceraldehyde.

3. Regenaration phase :-

→ The CO_2 acceptor RUBP is regenerated at end of the cycle.

Q There are various steps involved in calvin cycle :-

1. Carboxylation :-

→ The CO_2 acceptor (RUBP) & Ribulose 1,5 bisphosphate forms 6-carbon addition compound.

→ After hydrolysis it is converted into 3-phosphoglyceric acid.

→ The 3-phosphoglyceric acid is first stable product of this cycle.

RUBP + CO_2 ⟶ 3-phosphoglyceric acid (6 carbon addition compound) → 3-phospho glyceric acid.

2. Reduction :-

→ The ~~thr~~ 3-phosphoglyceric acid is isomerised into 3-phosphoglyceraldehyde in presence of ~~transketolase~~ triose phosphate kinase. This reaction takes place in 2 ways :-

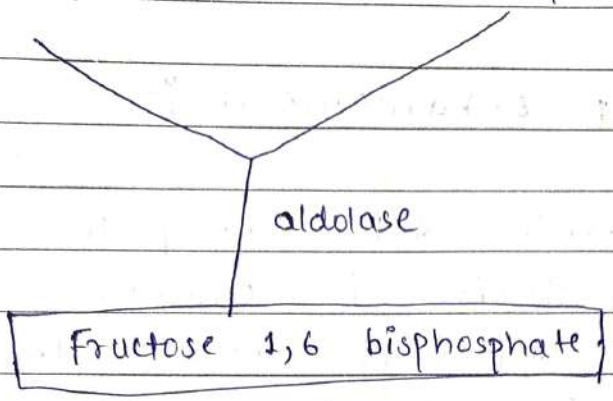
3-phosphoglyceric acid —(kinase)→ 1, 3 bisphosphoglyceric acid.

1, 3, bisphosphoglyceric acid —(triose Phosphate Kinase)→ 3-phosphoglyceric acid.

3. Regeneration of RUBP :-

→ Some 3-phosphoglyceraldehyde is converted into ~~hexo~~ dihydroxyacetone ~~glyceric~~ phosphate in presence of aldose forms Fructose 1,6 bisphosphate.

→ 3-glyceraldehyde —transketolase→ hydroxy acetone



→ Fructose 1, 6 bisphosphate in presence of phosphtase converted into Fructose-6 phosphate.

Fructose 1,6 bisphosphate —Phosphtase→ Fructose-6 phosphate.

→ Fructose-6-phosphate react with 3-glyceraldehyde and form sucrose, starch etc.

→ 3-glyceraldehyde instead of forming starch, sucrose diverted to ~~for~~ regenerate Ribulose 1,6 bisphosphate.

→ 3-phosphoglyceraldehyde combine with Fructose-6 phosphate to form xylulose-5-phosphate (5C) and Erythrose-6 phosphate (6C).

→ Erythrose-6-phosphate combine with hydroxy acetone phosphate to form ~~heptulophosphate~~ heptulose 1,7 bisphosphate.

→ heptulose 1,7 bisphosphate loss one phosphate group and form heptulose-6 phosphoste.

→ Heptulose-6 phosphate with 3-phospho glyceradehyde form Ribose-5 phosphate.

→ Ribose-5 phosphate finally convert into Ribulose 1,6 bisphosphate.

→ In The calvin cycle, 3-phospho glyceric acid is first stable product it is also known as C3-pathway

and reductive phosphate.

Q2(D) Red Drop Enhancement :-

→ Emesson while determining the quantum yield of photosynthesis of chlorela of monochromatic light of different wavelength noticed that decrease in quantum yield more than P680 mμ.

→ That decrease in quantum yield is occured in red part of spectrum and so called as Red - drop. effect.

→ The enhancement in photosynthesis is called Red- drop Enhancement.

Q3 What is movement in plant ? Explain tropism movement ?

→ The sudden exchange in external part of plant is called movement.

The movement of plant is divided into two types :-
1) Curvature movement.
2)

Tropic movement :-

→ The movement in unidirection flow of ~~Cs~~ stigma ~~stomata~~ called Tropic movement.

The tropic movement are divided into 2 parts :-

1) phototropism :- The movement towards the direction of light is called Phototropism.

2) Geotropism :- The movement ~~tow~~ due to gravitational force is called geotropism.

→ The movement towards direction of soil is called positive geotropism.

→ The movement away from soil is called Negative geotropism.

Qs

1. Osmosis :-

→ The diffusion of solvent from higher concentration to lower concentration through semi perpeable membrane is called osmosis.

There are two types of osmosis :-

1) Endo osmosis

2) Exoosmosis.

2. Turgor pressure :-

→ The pressure excerted on wall is called Turgor pressure.

It is written as TP.

3. Imbibition.

→ The water absorbed by particle is called imbibant.

→ The water absorbed by dry hydrophilic colloids is called imbibition.

6) Nitrate Reductase :-

It is molybdenum found in soyabean leaves.

9) Hydrotropism :-

→ The movement of water ~~to~~ in direction of water is called Hydrotropism.

M.Sc Sem I
2023-24
Unit test

GoodLuck | Page No.
Date 12 | 09 | 23

Sr No.	Name of student	Sign	mark
1.	Mayuri P. Digrase	Digrase	3½
2.	Khushali Mahoriya	Khushali	02
3.	mayuri D. Sembekar	Sembekar	05
4.	Mayuri W. Bonait	Bemait	1½
5.	Kalyani K. munne	K.K.munne	1½
6.	Harshlata G. Thakre	Thakre	4½
7.	kanak. A. Thakre	Thakre	05
8.	Sarika S. Chaudhari	Chaudhari	04
9.	Aishwarya S. Sawarekar	Sawarekar	9½
10.	Rani M. Wanjari		05
11.	Bhupesh R. Morekar		02

Q.1. Write in detail on geological time scale
— 10 M.

Q.2 Technique to study fossils preservation.
— 05 M.

ame- Aishwarya subhash sawarkar 12/09/23

class - M.Sc. (Botany - I) session- 2023 - 24

9½/15

15 marks

Q.1 Write an detail on geological time scale (10 M)

⇒ Introduction :-

i) The history of the earth was approximate 350 million years old.

ii) The geologist have used two units for subdiving the geological history of the earth i.e. time and strata. 1½

iii) on the basis of the time there are 5 eras. these are as follows

a) cenozoic
b) Mesozoic
c) paleozoic
d) proterozoic
e) Archaezoic

iv) ~~The~~ ~~peri~~

v) ~~The periods are~~ divide into epoch.

iv) The era are divide into period and period further divides into epoch.

v) on the basis of strata the geological time scale described as System, series, stage and zone.

vi) The climatic conditions, ages, vegetation are seen in below table.

	Era	period or system	Epoch or series	Dominant vegetation
1)	cenozoic	quaternary	pleistocene	Herbaceous plants Angiosperm
		tertiary	i) Pleiocene (17 million years ago)	
			ii) miocene (30 million years ago)	
			iii) oligocene (40 million years ago)	
			iv) Eocene (60 million years ago)	
			v) paleocene (80 million years ago	
2)	Mesozoic	i) cretaceous (110 million years ago)	i) Upper cretaceous	Gymnosperm
		ii) Jurassic (170 million years ago)	ii) middle cretaceous	
		iii) triassic (200 million years ago)	iii) Lower cretaceous	
3)	paleozoic	i) permian (240 million years ago)		
		ii) carboniferous (280 million years ago)		→ Pteridophyte
		iii) Devonian (360 million years ago)		→ primitive land plants
		iv) silurian (375 million years ago)		→ Algae mostly calcareous.
		v) ordovician (420 million years ago)		
		vi) cambrian (550 million years ago)		

4.	proterozoic	precambrian (1500 million years ago)		
5.	Archaeozoic	(3500 million years ago)		unicellular organisms.

Table - Geologic. time scale

★ Geological time scale described as :→

1. proterozoic eleq (1500 million years ago)

i) Life is originated on this era.
ii) the fossils are found in this era because the environment was not suitable for fossilization either the plants present that time are not fit for fossilization.
iii) the minimum amount of fossiy are not sufficient for certain precambrian environments.

2. paleozoic (550 - 240 million years old)

i) It has following 6 periods i.e.

a) permian - 240 (million years old)
b) carboniferous - 280 (million years old)
c) devonian - 360 (million years old)
d) silurian - 375 (million years old)
e) ordovician - 420 (million years old)
f) cambrian - 550 (million years old)

ii) The vegetation observed both aquatic and land plants. Aquatic plants like Pneumatothalles and protofaxtiles.

iii) It resembles to pthalophytes

iv) The first land plants are seen in devonian and silurian period. (225 - 350 million years old)

v) The carboniferous and permian period include members like Lycopsida, psilopsida sphenopside and pteridopsida which forms dense forest.

vi) Devonian and silurian period includes genera like zosterophyllum, cooksonia, Rhynia, Horeniophyton and psilophyton.

vii) In late carboniferous period there is seasonal vegetation occurs.

viii) In this period seed ferns are abundant and this period also known as age of seed ferns.

ix) There is formation of annual ring in such species like callixylon eriianum and callixylon newberery.

x) There is formation of coal balls is called coalification. This is observed in members like Lycopsida, Sphenopsida, Gymnosperms and ferns.

Aishwarya S. Sawarkar

4) Mesozoic Era (200 - 110 million years ago)

i) It is also called age of cycads.
ii) There is dominant vegetation occurs as gymnosperms found in ~~no~~ abundant amount.
iii) It includes 3 periods i.e.
a) Cretaceous
b) Jurassic
c) Triassic

iv) The members like Moreaceae, Spanadeaceae, Lauriaceae are found in this era.

5 Cenzoic era (80 - 17 million years ago)

i) It is also called age of angiosperms.
ii) In this era formation of ranges like Himalaya in Asia and Alps in Europe.
iii) There is two periods i.e.
or
a) Quaternary
b) Tertiary

iv) Quaternary period has 1 epoch i.e. Pleistocene
v) Tertiary has 5 epoch like, Pleiocene, miocene, oligocene, eocene and paleocene.
vi) There is herbaceous plants and angiosperms are dominant in this era.

Q2 Methods of preservation :→

Introduction

i) The fossils are preserved in lower amount of oxygen. Example = Anaerobic sediments (because decomposed) fungi, etc.

ii) The sediments which required oxygen for metabolism is gray, brown, green or black than red.

iii) fossils are preserved by two methods i.e with or without alteration.

iv) fossils which preserved with alteration includes processes like carbonification, petrification, recrystallization and replacement.

v) fossils which preserved without alteration includes casting and moulding, are indirect fossils like foot prints.

1) carbonification

i) The organs of plants are preserved or soft organs preserved in this process.

ii) Gases includes in this process like hydrogen, nitrogen and carbon are of gases which process by compression.

iii) The remains part of plants are beneath crushed.

