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)

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(MSB - 302)

Duration: 20 minutes (PART A - Objective Type)						0	
I. Choose the correct answer: 1×20=20							
1.	Bt cotton is not: a) A GM plant c) A bacterial gene e	expressing system	b) Insect resistant d) Resistant to all pesti	cides		\bigcirc	
2.	A probe which is a molecule used to loo molecules could be: a) A single stranded RNA c) Either RNA or DNA		b) A single stranded DNA d) Can be ss DNA but not ss RNA				
3.	In genetic engineering, a DNA segment (gene) of interest is transferred to the host cell through a vector. Consider the following four agents (i –iv) in this regard and select the correct option about which one or more of these can be used as a vector/vectors. i) Bacterium ii) Plasmid iii) Plasmodium iv) Bacteriophages						
	a) i, ii and iv	b) ii and iv	c) i and iv	d) i only			
4.	Which of the following statements are true for Agrobacterium mediated gene transfer? a) Vir genes are essential for gene transfer. b) T-DNA borders are essential for gene transfer. c) Both a and b. d) None of these.						
5.	The transformation n at high velocity is cal a) Acceleration meth c) Particle gun delive	lled od	ngsten or gold particles of b) High velocity method) DNA particle deliver	d	DNA acceler	rated	
6.	Which of the following a) Cyanidin c) Acetosyringone	nces vir gene expression b) Glutennin d) Dextran	?				
7.	The vectors common a) Yeast artificial chr c) CMV vectors		b) Plasmid d) M13 vectors				

8. A <i>Shine – Dalgarno</i> sequence is: a) RNA polymerase binding site c) tRNA binding site	b) DNA polymerase binding site d) Ribosome binding site			
9. Pollination by animals like slugs, snailsa) Malacophilyc) Ornithophily	squirrels is known as: b) Chiropteriphily d) Entomophily			
10. The type of fruit in <i>Citrus aurantium</i> is a) Pepo b) Pome	c) Hisperidium d) Balausta			
11.In Monoclinic unit cell of the crystal wi a) $a=b=c \& \alpha \neq \beta \neq \gamma \neq 90^{\circ}$ c) $a\neq b\neq c \& \alpha \neq \beta \neq \gamma \neq 90^{\circ}$	th three axes (a, b, c) and interaxial angles (α , β , γ) b) $a\neq b\neq c$ & $\alpha=\gamma=90^{\circ}\neq\beta$ 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 crystallographyc) CD- spectroscopy	b) UV-visible spectroscopyd) 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 sa) Diffusionc) Paper chromatograph	ubstances is due to b) Electrophoresis d) Osmosis			
15. Separation of viruses is done bya) Isopycnic ultracentrifugationc) Contrinuous flow centrifugation	b) Zonal ultracentrifugation d) Refrigerated high speed centrifugation			
16. The production of secondary metabolitea) Protoplastc) Auxillary buds	•			
17.To obtain haploi plant we culture a) Entire anther b) Nucleus	c) Apical bud d) Embryo			
18.Somaclonal variation are the onea) Caused by mutagenc) Caused by gamma ray	b) Produced during tissue culture d) Induced during embryogeny			
19.DMSO is used as a) Gelling agent c) All keying agent	b) Chelating agent d) Cryoprotectant			
20.The most widely used chemical for proto a) Mannitol c) Mannol	oplast fusion, as fusogen is b) Sorbitol d) Poly Ethylene Glycol (PEG)			
