M.Sc. BOTANY SECOND SEMESTER (SPECIAL REPEAT) MOLECULAR CELL BIOLOGY

MSB-201

[USE OMR SHEET FOR OBJECTIVE PART]

2023/08 SET

Full Marks: 70 Duration: 3 hrs. **Objective** Marks: 20 Time: 30 mins. $1 \times 20 = 20$ Choose the correct answer from the following: 1. What is the minimum distance for the eye to focus any object? b. 25 cm a. 11 cm d. 42 cm c. 32 cm 2. Oil immersion objective lens has an NA value of b. 0.85 a. 0.65 d. 1.00 c. 1.33 3. Total Magnification is obtained by_ a. Magnifying power of the objective b. Magnifying power of eyepiece d. Magnifying power of both the objective c. Magnifying power of condenser lens lens and eyepiece 4. Microfilaments are composed of a protein called: a. Tubulin b. Actin d. Chitin c. Myosin 5. Phosphatidylserine residues in the plasma membrane are located at: b. The outer leaflet of the plasma a. Inner leaflet of the plasma membrane membrane c. Evenly distributed in the inner and d. None outer leaflet 6. Nucleoporins are_ b. Ribosomes on nuclear membranes a. Nuclear pores d. None of the mentioned c. rRNAs in the nucleolus 7. The transport factors that help in the transport of molecules through the nuclear pores are known as_ b. Nucleoporins a. Nucleopherins c. Karyopherins d. Karyoporins 8. Nuclear Organizer Regions (NOR) is found in b. Nucleolus a. Nuclear matrix d. Nucleoporins c. Nuclear lamina

b. histone mRNA processing

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d. tRNA processing

9. Which of the following is not a function of Cajal bodies?

a. snRNP biogenesis

c. telomere assembly

10.	A diagram of a person's chromosome is	called?		
	a. Karyotype		Syndrome	
	c. Chromatin	d.	Fingerprint	
11.	 This force can stabilize a DNA double-he a. Hydrophilic sugar-phosphate groups are found on the exterior of the helix where interaction with water occurs c. Covalent base stacking interactions may 	b.	Hydrophobic bases are present in the interior of the helix, each base-pair is stabilized by the same number of hydrogen bonds Non-covalent N-glycosidic bonds may form	
	take place between neighbouring bases within the same strand in the helix		between nitrogenous bases in opposite strands in the helix	
12.	If the DNA strand has nitrogenous base s a. ATTGCA c. UAACGG	b.	ce ATTGCC, the mRNA will have: UGGACC ATCGCC	
13.	. In DNA, the enzyme which breaks the H ₂ bonds is:			
	a. Ligase		Helicase	
	c. Topoisomerase		Polymerase	
14.	Which of the following mechanisms will remove uracil and incorporate the correct base?			
	a. Direct repairc. Mismatch repair		Base excision repair Nucleotide excision repair	
15.	What is the main enzyme that plays a ma a. Glycosylase c. Gyrase	b.	e in formation of thymine dimer? Photolyase DNA ligase	
16.	Which two Uvr component molecules sca a. UvrC, UvrA c. UvrB, UvrC	b.	DNA during nucleotide excision <mark>repair?</mark> UvrA, UvrB UvrD, UvrA	
17.	In SOS repair system cleavage of LexA an a. RecB c. RecC	b.	nD is mediated by: RecA UvrA	
18.	Which of the following is not a type of po a. Proteolysis c. Glycosylation	ь.	slational modification? Protein folding Lipid addition	
19.	In the N-linked glycoprotein, the carbohy-bases?	drates	are attached to which of the following	
	a. Valinec. Asparagine		Threonine Serine	
20.	25 individuals in a population are homozygous dominant, then the individuals that are expected to be homozygous recessive are:			
	a. 100 c. 50	b. d.		
		2	USTM/COE/R-01	

$\left(\underline{\text{Descriptive}} \right)$

Time: 2 hr. 30 mins.					
[Answer question no.1 & any four (4) from the rest]					
1.	Describe the working principle and uses of fluorescence microscope and phase contrast microscope.	5+5=10			
2.	State the difference between SEM & TEM.	10			
3.	Describe the structure and function of plasma membrane.	10			
4.	Write short notes on: a) Lampbrush chromosome b) Polytene chromosome c) DNA A d) DNA Packaging	5+5=10			
5.	Describe the process of DNA replication in prokaryotes.	10			
6.	What are the components of an operon? Explain the positive regulation of lac operon with suitable diagrams.	3+7=10			
7.	Describe the structure and function of any two of the following types of RNAs (i) mRNA (ii) tRNA (iii) rRNA	5+5=10			
8.	Write short notes on any two of the following: (i) Wiseman's theory of evolution (ii) Synthetic theory (iii) Lamarckism (iv) Darwinism	5+5=10			