2) Petrification

i) It is the process of preservation as per mineralization.
ii) In this process calcium carbonate are filled spaces which present in organic matter.
iii) It is hard.

3. Recrystallization

i) It is the process which occurs in a shell of fossils of plants.
ii) In this process one form of calcium carbonate is replace by another form of calcium carbonate.

or

4. Replacement

i) It is also called as silification.
ii) In this process that atomic structure of plants are replace by silica.
iii) E.g. petrified forest.

5. casting and moulding :->

i) It is indirect method of preservation.
ii) the indirect means the organic matter shows impression.

23-24

UNIT TEST

M.Sc Ist year (I sem)

Date 12/10/23
Page

	Name of students.	Date	Sign	Mark
(1)	Sarika chaudhari	12/10/23	Sharchai	
(2)	Mayuri Digrase	-1-	Digrase	
(3)	Amey R. Raut	-1-	Amey	
(4)	Kanak Thakre	-1-	Thakre	
(5)	Kalyani Munne	-1-	K.Kmunne	
(6)	Khushali Mlohoniya	-1-	Khushali	
(7)	Rani Wanjari	-1-	Rani	
(8)	Bhupesh Morekar	-1-	[illegible]	
(9)	Aishwarya sawarkar	-1-	Aswarkar	
(10)				

Q1. Write in detail on geological time scales - (6 M)

Any 3.

Q-2. Technique to study fossils preservation - 6 M

Q-3. Write note on Age determination - 6 M

Q.4. Write short note on Radiodating. - 6 M

Q.5. Write applied aspects of palaeobotany. - 6 M

Total - 40 M

नबीरा महाविद्यालय, काटोल

Page No.
Date

24/40

परीक्षा

नांव Aishwarya s. sawarkar

वर्ग M.Sc. I विषय Botany रोल नं.

	1	2	3	4	5	एकूण
गुण						
	6	7	8	9	10	
गुण						

तारीख : 16/10/2023

टिप:- १) उत्तर पत्रिकेच्या पहिल्या पानापासूनच सुरु करावे. परीक्षकांची सही

२) उत्तर पत्रिकेच्या दोन्ही बाजूचा उपयोग करावा.

३) उत्तर पत्रिकेत चित्र किंवा अयोग्य असा कोणताही प्रकार लिहू नये. केल्यास दंडास पात्र होईल.

Q.1 Geological time scale

⇒ Introduction

1) sequence of geological periods in the history of earth's is geological time scale.

2) Geological time scale is a system of chronological dating that relates stratigraphy (strata) to times.

3) Geological time scale used by geologist, palaeobotanist, palaeontologist and various other scientists which indicates the relationships and timing of events occurred during earth's history.

4) The history of the earth approximate 350 million years old.

5) The geologist have used two measure units for subdividing the history of earth i.e. time and strata.

6) On the basis of time geological time scale divided into 5 eras.

7) Similarly, on the basis of strata it divides into series, system, stage or zone.

8) Geological time scale put in a tabular form which gives the information about geological events

9) There are major divisions and subdivis are also present.

★ Major divisions and subdivisions of Geological time scale.

- The geological time scale divides into two groups called eon.

or

- Eon are then subdivided into eras.
- Each era further divided into period.
- The periods are subdivided into epoch.
- Then epoch further subdivided into age.

Geological time scale :→ Redrawn from Tylor

Era	period	Epoch	Dominant vegetation
		Million years ago (M.Y.A.)	
Cenozoic	quaternary	pleistocene	Herbaceous plants
	Tertiary	Pliocene (17 million years ago)	Angiosperms
		Miocene (30 M.Y.A.)	
		oligocene (40 M.Y.A.)	
		Eocene (60 M.Y.A.)	
		palaeocene (80 M.Y.A.)	
Mesozoic	Cretaceous (110 M.Y.A.)	i) Upper Cretaceous	Gymnosperms
	Jurassic (170 M.Y.A)	ii) Middle Cretaceous	
	Triassic (200 M.Y.A.)	iii) Lower Cretaceous	
Paleozoic	permian (240 M.Y.A.)		
	carboniferous (280 M.Y.A.)	→	Pteridophytes
	Devonian (360 M.Y.A.)	→	Primitive Land Plants
	Silurian (375 M.Y.A)	→	Algae mostly calcareous.
	ordovician (420 M.Y.A)		
	cambrian (550 M.Y.A.)		

proterozoic	precambrian (1500 M.Y.A.)		
Archaezoic (3500 M.Y.A.)			unicellular organisms

Fig: Geological time scale (Table)

- The eras of geological time scale are described as.

1) Precambrian era

i) The life originated on the earth this era.

ii) The rock of these era have less fossils because either the envi are not suitable for fossilization or the organisms present during that time not fit for fossilizati

iii) The amount of fossils are lack for study does not give exact informa about precambrian environment

2) Paleozoic era

i) It consists 6 periods. These are
- permian
- carboniferous
- devonian
- silurian
- ordovician
- cambrian

ii) It includes both aquatic and land plants.

iii) The aquatic plants like pneumatothallus and protofaxtiles shows resemblences to thalophytes.

iv) The first fossil land plants are observed during devonian and silurian period of this era.

v) The genera like Monograptus sporogonyte, zosterophylum, cooksonia, Rhynia, Horeniophyton etc. are found in this era.

vi) The species like Lycopsida, sphenopsida, pteridopsida are present in this era.

vii) The seed and ferns are abundant hence these era known as age of seed and ferns.

viii) Annual ring forem in this era.

3) Mesozoic era

i) It contain 3 periods
- Cretaceous
- Jurassic
- Triassic

ii) The ferns, cycads and conifers are abundant in this era.

iii) It is known as age of cycads.

iv) The origin of family like Lauriaceae, Moraceae, etc.

4) Cenozoic era

i) It is known as age of angiosperms.

ii) The ranges like Himalaya in Asia and Alps in Europe are found in this era.

iii) The herbaceous plants are dominant in this era.

iv) It has two period i.e.
- Quaternary
- Tertiary.

Page No.
Date

Eons

1) phanerozoic
2) precambrian

Eras
~~periods~~
Epochs

1) cenozoic →

Eon → 1) phanerozoic
2) precambrian

Era → period → Epoch

cenozoic	quaternary	pleistocene
mesozoic	tertiary	miocene
paleozoic		oligocene
proterozoic		pliocene
		eocene
		paleocene
	cretaceous	
	jurassic	
	triassic	
paleozoic →		permian
		ordovician
		silurian
		devonian
		carboniferous
		precambrian

Fig Divisions - sub-divisions of geological time scale

Q.2

Techniques of fossil preservation

i) Fossils are preserving in absence of oxygen.

ii) Example, anaerobic sediments (mostly decomposed), fungi, mostly decomposing bacteria and invertebrates.

iii) The fossils which require oxygen for metabolism are gray, green, black or brown in colour rather than red. 1½

iv) The fossils are preserved in two ways with and without alteration.

v) With alteration includes, carbonification petrification, recrystallization and replacement.

vi) Without alteration includes casting and moulding.

1) Carbonification

- It is the process preserving plants and soft organisms.
- These includes, remains crushed the beneath of the rock and weigh it. 01
- Gases involved like, Nitrogen, Hydrogen and oxygen.
- Compression & Heat process takes place.

वर्ग _____ विषय _____ रोल नं. _____

	1	2	3	4	5	एकूण
गुण						
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तारीख : / /२०

टिप:- १) उत्तर पत्रिकेच्या पहिल्या पानापासूनच सुरु करावे. परीक्षकाची सही

२) उत्तर पत्रिकेच्या दोन्ही बाजूचा उपयोग करावा.

३) उत्तर पत्रिकेत चित्र किंवा अयोग्य असा कोणताही प्रकार लिहू नये. केल्यास दंडास पात्र होईल.

2) Petrification

- It refered to as pere mineralization
- It involves the preserved matters like calcium carbonate and silica
- It is hard which fills the empty spaces in the materials and preserved the atoms. 1½

3) Recrystallization

- It is the process observed in shell fossils.
- Where calcium carbonate of one type can convert ove transfore into another type of calcium carbonate.
- It refereed as fossils.

4) Replacement

- It is the process where original structure of living can replaced by chemical structure.
- silification is common method.
- occurs in petrified forest.

or

5) casting and moulding

- It is indirect method.
- Where impression takes place.

Q.2.

3 Age determination

- Age of fossils are determined by two methods.

i) Absolute method / Direct

ii) Relative method or indirect.

or

i) Absolute dating

- It includes following methods.
- It is the methods gives absolute age of fossils.

Dendrochronology

- the age of tree increases with the annual ring formation.

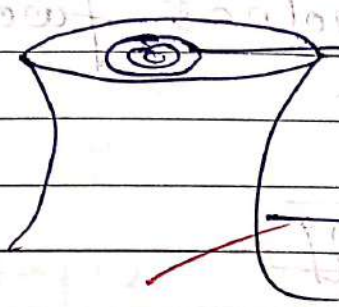


Fig. Annual ring formation.

Radiometric Dating

It involves the radioactive isotopes. Radioactive isotopes of Uranium is used.

$$^{238}U \longrightarrow {}^{206}Pb$$

Uranium — Lead

Uranium gets converted into Lead.

carbon dating

- It involves the isotopes of carbon atom i.e. ^{14}C and ^{12}C.
- the relationship of ^{12}C and ^{14}C are constant.
- the ^{14}C are living fossils.
- But, when they die this relationship changes.
- It is used for recent fossils.

q.2

4. Radio dating.

- Introduction

i) Radiodating involves two types of dating i.e.
- carbon dating
- Uranium dating

ii) It is the type of dating which is commonly used for age determination of fossils.

iii) It involves radioactive isotopes of various elements like carbon, uranium, thorium and potassium.

iv) Radioactive isotopes are also called as biological clocks.

v) the original (parent) decay and leads to new formation of product (daughter) in this dating.

vi) the methods of radio-dating are as follows and described as one by one.

Radio-carbon Dating

i) In this method of dating used decay of radioactive isotopes.

ii) Isotopes are the atoms of elements where the number of ~~nucle~~ neutron in their nuclei are different.

iii) the isotopes of carbon are used in this dating i.e. ^{14}C and ^{12}C.

iv) the ^{14}C are living fossils.

v) Relationships between ^{14}C and ^{12}C are constant.

vi) But, when they die this relationships are changed.

vii) this method used for recent fossils.

M.sc (sem I) 4/01/2024

Name of students	Date	sign.
1) Kanak. A. Thakre	4/01/24	Thakre
2) Harshlata G. Thakre	4/01/24	Thakre
3) Bhupesh B. Morekar	-/-	Morekar
4) Rohit -A. Patil	-/-	Patil
5) Pragakta R. Nasare	-/-	Nasare
6) Sarika S- Chaudhari	-/-	Chaudhari
7) Mayuri P. Digrase	-/-	Digrase
8) Rani M. Wanjari	-/-	Wanjari
9) Aishwarya S. Sawarkar	-/-	Sawarkar

Q. Give a general account and Reproduction of Anthocerotales. — 12 M.

Q. fossils bryophyte / History — 5 M

नबीरां महाविद्यालय, काटोल

12/18

परीक्षा

नांव Harshlata G. Thakre

वर्ग M.S.c - I (Botany) विषय Bryophyte रोल नं.

