

M.Sc. BOTANY
Third Semester
BIOPHYSICAL INSTRUMENTATION, PLANT TISSUE CULTURE,
PALYNOLOGY AND DEVELOPMENTAL BOTANY
(MSB - 302)

Duration: 3Hrs.

Full Marks: 70

Part-A (Objective) =20
Part-B (Descriptive) =50

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

Answer any *four* from *Question no. 2 to 8*
Question no. 1 is compulsory.

1. What is gel electrophoresis? Describe the process of Southern Blotting with diagram. (10)
2. Write short notes on: (5+5=10)
a) cDNA genomic library b) Shuttle vectors
3. Write with proper diagram the instrumentation of HPLC. What is the utility of HPLC in biological sciences? (8+2=10)
4. Write short notes on: (5+5=10)
a) ELISA b) pH meter
5. Discuss the various steps for X-Ray diffraction study of protein. (10)
6. Write short notes on: (5+5=10)
a) Cryopreservation b) Hydroponics
7. Describe the different method of micropropagation in plant tissue culture. (10)
8. Discuss the different types of embryo sac in Angiosperms with diagram. (10)

8. A Shine – Dalgarno sequence is:
 a) RNA polymerase binding site b) DNA polymerase binding site
 c) tRNA binding site d) Ribosome binding site
9. Pollination by animals like slugs, snails, squirrels is known as:
 a) Malacophily b) Chiropteriphily
 c) Ornithophily d) Entomophily
10. The type of fruit in *Citrus aurantium* is
 a) Pepo b) Pome c) Hisperidium d) Balausta
11. In Monoclinic unit cell of the crystal with three axes (a, b, c) and interaxial angles (α , β , γ)
 a) $a=b=c$ & $\alpha \neq \beta \neq \gamma \neq 90^\circ$ b) $a \neq b \neq c$ & $\alpha = \gamma = 90^\circ \neq \beta$
 c) $a \neq b \neq c$ & $\alpha \neq \beta \neq \gamma \neq 90^\circ$ d) $a \neq b \neq c$ & $\alpha = \beta = \gamma = 90^\circ$
12. One of the following is the best tool to study the interacting residues in protein ligand interaction
 a) X-Ray crystallography b) UV-visible spectroscopy
 c) CD- spectroscopy d) Fluorescence spectroscopy
13. Which is the most frequently used wavelength in UV region?
 a) 460nm b) 663nm c) 220nm d) 340nm
14. In chromatography mass movement of substances is due to
 a) Diffusion b) Electrophoresis
 c) Paper chromatograph d) Osmosis
15. Separation of viruses is done by
 a) Isopycnic ultracentrifugation b) Zonal ultracentrifugation
 c) Contrinuous flow centrifugation d) Refrigerated high speed centrifugation
16. The production of secondary metabolite require the use of
 a) Protoplast b) Cell suspension
 c) Auxillary buds d) Meritem
17. To obtain haploi plant we culture
 a) Entire anther b) Nucleus c) Apical bud d) Embryo
18. Somaclonal variation are the one
 a) Caused by mutagen b) Produced during tissue culture
 c) Caused by gamma ray d) Induced during embryogeny
19. DMSO is used as
 a) Gelling agent b) Chelating agent
 c) All keying agent d) Cryoprotectant
20. The most widely used chemical for protoplast fusion, as fusogen is
 a) Mannitol b) Sorbitol
 c) Mannol d) Poly Ethylene Glycol (PEG)
