

M.Sc. 4th Semester Examination, 2024

BOTANY

(Molecular Systematics)

(Practical)

PAPER—BOT-495(A)

Full Marks : 25

Time : 3 hours

Answer **all** questions

The figures in the right hand margin indicate marks

1. (a) Write down the Principle of Chromatography. What is R_f ?

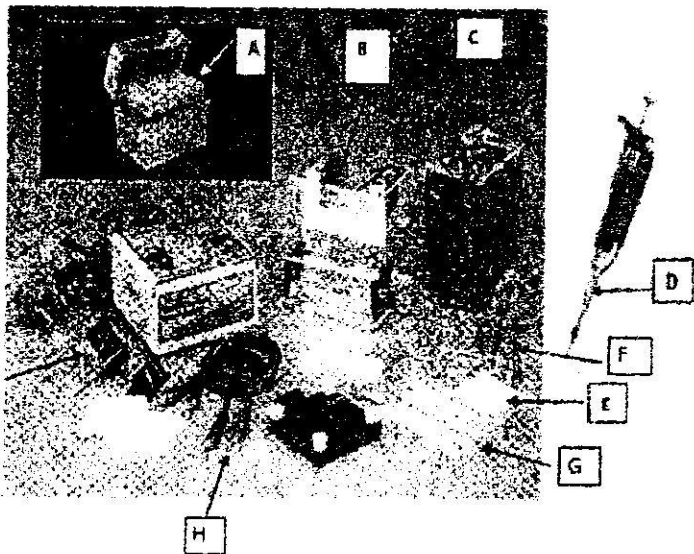
(b) TLC was performed with 4 standard amino acids (A, B, C & D). After developing the Chromatogram, the distance moved by amino acids A, B, C and D

was found to be 1.3 cm, 4.2 cm, 3.5 cm and 2.8 cm respectively. Find out the Rf values of the 4 amino acids taking the Solvent Front (distance run by solvent) as 12 cm.

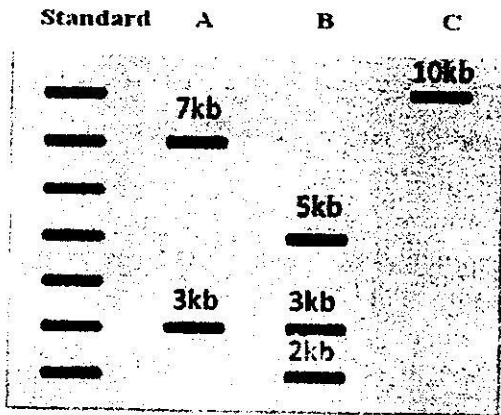
- (c) An unknown sample was chromatographed and two amino acids with Rf value 0.108 and 0.233 were detected. Identify the amino acids from the standard amino acid data obtained above. (2+2)+2+1

2. (a) Write down the Principle of Gel Electrophoresis. What is the role of SDS in SDS-PAGE ?

- (b) Identify the parts marked A-H in the following apparatus used for SDS-PAGE and mention their function. (2+1)+4



3. Sample DNA was cut with Restriction Endonuclease and agarose gel electrophoresis was performed. Following results were obtained. Interpret the data obtained and conclude on the results obtained. 4 + 2



A: Control + RE1
B: Type 1 mutated+RE1
C: Type 2 Mutated+RE1

4. Laboratory Note Book. 2
5. Viva-voce. 3

M.Sc. 4th Semester Examination, 2024

BOTANY

(Plant Pathology)

(Practical)

PAPER—BOT-495(B)

Full Marks : 25

Time : 3 hours

The figures in the right hand margin indicate marks

1. Make a suitable preparation of the supplied specimen A. Write the requirements, method, and results with suitable drawing and labelling.

(Requirements, 2; Method, 4; Results, 4;

Slide preparation, 3; Drawing, 3)

16

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|--------------------------|---|
| 2. Laboratory Note Book. | 4 |
| 3. Viva-voce. | 5 |
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M.Sc. 4th Semester Examination, 2024

BOTANY

*(Special Paper on Molecular Biology
and Biotechnology)*

(Practical)

PAPER—BOT-495(C)

Full Marks : 25

Time : 3 hours

Answer **all** questions

The figures in the right hand margin indicate marks

1. Answer the questions from the following : 10

- (a) Perform the quantitative analysis of the supplied protein(s) and comment on the result(s).

(Turn Over)

- (b) Demonstrate the tissue culture practice as instructed in the card drawn/supplied.
- (c) Quantitate the amount of DNA supplied and comment.
- (d) Estimate the molecular weight of the protein band in the supplied material.

- 2. Perform the supplied statistical analysis. 8
 - 3. Practical Note Book. 2
 - 4. Viva-voce. 5
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M.Sc. 4th Semester Examination, 2024

BOTANY

(Microbiology: Applied)

(Practical)

PAPER – BOT-495 (E)

Full Marks : 25

Time : 5 hours

Answer all questions

The figures in the right hand margin indicate marks

Perform the following experiments. Write down principle, requisition, result and comment of each experiment in answer script.

1. Identify the unknown amino acid (A) by TLC using standard X and Y.

6

2. Prepare a phylogenetic tree using the supplied nucleotide sequence (B) [Soft copy of the sequence will be supplied] using online BLAST. 6

Or

Isolate *Azotobactor* from supplied soil sample (S).

3. Estimate concentration of protein present in supplied sample (C). 6

Or

Estimate concentration of DNA present in supplied sample (D).

4. Laboratory Note Book. 3
5. Viva-Voce. 4

M.Sc. 4th Semester Examination, 2024

BOTANY

*(Palaeobotany, Palynology & Plant Reproductive
Biology)*

(Practical)

PAPER — BOT-495 F (Special paper)

Full Marks : 25

Time : 4 hours

Answer **all** question

The figures in the right hand margin indicate marks

1. Describe the acetolysis technique of G. Erdtman (1960) for the preparation of palynological slides.

3

2. Draw and describe the palynomorphs (any three) present in sample A. 3 + 3 + 3
 3. Comment on B and C. 2 × 2
 4. Submission of practical records. 4
 5. Viva-voce. 5
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M.Sc. 4th Semester Examination, 2024

BOTANY

*(Plant physiology, Biochemistry and Molecular
Biology)*

(Practical)

PAPER – BOT-495 G

Full Marks : 25

Time : 4 hours

The figures in the right hand margin indicate marks

Perform any **two** experiments (Q. No. 1 to 5)
as indicated by the tick (✓) mark.

1. Estimation of total phenolic content in supplied specimen using colorimetry.
(Requisition-2, Procedure-3, Result-3)

2. Separation and detection of secondary metabolites through TLC.
(Requisition-2, Procedure-3, Result-3)
 3. Extraction and identification of the presence of flavonoid and alkaloid in supplied plant sample.
(Requisition-2, Procedure-3, Result-3)
 4. Extraction and identification the presence of saponin and tannin in supplied plant specimen.
(Requisition-2, Procedure-3, Result-3)
 5. Extraction total protein from plant sample and analysis by SDS PAGE.
(Requisition-2, Procedure-3, Result-3)
 6. Laboratory Notebook. 4
 7. Viva-voce. 5
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