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तारीख 4 / 1 /2024

परीक्षकाची सही

टिप : १) उत्तर पत्रिकेच्या पहिल्या पानापासूनच सुरु करावे.
२) उत्तर पत्रिकेच्या दोन्ही बाजूचा उपयोग करावा.
~~३) उत्तर पत्रिकेत चित्र किंवा अयोग्य असा कोणताही प्रकार लिहू नये.~~
केल्यास दंडास पात्र होईल.

Q. Give a general account and Reproduction of Anthocerotales. — 12 M

→

Classification

Division : Bryophyte
Class : Anthocerotopsida
order : Anthocerotales
Family : Anthoceroteceae
Genus : Anthoceros
species : Himalayensis

02

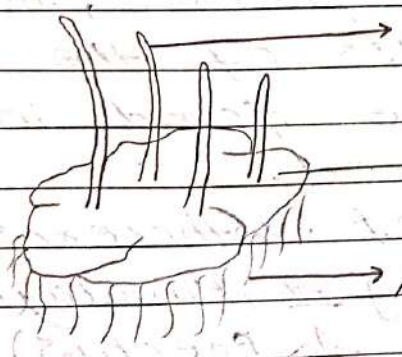


Fig : Thallus of Anthoceros

• Introduction :-

1) Representated 6 generas and 300 species.
2) widely distributed in temperat and tropical region.
3) In India, Anthoceros represente by about 25 species.
4) The three common species of anthoceros is A. Himalayensis, A. erectus, A. Cambensis.
5) They are found in western Himalayas at an altitude of 5000 to 8000 ft.
6) They have been reported by Kashyap from mussoorie, ~~Nainital and Dalhousie also~~. Kulu & manali.
7) Mehra and Handoo are collected the first two species from Shimla, Nainital and Dalhousie also.

• Habit :-

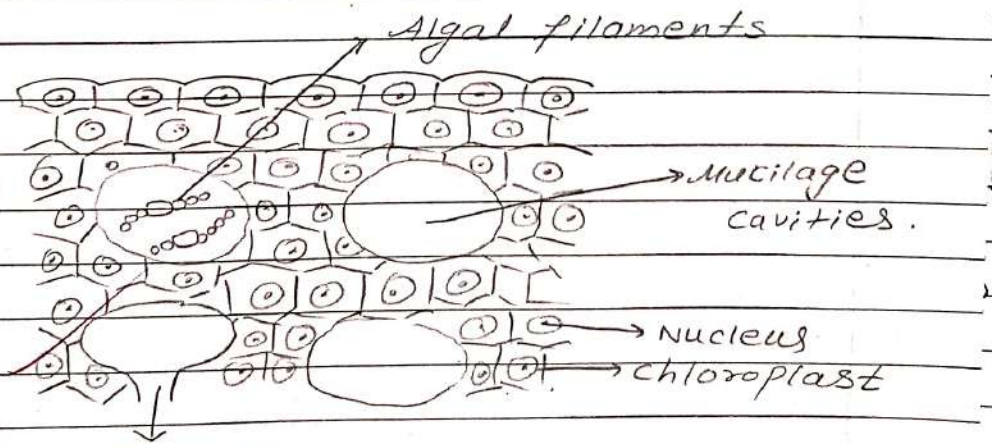
1) All species are terrestial and cosmopolitan in distribution.
2) The species are grown in very moist and shady placeses, like slops rocks and sides of the bitches.
3) Some species are found in growing decaying wood.
4) The species of Anthoceros may be perennial (e.g A. Himalayensis) or annul (e.g. A. erectus).
5) Unlike other bryophytes anthocerous

is not well adapted to resists dry conditions.

- **External structure :-**

1) The plant body is dorsiventral, flat, thalloid, prostrate and dark green in colour.
2) colonies are rosette like., Dichotomous branched. 0 2/
3) The thallus is bilobed or pannital branching.
4) The dorsal surface of thallus is smooth & velvety because of the presence of several lobed lamella.
5) The ventral surface of thallus bears unicellular, smooth wall rhizoids.
6) Tuberculated and scales are present.
7) A small, rounded, thickened, dark bluish-green spots are seen on the ventral surface of thallus.
8) This thickened spots is called as Nostoc colonies.

- **Internal structure :-**



1 1/2

fig : T.S. of thallus

1) No cellular differentiation of photosynthesis and storage region.
2) Thallus uniformally composed of thin walled is called as parenchyamatous cells.
3) The mucilage cavities are present on the lower surface of thallus. 0½
4) Mucilage cavities open on ventral surface of thallus through the slime pores.
5) Mucilage cavity carry the blue green algae Nostoc.
6) Air chambers and pores are absent.

• Reproduction :-

① Vegetative Reproduction :-
By detch and decay older portion of thallus or fragmentation. ½
② By tuber, ③ By Gemmae, ④ By apical growth and ⑤ apospory.

- **Sexual Reproduction :**

1) They reproduce by oogamous.
2) Anthocerous is both monoecious and diaecious.
3) Anthesidia mature before Archegonia.
4) The male gametes bears structure is called Antheridium and the female gametes bears structure is called Archegonium.

- **Antheridiom :-**

02

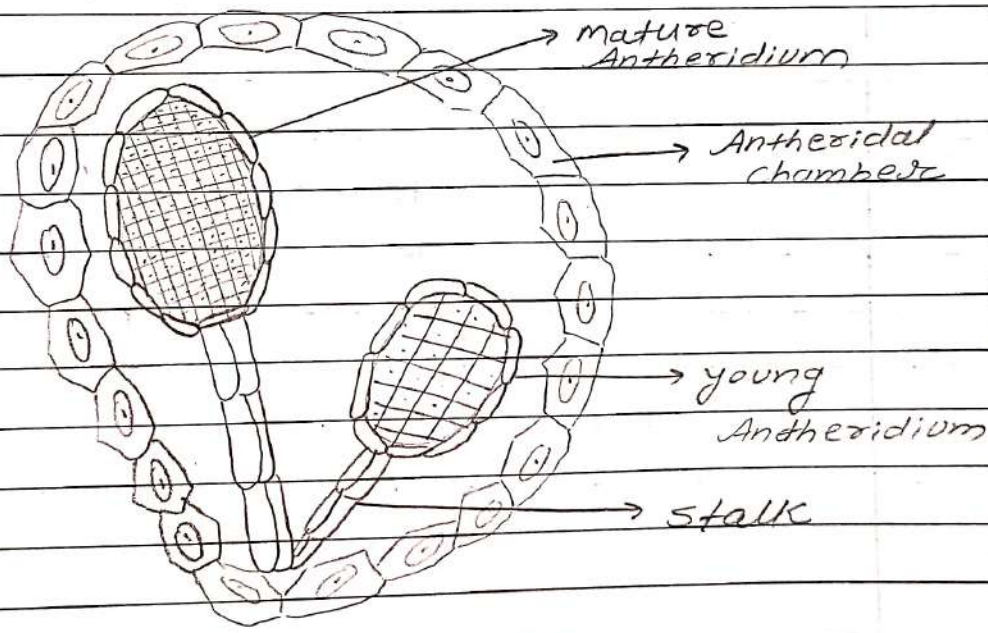


Fig :- Structure of Antheridium

1) Antheridium form singly or in group in Antheridial chamber on the dorsal surface of thallus.
2) 1 - 25 Antheridia may be develop in each Antheridium.

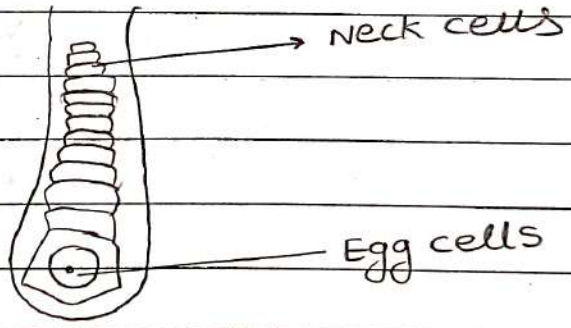
3) Antheridium is ovoid shaped and attached to stalk.

4) Antheridium attached to the base of the stalk.

5) In some species for e.g A. erectus 4 tiers of cells in sterial jacket.

6) Stalk is attached to the antheridial chamber to the lower surface of thallus.

- Archegonium :-



?

~~UNIT~~ TEST.

Page No.
Date 18/09/24
Monday.

Q. Write Notes on-

1. Structure of carbohydrate and its function.

Sr No.	Name.	sign.
1.	Harshlata G. Thakre	Thakre
2.	Arti R. Ramteke	Ramteke
3.	Mayuri N. Bemait	Bemait
4.	Bhupesh R. Morekar	
5.	Pedjakta R. Nasare	Nasare
6.	Sarika S. Chaudhari	Chaudhari
7.)	Mayuri P. Digrase	Digrase
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9)	Aishwarya S. Sawarkar	Sawarkar

नबीरा महाविद्यालय, काटोल

Page No.
Date

05/08

परीक्षा

नांव Harshlata G. Thakre.

वर्ग M.Sc I st Sem II विषय Botany रोल नं.

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तारीख : 18 / 3 /२०२4

टिपः- १) उत्तर पत्रिकेच्या पहिल्या पानापासूनच सुरु करावे.

२) उत्तर पत्रिकेच्या दोन्ही बाजूचा उपयोग करावा.

३) ~~उत्तर पत्रिकेत चित्र किंवा अयोग्य असा कोणताही प्रकार लिहू नये.~~
केल्यास दंडास पात्र होईल.

परीक्षकाची सही

Que- write notes on :-

Q- Structure of carbohydrate and its function

→

1) Carbohydrates is a group of organic complex & food form in the form of starch, cellulose and sugar.
2) Carbohydrates are also called as Saccharides. that is Greek words which ~~is~~ means sugar, because almost all the carbohydrates have sweet ~~test~~. taste.
3) Many sugars have empirical formula $(CH_2O)_n$.

Carbohydrates

- Simple
  - Monosaccharides — Glucose, Fructose, galactose
  - Diasaccharides — Maltose, Lactose, Sucrose
- Complex
  - Polysaccharides — Fibres, glycogen

02

① Simple carbohydrates :-

1) Simple carbohydrates is a basic type of carbohydrate.
2) Soft drinks, cookies & other sweet snacks contain simple sugars.

3) Thus have one or two sugar molecules & are quickly digest living to rapidly rise in blood sugar level.

