REV-01
MSB/54/60

2024/06

SET B

M.Sc. BOTANY
SECOND SEMESTER
CELL BIOLOGY
MSB-205

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins. **Full Marks: 35**

Objective

Time: 15 mins. **Marks: 10**

Choose the correct answer from the following: ***1×10=10***

1. Which of the following is less condensed, less stained portion of chromatin?
   a. Metaphase
   b. Interphase
   c. Heterochromatin
   d. Euchromatin

2. What is the site of rRNA synthesis within a cell?
   a. Chromatin
   b. Nucleolus
   c. Perinuclear space
   d. Centrosomes

3. The resolving power of TEM is derived from:
   a. Electrons
   b. Specimens
   c. Power
   d. Ocular system

4. Plasma membrane is made up of:
   a. Protein
   b. Carbohydrate
   c. Lipid
   d. Both a and b

5. Which of the following statements is true about the ends of the chromosome?
   a. The ends of the chromosome are called Satellites
   b. The ends of the chromosome are called Centromeres
   c. The ends of the chromosome are called Telomeres
   d. The ends of the chromosome are called Kinetochore

6. The G-protein coupled receptors have their .....outside the cell.
   a. Amino terminus
   b. Carboxyl terminus
   c. Alpha helices
   d. Beta helices

7. Protein kinase A is a:
   a. Completely inhibited by cyclic AMP
   b. Allosterically activated by cyclic AMP
   c. Affected by cyclic AMP only under unusual circumstances
   d. Activated by covalent binding of cyclic AMP

8. What catalyzes the cutting of PIP2 into 2 moles of IP3 and diacylglycerol in cell signalling?
   a. Phosphokinase
   b. Phospholipase C
   c. Lipokinase
   d. Phosphodiesterase C

9. The reason for daughter cells to differ from parent cells and also each other in meiosis is:
   a. Segregation and crossing over
   b. Segregation and independent assortment
   c. Segregation, crossing over and independent assortment
   d. Independent assortment and crossing over

10. Which process does the M phase of the cell cycle start with?
   a. Spindle formation
   b. Cytokinesis
   c. Interphase
   d. Karyokinesis

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(Descriptive)

Time : 1 hr. 15 mins. **Marks : 25**

[Answer question no.1 & any two (2) from the rest]

1. Discuss the working principle of Fluorescence microscope with illustrations. 5

2. What is a checkpoint in a cell cycle and how many checkpoints are in the eukaryotic cell cycle? Elaborate the role of these checkpoints. 2+1+7=10

3. What are GPCRs? Explain how the binding of a ligand initiates signal transduction throughout a cell with a suitable example of GPCRs and the role of secondary messenger for cellular response. 1+9=10

4. Describe the Fluid Mosaic Model of plasma membrane. Mention the functions of plasma membrane. 7+3=10

5. Discuss the working principle of Phase contrast microscope with illustrations. 10

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