

2. Define the terms as mentioned a) Promoter b) Helicase c) siRNA d) aptamer e) Codon

2x5=10

3. What are cell cycle checkpoints? How can we analyze the cell cycle by using Flow cytometry? Explain. (4+6)

III. Short answers (Answer seven out of nine questions) 5x7=35

1. Indicate the different steps that take place in the cell signaling pathway with a net sketch flow diagram. 5
2. Draw the different parts of the “**cell surface receptor**” with a brief explanation. 2+3=5
3. Differentiate between **Phosphatase and Kinase enzymes** with respect to their major function. 5
4. What is **passive diffusion** and **active transport**? 2.5x2=5
5. Explain DNA denaturation and indicate its triggering factor. 3+2=5
6. Define Okazaki fragments, which phase of the central dogma of life, it takes place? 3+2=5
7. What is the difference between Prokaryotic and Eukaryotic? Explain with a diagram. (2.5+2.5)
8. What are the properties of cell membranes? Discuss about the fluid mosaic model. (2+3)
9. What are the modern techniques of cell and molecular biology? 5

2023/EVEN/13/38/BP-808/022

**B Pharm Even Semester Examination,
September, 2023**

PHARMACEUTICAL SCIENCES

(8th Semester)

Course No: BP-808ET

(Cell and Molecular Biology- Theory)

FM: 75

Time: 3 Hours

The figures in the right margin indicate full marks for the question

I. A. Multiple Choice questions 1x10=10

1. Nuclear DNA replicates in the _____ phase.
- a) G2 phase b) M phase
- c) S phase d) None
2. Which of the following is a type of RNA involved in protein synthesis?
- a) snRNA b) rRNA
- c) yRNA d) dsRNA
3. Which of the following is not true about nucleotides?
- a) Energy-rich molecules
- b) Monomeric units
- c) Ubiquitous substances
- d) Nonenzymatic molecules

Turn Over

4. Which of the following is the slowest process among the following?
- a) Splicing b) Translation
c) Transcription d) Replication
5. Which of the following function of DNA is necessary for the purpose of evolution?
- a) Mutation b) Replication
c) Translation d) Transcription
6. Which of the following base-pairing rule is correct?
- a) Adenine with guanine and thymine with cytosine
b) DNA base pairing is non-specific
c) Adenine with cytosine and guanine with thymine
d) Adenine with thymine and guanine with cytosine
7. Which of the following are the basic categories of chemical signaling found in multicellular organisms?
- (a) Paracrine signaling (b)Autocrine signaling
(c) Endocrine signaling (d)All of the above
8. In the plasma membrane, carbohydrates
- a) always faces outwards, towards extracellular space
b) directed to all sides of the membrane randomly
c) always faces the lumen of cells
d) always faces inward to the nonpolar portion of the membrane
9. Which of the following does not converge to activate the same signaling pathway?
- a) G-protein coupled receptor
b) Receptor tyrosine kinase
c) Integrin
d) Calmodulin
10. This condition is necessary for a cell to qualify through the G2 checkpoint
- (i) Cell should be of a size sufficient enough
(ii) Complete and accurate DNA replication
(iii) Sufficient nucleotides
(iv) Complete attachment of mitotic spindle fibers to kinetochores
- I. B. Objective type 2x5=10**
1. What is "operon"?
 2. Define riboswitch.
 3. What is a notch receptor?
 4. Draw a cell cycle diagram showing various checkpoints.
 5. What is mitosis and meiosis?
- II. Long answers (Answer two out of three questions) 10x2=20**
1. Explain the different steps of Protein synthesis with a neat diagram of translation. 10