(2) Complex carbohydrates

(1) Complex carbohydrates are contain two or more sugar molecules often refferd to as starchy food.

(2) Carbohydrate differaited into 3 groups.

02/

(1) Monosaccharides
(2) Diasaccharides.
(2) polysaccharides

(1) Monosaccharides :-

1) Monosaccharider are the simplest carbohydrates and cannot be hydrolyse into other smaller carbohydrates.

(2) The mono in monosaccharides mean in which show the the presence of only one sugar units.

(3) They are the building block of disaccharides & polysaccharides for which reasions also known as simple sugars.

(4) Ex- Glucose, fructose & galatose, etc.

Page No.
Date

(2) Diasaccharides :-

(1) Diasaccharides are made up of two monosaccharides.

(2) The most common ones includes sucrose, Lactose and maltose.

(3) The common diasaccharides contain at least one glacosidic bond.

(4) Ex :- Maltose, Lactose and ~~Suco~~ sucrose.

(3) polysaccharides :-

(1) polysaccharides are made up of two or more sugar unites.

(2) Ex -, fibres, glycogen, etc

(3) polysaccharides is a group of sugar molecules that covalently attached with each other.

(4) polysaccharides id a large molecules composed of smaller units called monosaccharides.

M.Sc II nd year (III rd sem)

Date - 17/08/2024
Saturday.

paper - 2
Module - 1 Angiosperms - I

Write short Notes on -

Q.1. plant Introduction and explain its root types. — 10 M

Q.2. ~~plan~~ floral Morphology. — 10 M.

Sr No.	Name of students.	Sign.
1.	Bhupesh Morekar.	
2.	Mayuri Digraye.	
3.	Kanak. A. Thakre	
4.	Harshlata G. Thakre	
5.	Rani M. Wanjari	
6.	Aishwaeya S. Sawarkar	
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नबारा महाविद्यालय, काटोल

परीक्षा _____ Page No.: Date :

नांव Harshada Ganesh Thakre

वर्ग M.Sc 2nd year विषय Botany रोल नं. _____

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14/20

तारीख : 17 / 8 /२०२४

टिपः- १) उत्तर पत्रिकेच्या पहिल्या पानापासूनच सुरु करावे. परीक्षकाची सही

२) ~~उत्तर पत्रिकेच्या दोन्ही बाजूचा उपयोग करावा.~~

३) उत्तर पत्रिकेत चित्र किंवा अयोग्य असा कोणताही प्रकार लिहू नये. केल्यास दंडास पात्र होईल.

Que- write Notes on

Q 1] plant Introduction and explain root types.

Q-2] floral Morphology.

Date :

Q-1] → The plant structure are well differentiated into a well-define Root system, shoot system and leaves system.

2) The specialized structure is called as flowers are present.

3) Root system are Anchor of plant & absorb water and nutrient from the soil.

4) Stem system are support the plant body and transfer the water & nutrients.

5) ~~Roo~~ leaves system perform photosynthesis where light energy converted into chemical energy.

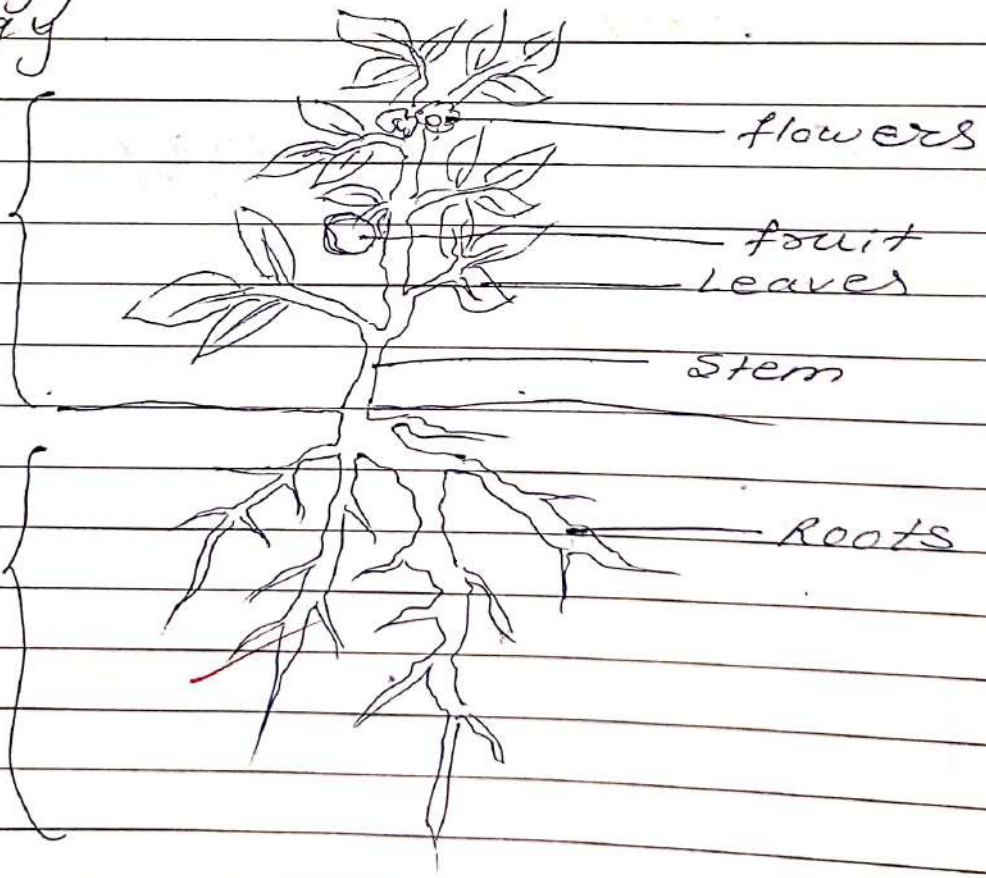


Fig :- Structure of plant

Page No.:
Date :

6) Angiosperm plant is also called as flowering plants.
7) It is the most diverse group of plant.
8) flower is a reproductive organs, they contain male (stamen) & female (pistil)
9) They attracted pollinators thabugh nectors, scent and colour. 02
10) Leaves contain their photosynthetic pigment called chlorophyll & thin spores called stomata.
11) In plants their are three types of root system are Tap root system, advantageous root system, and fibrous root system
12) ~~plant~~
• plant life forms :-

① Therophytes :- Annual plants complete their life cycle in a single seasons.
- They serves in unfavourable condition like a seeds. 01

② Geophytes :- perennial plants are underground organs like bulbs, tubers, etc.
- They help to sexual in adverse conditions.

(3) Epiphytes :- plants grow on other plants for survive & supports.

(4) Helophytes :- They adaptes grow in saline condition such as mangroves.

(5) stem & leaves saculents :- The plant stored their water in stem & leaves & help to survive in arid environments.

(6) xerophytes :- They adapted to grow in warm temperature features like leaf area compress, shoot short growing they help to survival in hot environment.

- Specila plant life forms are :-

(1) Saprophytes :- They grow on death organic matter.

(2) parasites :- they grow on other plants fore their nutrients.

(3) Hemiparasites :- They grow on other plant fore their nutrients & water if possible.

These are two type facultitives & obligate Hemiparasite.

Page No.:
Date:

Root Types.

(1) The main organs in plant body is Root.

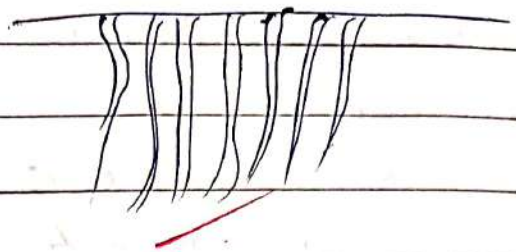
(2) Roots are three types they are Tap root system, fibrous root system & advantageous root system.

(1) Tap root system :- It is a ~~small~~ large and grow in downward.
- They mostly found in dicotledonous plants.
- provide nutrients & water for plant body.
- ~~ex~~, ~~carrot~~ ex:- onion, carrot

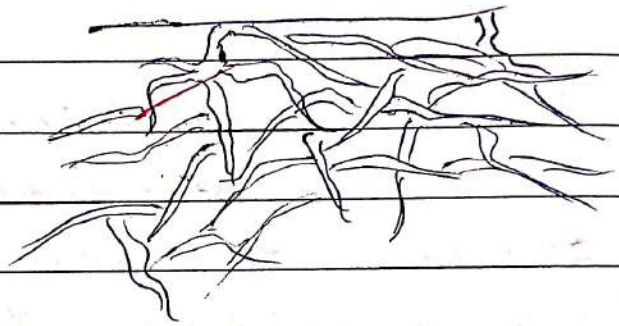
(2) Fibrous root system :- It is mostly found in monocotledonous plants.
- They look like carpet in the floor.
- closely associated with fungi.

(3) Advantageous root system :-
- It is mostly found in monocotledous plants.
- The grow in downward & contain water from the soil.

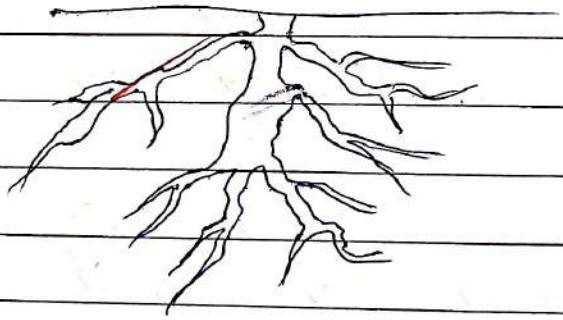
• Tap Root system



(2) fibrous root system

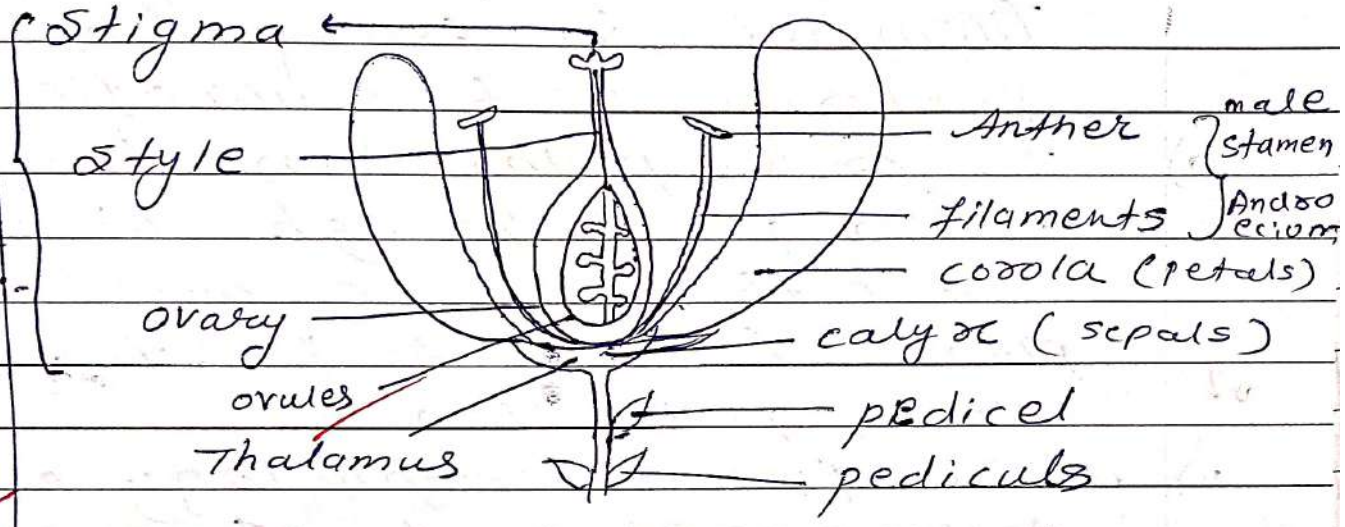


(3) Advantageous root system



Page No.:
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-2) Floral Morphology :-



02

fig :- Floral Morphology

(1) flower is the attractive part in the plant body.
(2) They contain male & female reproductive organs.
(3) They attract pollinatours through nector, scents and colours.

01

(4) Gynoecium is differentiated into stigma, style and ovary
(5) the stigma, style & ovary is also called as pistil.
(6) Androecium is differentiated into Anther & filaments.
(7) when Androecium & Gynoecium prents in same plant they perform self pollination.
(8) when the Androecium & Gynoecium present in different

plant they performed cross pollination.

9) In self pollination pollen grain transfer through filament in ovary & perform self pollination.

10) In cross pollination transfer pollen grain through birds, insects, etc on other plant flower & perform cross pollination.

02

11) Some floral morphology are Actinomorphic & some are zygomorphic.

12) In Actinomorphic they divided in four parts.

13) In zygomorphic they divided only into two parts.

14) There are some types of petal which are monopetalous dipetalous, tripetalous, tetra petalous & polypetalous.

15) corolla are in various shapes & colours.

M.Sc semester III

Test

Wednesday.
18/09/2024

(1) Discuss the Pincam system of classification. — 8 M

(2) Give an account of Bentham and Hookers system of classification. — 8 M

(3) Write notes on Molecular Systematics and APG III system of classification — 8 M

Sr No.	Name.	Sign.
1)	Harshlata Thakre	HThakre
2)	Mayuri Digrase	Digrase
3)	Bhupesh Morekar	
4)	Aishwarya S. Sawarkar	Sawarkar

नबीरा महाविद्यालय, काटोल

परीक्षा Angiosperms Page No.
Date: Taxonomy

नांव Aishwarya S. Sawarkar

वर्ग M.Sc. IInd विषय Botany रोल नं.

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18/24

तारीख : 18 / 09 / 2024

टिप:- १) उत्तर पत्रिकेच्या पहिल्या पानापासूनच सुरु करावे. परीक्षकाची सही

२) उत्तर पत्रिकेच्या दोन्ही बाजूचा उपयोग करावा.

३) उत्तर पत्रिकेत चित्र किंवा अयोग्य असा कोणताही प्रकार लिहू नये. केल्यास दंडास पात्र होईल.

Q.1) Discuss the Linnean system of classification — 8M

Q.2) Give an account of Bentham and Hookers system of classification — 8M

Q.3 Write notes on molecular systematics and APG-III system of classification — 8M

Page No.:
Date:

Q.1

Introduction

⇒

1) Carl Linnaeus (1707-1778) or Carl Linne, was a Swedish botanist, zoolog and physician who formalized binome nomenclature, the modern system of naming organisms.

2) He is known as the "father of mode taxonomy".

3) Many of his writings were in Latin, and his name is rendered in Latin a Carolus Linnaeus.

02

4) Linnaeus was born in the countryside of Smaland in southern Sweden.

5) He received most of his higher educatio at Uppsala university and began giving lectures in botany there in 1730.

6) In the 1740s, he was sent on several journeys, through sweden to find and classify plants and animals.

7) In the 1750s and 1760s, he continued to collect and classify animals, plants, and minerals, while publishing several volumes.

8) He ~~was~~ is also considered as one of the founders of modern ecology.

In botany and zoology, the abbreviation L. is used to indicate Linnaeus as the authority for a species name.

In older publication the abbreviation "Linn" is found.

Classification of Linnaeus :-

Linnaeus published species plantarum the work is now internationally accepted as the starting point of modern botanical nomenclature, in 1753.

The book contained 1,200 pages and was published in two volumes.

It described over 7,300 species.

Another important work of Linnaeus was, Genera plantarum published in 1737, delineating plant genera.

Around 10 editions were published, not all of them by Linnaeus himself; the most important is the 1754 fifth edition.

In it's Linnaeus divided the plant kingdom into 24 classes.

This was an artificial system of classification.

Plants classified on the basis of number cohesion, length & certain other characters of stamens.

19) The outline of the clayses of his classif system of was published in Systema Naturae in 1735 and again in Genera plantarum in 1737.

20) outline of his classification as follows:

- class 1 → Monandria (flowers with 1 stamen)
- class-2 → Diandria (flowers with 2 stamens)
- class-3 → Triandria (flowers with 3 stamens and so on - - -

- Merits of classification :-

1) The only merit of this system is the quick and easy identification of plants based on one or a few characters.

- Demerits :-

1) The system is not at all sexual in proper sense.

2) The monocot dicot & Gymnosperms plants are not considered separately.

3) Members of monocot & dicot become very close.

4) Examples → Hexandria (6 stamens in flower) & Alisma (Alismaceae of monocot) and Rumex (Polygonacea of Dicot) come very close.

.2

Bentham & Hooker's classification

Introduction

1) George Bentham (1800-1884) and Joseph Dalton Hooker (1817-1911) the two British botanists were associated with Royal Botanical Garden

2) They published a monumental work on Genera plantarum (1862-1883) in 3 volumes.

02

3) The first part of Genera Plantarum appeared in July 1862

4) The last part appeared in April 1883.

5) They have provided first rate descriptions of the families and genera of seed plants then known.

classification of Bentham & Hookers

1) Bentham and Hooker divided the seed plants into Dicotyledons, Gymnosperms and monocotyledony

2) They placed Ranales in the beginning and grasses at the end.

3) Their treatment is inconsistent with present day understanding of the groups.

4) The gymnosperms are a distinct group from the angiosperms and their placement between monocot & dicot is inconsistent with our current understanding of this group.

5) The position of Apocarpae among monocotyledons is incorrect & they should have been placed in the monocot. 02

6) Bentham & Hooker divided seed plants into 3 classes.

- Dicotyledons
- ~~Monocotyl~~ Gymnosperms
- Monocotyledons

7) In this classification of system there are, 3 sub-classes, 24-series, 25 cohorts and 202 orders (initially 200 orders)

Orders - Vochysiaceae & Cyrillae were incorporated later.

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Date:

outline of classification

8) Class - 1 Dicotyledons →

- Two cotyledons present.
- Exogenous growth.

Example → Polypetalae (sub-class)
Thalamiflorae (series)
Ranales (cohort)
Ranunculacea (order)

9) ~~order~~ class - 2 monocotyledons :-

- one cotyledon
- Endogenous growth.
- orders : 167 (Hydrocharideae)

Example

10) Class - 3 Gymnospermae

- orders - 164 (Gnetales -)
  165 (Coniferae)
  166 (Cycadaceae).

★ Merits

- It is a natural system of classification.
- It includes geographical distribution of genera & species.
- The gymnosperms are placed as a separate had been done by Candolle
- The monocots placed after dicots which are accepted by present day
- taxonomists.
- The sequence adopted in the classification suggests an evolutionary pattern.

Demerits :-

1) classification does not include origin of angiosperms.

2) position of gymnosperms between dicot & monocot is inappropriate.

3) Arrangement of monocot is unnatural and unphylogenetic.

.3

APG - III system of classification :-

Introduction :-

1) To establish a consensus view of classification of flowering plants, an International group of flowering plant systematist christened as the Angiosperm Phylogeny Group (APG).

2) came together & propose a classification based on sound phylogenetic data sets in 1998.

02

3) Till 2010, three versions of classification have been proposed by this group. that was published in 1998, 2003 & 2009 each superseding the previous system.

4) Peter F. Stevens, one of the authors of all three of the APG classification.

5) Maintains a web site, APweb, hosted by the Missouri Botanical Garden, which regularly update information since 2001.

6) Angiosperms classification and the APG until detailed genetic evidence became available.

7) The classification of flowering plants (Angiosperms) was based on their morphology (particularly that of the flower) and their biochemistry (what kinds of chemical compounds they contained or produced).

Date :

8) Classification systems were typically produced by an individual botanist or by a small group.

APG-III system of classification

→ To fill fwether gaps in APG-II an to develop a much more stabilized classification →

1) with recomendations of different scie groups around the world, a revise and updated version of APG was published in October 2009 by a team 8 scientists is the name of APG-III.

2) APG-III recognizes 413 families
Example → Sabiaceae, Boraginace

3) It contains 59 orders.
Example → Amborellales, Nymphaeales

4) out of 413 families of APG-III, 127 are monotypic.

5) 28 families represented by single species.

6) The largest family is Orchidaceae.

7) perusal of the literature has revea that of 413 families, 259 represente in India.

Date :

Molecular systematics :-

1) Simpson (1961) suggests that systematics include identification, taxonomy classification and nomenclature and in accordance with a particulare and well established plan.

2) In systematics there is scientific study of the kinds and diversity of organism and of any and all relationships between them.

3) de candolle (1813) first coined the term taxonomy.

4) classification denotes arrangement of single plant or group.

5) The basic unit of classification are. family, order, class & division.

6) The usage of the terms taxonomy and systematics with regard to biological classification varies greatly.

7) Definition → American evolutionist Ernst mayer has stated that taxonomy is the theory and practice of classifying organisms.

8) "systematics is the science of the diversity of organisms".

Test

Tuesday
08/10/24

Q. Give an account on taxonomic evidence in relation to embryology.

Q. Write briefly on taxonomic evidence in relation to cytology and phytochemistry.

	Name	sign
1)	Kanak. A. Thakre	A Thakre
2)	Harshlata. H. Thakre	HThakre
3)	Bhupesh R. Moreliar	
4)	Mayuri P. Digrase	Digrase.
5)	Rani M. Wanjari	
6)	Aishwaryya Sawarekar	Sawarekar

Name :- Aishwaryq S. Sawardekar Date :- 08/10/24

Test – Taxonomic Evidence

8½/24

Q.1 Give an account on taxonomic evidence in relation to embryology

Q.2 Write briefly on taxonomic evidence in relation to cytology and phytochemistry.

Q.1

Ans. – **Introduction :→**

- Taxonomy defined as the study of arrangement, identification and classification of plants.
- Taxonomy comes from word "taxus" means arrangement and "nomous" means study of rule. 01
- Taxonomy helps for identification of plants species.
- Taxonomy and systematics are interconnected with each other.
- Taxonomy deals with the study of ~~comes~~ morphological characters of plants.
- It includes habit, root type, stem, leaves, floral morphology, fruit type, seed, etc.

Taxonomic evidence :→

1) Taxonomic evidences referred to the identification and classification of group of naming organisms.

2) morphological characters gives only external structure of plants.

3) But, anatomical characters shows or describe internal structure of plants. 1 1/2

4) The word "morphology" comes from "morpha" — form and logous → study.

5) Taxonomic evidences are comes from debris of plant or from sedimentary rocks.

6) The individual of same groups share common morphological characters.

7) When morphological characters are unable to identify plants then anatomical characters must be used for identification of plants.

8) Morphology is basic tool for study of taxonomic evidences.

Embryology :→

1) Embryology is the branch of science which deals with the study of embryo.

2) Embryology includes the phases like gametogenesis, sporogenesis, embryogenesis etc.

Gametogenesis :→

3) The formation of gametes are called gametogenesis.

4) Sporogenesis → formation of spores.

5) Embryogenesis :- formation and growth are development of embryo.

6) Embryology includes development of anther.

7) Embryology deal with the study of growth and development of embryo.

8) It also includes study of ovule.

9) There is formation of seed after development of embryo.

10) Embryology helps for study ~~of~~ are identification of plants.

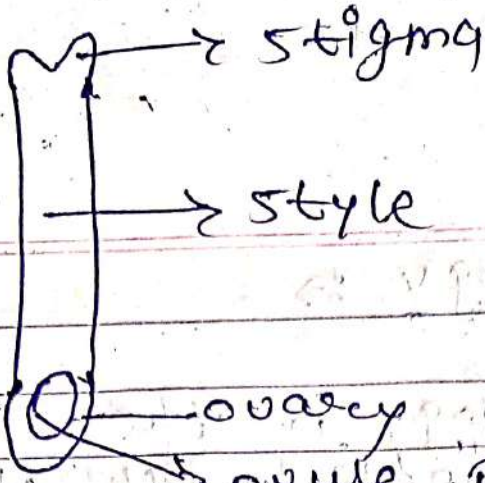
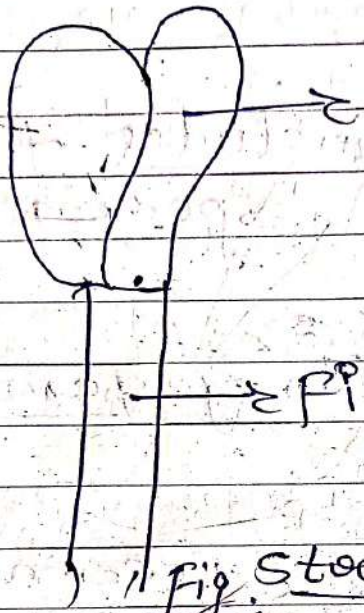
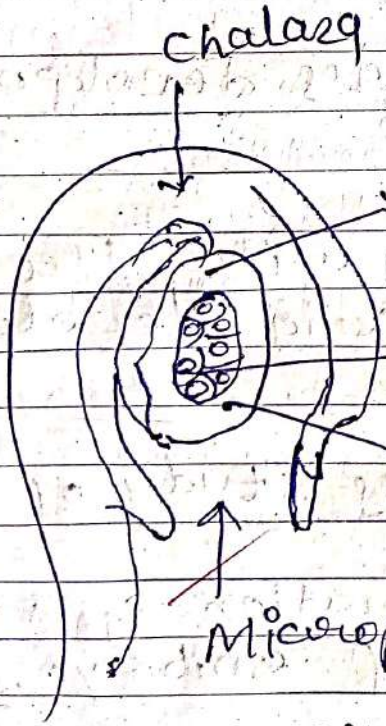


Fig. Female gametophy



01/2/

Fig. Structure of Anther (male) gametophyte)



01/2/

Fig. structure of ovule

Q.2

Page No.
Date:

Cytology

1) The branch of science deals with the study of cells of plants is called cytology

2) Cytology includes study of cells, tissues of plants.

3) Cytology deals with the study of cell wall, plasma membrane, structure of chromosome etc. ½

4) Additionally, cytology includes study of chromosome number structure, size, shape, etc.

5) Cytology helps in the study of taxonomic evidences.

6) Cytology helps in the identification of plants.

7) In cytology there is study of chromosomes and their structure. helps for identification of plants species in taxonomy relation to.

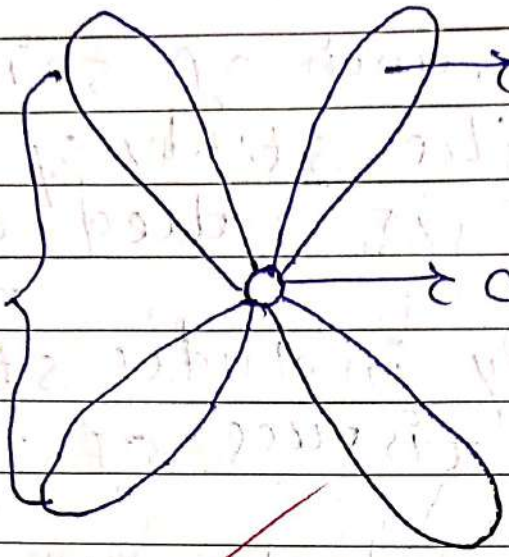


Fig. Structure of Chromosome

★ Chromosome (Structure)

1) Chromosome have rod like shape.
2) They consists of centromere, chromatids, chromatin fibres, etc.
3) On the basis of position of centromere chromosomes classified into following types.

- Telocentric
- Metacentric
- Acrocentric

c) Telocentric :→
centromere present on terminal site.

b) Metacentric :→
centromere present on middle portion.

c) Acrocentric →
centromere present on tip of the chromosome.

4) on the basis of number chromosomes classified into → two types :→

a) Haploid
b) Diploid

a) Haploid :→
- They have single set of chromosomes.
- Denoted by 'n'.

b) Diploid :→
- they have two set of chromosomes.
- Denoted by '2n'.
- Example → Human (2 sets of chromosom Have

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Date :

✱ Phytochemistry

1) The branch of science which deals with the chemicals found in plants are called phytochemistry.

2) phytochemistry comes from "phyton" → plants and chemistry, study of chemical compounds.

3) There is several phytochemicals are found in plants. such as alkaloids, betalains, anthocyanins, glucosinolates, terpenoids, etc.

4) The pigments like Auxin, cytokinin, gibberellins, Ethylene, abscic acid also found in plants.

5) phytochemistry helps for identification of several plants.

6) phytochemistry is one of the basic tool for study of taxonomic evidences.

Test

15/10/2024

Q. What is bacterial transformation ? and its properties

Q. What are the Methods of transformation of bacteria ?

Sr No.	Name	Sign
1)	Kanak. A. Thakre	Thakre
2)	Harshlata G. Thakre	HGThakre
3)	Vikita. D. Damdhare	Damdhare
4)	Bhupesh R. Morekar	RBmorekar
5)	Pragakta R. Nasare	Rasare
6)	Mayuri P. Digrase	PDigrase
7)	Rani M. Wanjari	Rani
8)	Aishwarya S. Jawarekar	Jawarekar

Ku. Harshlata G. Thakre

5½/24

1.Q] what is bacterial transformation and write down its properties.

2.Q] what are the Methods of Tranformation of Bacteria.

Q 1] → 1) Bacterial transformation, it is the process as uptake of foreign DNA by the cell.

2) It is the process by which the cell uptake and incoperated the foreign genetic material into it's genome.

3) Bacteria can take up foreign DNA in a process called as transformation.

01 4) transformation is a key step in DNA cloning.

5) It's occur after restriation digestion & ligation and transfer newly made plasmid to bacteria.

6) DNA cloning is a process of making many copies of a specific piece of DNA, such as gene.

7) (I) In cloning experiment, the researchers first insert a specific piece of DNA into a circular plasmid.

8) ~~we can use re~~ (II) This method

can use restriation enzyme
and ligase is called as
ligation.

9) After ligation the next s
is tranfer of DNA into t
bacteria

10) This process is called as
transformation.

11) we can uses the antibiot
& DNA analysis to identi
the Bacteria that contai
the plasmid.

12) This are the four step
bacterial transformation

13) cloning, ligation,
restriction & than trans
mation.

14) After this step we can
uses as antibiotic to
identification of DNA
contain plasmid.

15) It is the process used in
genetic engineering for
making genomically mod
oryanisms (GMOs).

2] → Methods of Transformation of Bacteria:

1) Bacteria can take up foreign DNA in a process called as Bacterial transformation.
2) It's occurs after restriction & ligation transfer DNA into bacteria.
3) There are some methods are used for Bacterial transformation.
4) Such methods are calcium chloride method, In using virons method & electroporation method.

1½

- Calcium chloride method :-

1) This method is commonly used for foreign DNA.
2) It is the process commonly used to introduce the foreign DNA to bacteria.
3) This process is called as the bacterial transformation.
4) It allow to DNA interact with cacl2 to make bacterial cell wall more permeable.
5) These are few step of calcium chloride method.
6) step I :- formation of compenent cell.

7) step II :- Incubation.
step III :- Adding DNA
step IV :- Heat shock
step V :- Recovering and
step VI :- selection.

8) Step - I :- Formation of compo
nent cell :-
Bacterial cell treated to calcium ion chloride solution to make bacterial cell wall more permeable to DNA.

9) Step - II :- Incubation :- After treated with CaCl2 soluti
on then Incubated on ice about 30 min

10) Step - III :- Adding DNA :-
After incubation on ice then added plasmid DNA & gently mixed.

11) Step - IV :- Heat shock :-
After Adding DNA & mix well gently then Heat higher temp 90° C, then placed back quickly on ice.
- Heat shock process creat thermal imbalance to make DNA transfer into bacterial cell easily.

12) Step V :- Recovering :- recove to
After Heat-shock it's able to transfer in nutrient rich-medium.

13) Step VI :- Selection :- After Recoving we selected the transfer in agar media & store for next used.

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UNIT TEST ATTENDENCE

Class:-B.Sc. I (Sem. I) Subject:-ELECTRONICS Paper-1-Unit-1

Date: 26/08/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Bharat R. Rushiya	Bharat	19
2	Krutika R. Junghare	K.R.Junghare	00
3	Madhavi V. Bhongale	AB	
4	Gunjan M. Shembekar	Gshembekar	03
5	Tina R. Mahoriya	Tmahoriya	01
6	Harshada A. Bodad	Hbodad	01
7	Prachi G. Deshmuklh	AB	
8	Roshni D. Uikey	AB	
9	Kalyani A. Renghe	K.A.Renghe	03
10	Poonam I. Dupare	AB	
11	Nilesh S. Gadre	Ngadre	00
12	Vaishavi H. Sahare	AB	
13	Pragati Rewatkar	Prewatkar	03
14	Hujef Sheikh	hujefa	02
15	Kalyani R. Kadwe	Rkadwe	01
16	Nandini R. Bhongale	AB	
17	Bhawana R. Werulkar	AB	

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Class:-**B.Sc. I (Sem. I)** Subject:-**ELECTRONICS Paper-I-Unit-II**

Date: 10/10/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Bharat R. Rushiya	AB	
2	Krutika R. Junghare	AB	
3	Madhavi V. Bhongale	mBhongale.	04
4	Gunjan M. Shembekar	AB	
5	Harshada A. Bodad	AB	
6	Prachi G. Deshmuklh	AB	
7	Roshni D. Uikey	AB	
8	Kalyani A. Renghe	AB	
9	Poonam I. Dupare	AB	
10	Nilesh S. Gadre	AB	
11	Vaishavi H. Sahare	AB	
12	Pragati Rewatkar	AB	
13	Hujef Sheikh	AB	
14	Kalyani R. Kadwe	KRKadwe	09
15	Nandini R. Bhongale	AB	
16	Bhawana R. Werulkar	AB	

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Class:-B.Sc. I (Sem. I) Subject:-ELECTRONICS Paper-I-Unit-III

Date: 15/12/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Bharat R. Rushiya	Rushiya	16
2	Krutika R. Junghare	AB	
3	Madhavi V. Bhongale	AB	
4	Gunjan M. Shembekar	AB	
5	Harshada A. Bodad	AB	
6	Prachi G. Deshmuklh	AB	
7	Roshni D. Uikey	AB	
8	Kalyani A. Renghe	AB	
9	Poonam I. Dupare	AB	
10	Nilesh S. Gadre	AB	
11	Vaishavi H. Sahare	AB	
12	Pragati Rewatkar	AB	
13	Hujef Sheikh	AB	
14	Kalyani R. Kadwe	AB	
15	Nandini R. Bhongale	AB	
16	Bhawana R. Werulkar	AB	

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Class:-B.Sc. I (Sem. I) **Subject:-ELECTRONICS Paper-2-Unit-1**

Date: 21/09/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Bharat R. Rushiya	AB	—
2	Krutika R. Junghare	K.R.Junghare	09
3	Madhavi V. Bhongale	AB	—
4	Gunjan M. Shembekar	Gshembekar	04
5	Tina R. Mahoriya	AB	—
6	Harshada A. Bodad	AB	—
7	Prachi G. Deshmuklh	AB	—
8	Roshni D. Uikey	AB	—
9	Kalyani A. Renghe	AB	—
10	Poonam I. Dupare	AB	—
11	Nilesh S. Gadre	AB	—
12	Vaishavi H. Sahare	Dohare	06
13	Pragati Rewatkar	Rewatkar	10
14	Hujef Sheikh	hujefs	10
15	Kalyani R. Kadwe	Rkadwe	12
16	Nandini R. Bhongale	AB	—
17	Bhawana R. Werulkar	Bhwerulkar.	05

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Class:-**B.Sc. I (Sem. I)** Subject:-**ELECTRONICS Paper-II-Unit-I**

Date: 18/12/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Bharat R. Rushiya	AB	
2	Krutika R. Junghare	AB	
3	Madhavi V. Bhongale	AB	
4	Gunjan M. Shembekar	AB	
5	Harshada A. Bodad	AB	
6	Prachi G. Deshmuklh	AB	
7	Roshni D. Uikey	AB	
8	Kalyani A. Renghe	K.A.Renghe	11
9	Poonam I. Dupare	AB	
10	Nilesh S. Gadre	AB	
11	Vaishavi H. Sahare	AB	
12	Pragati Rewatkar	Rewatkar	13
13	Hujef Sheikh	AB	
14	Kalyani R. Kadwe	KRKadwe	12
15	Nandini R. Bhongale	AB	
16	Bhawana R. Werulkar	AB	

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Class:-**B.Sc. I (Sem. I)** Subject:-**ELECTRONICS Paper-II-Unit-II**

Date: 19/10/2023
21/10/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Bharat R. Rushiya	Rushiya	15
2	Krutika R. Junghare	AB	—
3	Madhavi V. Bhongale	AB	—
4	Gunjan M. Shembekar	AB	—
5	Harshada A. Bodad	AB	—
6	Prachi G. Deshmuklh	AB	—
7	Roshni D. Uikey	AB	—
8	Kalyani A. Renghe	AB	—
9	Poonam I. Dupare	AB	—
10	Nilesh S. Gadre	AB	—
11	Vaishavi H. Sahare	AB	—
12	Pragati Rewatkar	Rewatkar	13
13	Hujef Sheikh	hujefa	10
14	Kalyani R. Kadwe	KRkadwe	14
15	Nandini R. Bhongale	AB	—
16	Bhawana R. Werulkar	AB	—

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Class:-**B.Sc. I (Sem. I)** Subject:-**ELECTRONICS Paper-II-Unit-IV**

Date: 28/10/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Bharat R. Rushiya		16
2	Krutika R. Junghare	AB	
3	Madhavi V. Bhongale	AB	
4	Gunjan M. Shembekar		09
5	Harshada A. Bodad	AB	
6	Prachi G. Deshmuklh	AB	
7	Roshni D. Uikey	AB	
8	Kalyani A. Renghe	AB	
9	Poonam I. Dupare	AB	
10	Nilesh S. Gadre	AB	
11	Vaishavi H. Sahare	AB	
12	Pragati Rewatkar	AB	
13	Hujef Sheikh		08
14	Kalyani R. Kadwe	AB	
15	Nandini R. Bhongale	AB	
16	Bhawana R. Werulkar		08

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Class:-B.Sc. I (Sem. II) **Subject:-ELECTRONICS Paper-I-Unit-I**

Date: 18/12/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Bharat R. Rushiya	Rushiya	13
2	Krutika R. Junghare	AB	
3	Gunjan M. Shembekar	Gshwa	12
4	Harshada A. Bodad	AB	
5	Prachi G. Deshmuklh	AB	
6	Roshni D. Uikey	AB	
7	Kalyani A. Renghe	K.A Renghe	14
8	Vaishavi H. Sahare	Sahare	09
9	Pragati Rewatkar	Rewatkar	12
10	Hujef Sheikh	hujefa	09
11	Kalyani R. Kadwe	Rkadwe	14
12	Bhawana R. Werulkar	Bhawang.	10
13		AB	

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Class:-**B.Sc. I (Sem. II)** Subject:-**ELECTRONICS Paper-I-Unit-II**

Date: 12/03/2024

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Bharat R. Rushiya	Rushiya	14
2	Krutika R. Junghare	AB	
3	Gunjan M. Shembekar	Gshembekar	08
4	Harshada A. Bodad	AB	
5	Prachi G. Deshmuklh	AB	
6	Roshni D. Uikey	AB	
7	Kalyani A. Renghe	AB	
8	Vaishavi H. Sahare	AB	
9	Pragati Rewatkar	Rewatkar	12
10	Hujef Sheikh	hujefe	11
11	Kalyani R. Kadwe	AB	
12	Bhawana R. Werulkar	Bhawane	10
13			

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Class:-**B.Sc. I (Sem. II)** Subject:-**ELECTRONICS Paper-I-Unit-III**

Date: 02/04/2024

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Bharat R. Rushiya	AB	
2	Krutika R. Junghare	AB	
3	Gunjan M. Shembekar	Gshm	09
4	Harshada A. Bodad	AB	
5	Prachi G. Deshmuklh	AB	
6	Roshni D. Uikey	Ruikey	08
7	Kalyani A. Renghe	AB	
8	Vaishavi H. Sahare	Sahare	09
9	Pragati Rewatkar	Rewatkar	13
10	Hujef Sheikh	AB	
11	Kalyani R. Kadwe	AB	
12	Bhawana R. Werulkar	Bhawana.	09
13			

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Class:-B.Sc. I (Sem. II) **Subject:-ELECTRONICS Paper-II-Unit-I**

Date: 28/03/2024

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Bharat R. Rushiya	Bushiya	16
2	Krutika R. Junghare	AB	
3	Gunjan M. Shembekar	AB	
4	Harshada A. Bodad	AB	
5	Prachi G. Deshmuklh	AB	
6	Roshni D. Uikey	AB	
7	Kalyani A. Renghe	K.A.Renghe.	12
8	Vaishavi H. Sahare	AB	
9	Pragati Rewatkar	Rewatkar	13
10	Hujef Sheikh	hujefa.	06
11	Kalyani R. Kadwe	KRkadwe	15
12	Bhawana R. Werulkar	Bhawana.	10
13			

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UNIT TEST ATTENDENCE

Class:-**B.Sc. I (Sem. II)** Subject:-**ELECTRONICS Paper-II-Unit-II**

Date: 17/04/2024

22/04/2024

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Bharat R. Rushiya	AB	
2	Krutika R. Junghare	AB	
3	Gunjan M. Shembekar	Gshembekar	11
4	Harshada A. Bodad	AB	
5	Prachi G. Deshmuklh	AB	
6	Roshni D. Uikey	AB	
7	Kalyani A. Renghe	K.A Renghe	14
8	Vaishavi H. Sahare	Dahare	10
9	Pragati Rewatkar	AB	
10	Hujef Sheikh	AB	
11	Kalyani R. Kadwe	KRkadwe	15
12	Bhawana R. Werulkar	Bhawana.	09
13			

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UNIT TEST ATTENDENCE

Class:-B.Sc. II (Sem. III) Subject:-ELECTRONICS Paper-I-Unit-1

Date: 16/09/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Anjali N. Gaikwad	AB	
2	Kunal G. Gawande		13
3	Kushal R. Nasare	K.R.nasare	18
4	Lukesh G. Sawarkar		18
5	Nayan S. Yelekar	NSYelekar	07
6	Sarvesh M. Gajbhiye	AB	
7	Dhanshri G. Kalambe	D.G.Kalambe	09
8	Divya R. Kumbhare	Divya	08
9	Nikita N. Chauhan		05
10	Toshika K. Deshmukh	Deshmukh	11
11	Chintu Y. Hajare		13
12	Laxmikant S. Khandait	L.S.Khandait	04
13	Samyek R. Panchbhai	AB	
14	Sharukh U. Pathan		10
15	Tushar D. Waghmare	AB	
16	Yash R. Junghare		17

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Class:-B.Sc. II (Sem. III) **Subject:-ELECTRONICS Paper-II-Unit-1**

Date: 09/10/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Anjali N. Gaikwad	Anjali	06
2	Kunal G. Gawande		11
3	Kushal R. Nasare	K. Rnasare	17
4	Lukesh G. Sawarkar		18
5	Nayan S. Yelekar	Yelekar	05
6	Sarvesh M. Gajbhiye	AB	—
7	Dhanshri G. Kalambe	D.G. Kalambe	04
8	Divya R. Kumbhare	AB	—
9	Nikita N. Chauhan	AB	—
10	Toshika K. Deshmukh	Deshmukh	13
11	Chintu Y. Hajare	AB	—
12	Laxmikant S. Khandait	AB	—
13	Samyek R. Panchbhai		02
14	Sharukh U. Pathan	AB	—
15	Tushar D. Waghmare	Waghmare	10
16	Yash R. Junghare		13

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UNIT TEST ATTENDENCE

Class:-B.Sc. II (Sem. III) **Subject:-ELECTRONICS Paper-II-Unit-I**

Date: 04/03/2024

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Anjali N. Gaikwad	AB	—
2	Kunal G. Gawande		12
3	Kushal R. Nasare	K.R.Nasare	18
4	Lukesh G. Sawarkar		17
5	Nayan S. Yelekar	AB	—
6	Sarvesh M. Gajbhiye		10
7	Dhanshri G. Kalambe	AB	—
8	Divya R. Kumbhare		06
9	Nikita N. Chauhan		04
10	Toshika K. Deshmukh	AB	—
11	Chintu Y. Hajare	AB	—
12	Laxmikant S. Khandait	AB	—
13	Sharukh U. Pathan	AB	—
14	Yash R. Junghare		10

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Class:-B.Sc. II (Sem. III) Subject:-ELECTRONICS Paper-II-Unit-II

Date: 21/10/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Anjali N. Gaikwad	AB	—
2	Kunal G. Gawande	AB	—
3	Kushal R. Nasare	K.R.nasar	16
4	Lukesh G. Sawarkar	AB	—
5	Nayan S. Yelekar	Yelekar	05
6	Sarvesh M. Gajbhiye	AB	—
7	Dhanshri G. Kalambe	AB	—
8	Divya R. Kumbhare	AB	—
9	Nikita N. Chauhan	AB	—
10	Toshika K. Deshmukh	AB	—
11	Chintu Y. Hajare		17
12	Laxmikant S. Khandait	AB	—
13	Samyek R. Panchbhai	AB	—
14	Sharukh U. Pathan	Upathan	09
15	Tushar D. Waghmare	AB	—
16	Yash R. Junghare	Yjunghare	12

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UNIT TEST ATTENDENCE

Class:-B.Sc. II (Sem. III) **Subject:-ELECTRONICS Paper-II Unit-III**

Date: 28/10/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	Anjali N. Gaikwad	AB	
2	Kunal G. Gawande		12
3	Kushal R. Nasare	AB	
4	Lukesh G. Sawarkar	Lgsawkar	17
5	Nayan S. Yelekar	Yelekar	04
6	Sarvesh M. Gajbhiye	AB	
7	Dhanshri G. Kalambe	D.G.kalambe	06
8	Divya R. Kumbhare	divya	08
9	Nikita N. Chauhan	Chauhan	04
10	Toshika K. Deshmukh	Deshmukh	14
11	Chintu Y. Hajare		15
12	Laxmikant S. Khandait	L.S.Khandait.	04
13	Samyek R. Panchbhai	AB	
14	Sharukh U. Pathan	Pathan	10
15	Tushar D. Waghmare	Waghmare	11
16	Yash R. Junghare	Yghare	14

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Class:-B.Sc. III (Sem. V) **Subject:-ELECTRONICS Paper-1-Unit-I**

Date: 09/10/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	ANKUSH ASHOK BHANGE	AB	
2	GEETKUMAR ASHOKRAO BHASME	GAB	07
3	NAYAN KAILASRAO SAMBHARE	AB	
4	NEHA SUDHAKAR KAKDE	NSkakde	07
5	PARANAY PRAMOD MALVI		06
6	PRAGATI GUNVANTA MUNNE	PGMunne	05
7	ROHIT RAJU JAISWAL	AB	

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Class:-B.Sc. III (Sem. V) Subject:-ELECTRONICS Paper-2-Unit-1

Date: 18/08/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	ANKUSH ASHOK BHANGE	ABhang	12
2	GEETKUMAR ASHOKRAO BHASME	GABh	08
3	MONIKA WAMAN TAJANE	AB	—
4	NAYAN KAILASRAO SAMBHARE	AB	—
5	NEHA SUDHAKAR KAKDE	NSKakde	10
6	PARANAY PRAMOD MALVI	P. P. Malvi	07
7	PRAGATI GUNVANTA MUNNE	AB	—
8	PRAVINA PANDURANG LOKHANDE	Pravina	06
9	ROHIT RAJU JAISWAL	AB	—
10	SANKALP DILIP BAVISKAR	AB	—

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Class:-**B.Sc. III (Sem. V)** Subject:-**ELECTRONICS Paper-2-Unit-II**

Date: 16/09/2023

Sr. No.	Name of Student	Signature	Total Marks (20)
1	ANKUSH ASHOK BHANGE		09
2	GEETKUMAR ASHOKRAO BHASME		06
3	NAYAN KAILASRAO SAMBHARE		04
4	NEHA SUDHAKAR KAKDE	AB	—
5	PARANAY PRAMOD MALVI	P.P.malvi	05
6	PRAGATI GUNVANTA MUNNE	AB	—
7	ROHIT RAJU JAISWAL	AB	—

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Class:-**B.Sc. III (Sem. VI)** Subject:-**ELECTRONICS Paper-1-Unit-I**

Date: 24/02/2024

Sr. No.	Name of Student	Signature	Total Marks (20)
1	ANKUSH ASHOK BHANGE	AB	
2	GEETKUMAR ASHOKRAO BHASME	GABh	08
3	NAYAN KAILASRAO SAMBHARE	AB	
4	NEHA SUDHAKAR KAKDE	Nskakde	05
5	PARANAY PRAMOD MALVI	P. P. Malvi	05
6	PRAGATI GUNVANTA MUNNE	AB	

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Class:-**B.Sc. III (Sem. VI)** Subject:-**ELECTRONICS Paper-2-Unit-I**

Date: 13/02/2024

Sr. No.	Name of Student	Signature	Total Marks (20)
1	ANKUSH ASHOK BHANGE	ABhange	08
2	GEETKUMAR ASHOKRAO BHASME	AB	—
3	NAYAN KAILASRAO SAMBHARE	AB	—
4	NEHA SUDHAKAR KAKDE	NSkakde	10
5	PARANAY PRAMOD MALVI	Pmalvi	09
6	PRAGATI GUNVANTA MUNNE	Pgmunne	09

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Class:-**B.Sc. III (Sem. VI)** Subject:-**ELECTRONICS Paper-2-Unit-II**

Date: 28/03/2024

Sr. No.	Name of Student	Signature	Total Marks (20)
1	ANKUSH ASHOK BHANGE	AB	
2	GEETKUMAR ASHOKRAO BHASME	GABh	07
3	NAYAN KAILASRAO SAMBHARE	AB	
4	NEHA SUDHAKAR KAKDE	Nskakde	08
5	PARANAY PRAMOD MALVI	PPMalvi	07
6	PRAGATI GUNVANTA MUNNE	PGMunne	07

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Nabira Mahavidyalaya, Katol
DEPARTMENT OF ELECTRONICS
Session: 2023-2024

Class:-**B.Sc. I (Sem. I)** Subject:-**ELECTRONICS** Date: 23/10/2023

S.N.	Name of Student	Assignment Submission	Record submission	
1	Bharat R. Rushiya	✓	✓	
2	Krutika R. Junghare	✓ L	✓ L	
3	Madhavi V. Bhongale			
4	Gunjan M. Shembekar	✓	✓ L	
5	Harshada A. Bodad			
6	Prachi G. Deshmuklh			
7	Roshni D. Uikey	✓	✓ Incomplete	
8	Kalyani A. Renghe	✓	✓	
9	Poonam I. Dupare			
10	Nilesh S. Gadre			
11	Vaishavi H. Sahare	✓	✓ L	
12	Pragati Rewatkar	✓	✓	
13	Hujef Sheikh	✓	✓	
14	Kalyani R. Kadwe	✓	✓	
15	Nandini R. Bhongale			
16	Bhawana R. Werulkar	✓	✓ L	

Class:-**B.Sc. II (Sem. III)** Subject:-**ELECTRONICS** Date:

S.N.	Name of Student	Assignment Submission	Record submission	
1	Anjali N. Gaikwad	✓	✓	
2	Kunal G. Gawande	✓	✓	
3	Kushal R. Nasare	✓	✓	
4	Lukesh G. Sawarkar	✓	✓	
5	Nayan S. Yelekar	✓	✓	
6	Sarvesh M. Gajbhiye	✓	✓	
7	Dhanshri G. Kalambe	✓	✓	
8	Divya R. Kumbhare	✓	✓	
9	Nikita N. Chauhan	✓	✓	
10	Toshika K. Deshmukh	✓	✓	
11	Chintu Y. Hajare	✓	✓	
12	Laxmikant S. Khandait	✓	✓	
13	Samyek R. Panchbhai	✓	✓	
14	Sharukh U. Pathan	✓	✓	
15	Tushar D. Waghmare		✓	
16	Yash R. Junghare	✓		

Class:-**B.Sc. III (Sem. V)** Subject:-**ELECTRONICS**

S.N.	Name of Student	Assignment Submission	Record submission	
1	Ankush A. Bhange	✓	✓	
2	Geetkumar A. Bhasme	✓	✓	
3	Nayan K. Sambhare			
4	Neha S. Kakade	✓	✓	
5	Pranay P. Malavi		✓	
6	Pragati G. Munne	✓	✓	
7	Rohit R. Jaiswal			

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Date: 18th Oct. 23

Shrikrupa
Page :
Date :

Seminar "Presentation on Eminent Scientist"

Department of Electronics organized Seminar "presentation on Eminent Scientist" on dated 18th Oct. 2023 at 10.30 AM. The following students were present in this presentation.

Sr.	Name of student	Semester	sign
1)	Joshika Deshmukh	III	Deshmukh
2)	Geetkumar A. Bhasme	V	
3)	Ankush A. Bhange	V	ABhan
4)	Pragati D. Rewatkar	I	Rewatkar
5)	ROSHANI UIKEY	I	Uikey
6)	Vaishnavi Sahare	I	Sahare
7)	Bhavana R. Werulkar	I	Bhenug.
8)	Gunjan Mahembekar	I	Mahembekar
9)	Bharat R. Rushiya	I	
10)	Kalyani A. Renghe	I	K.A.Renghe
11)	Kalyani R. Kadwe	I	Kkadwe
12)	Lokesh G. Sawarkar	III	
13)	KUSHAL R. NASARE	III	K.R.nasare

18/10/23

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