



Roll No:

MPIIARM
(SEM I) THEORY EXAMINATION 2025-26
CELLULAR AND MOLECULAR PHARMACOLOGY

TIME: 3 HRS

M.MARKS: 75

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.

10 x 2 = 20

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| a. | State any two functions of the nucleus. |
| b. | What is genome organization? |
| c. | Define microRNA (miRNA). |
| d. | What is the role of cyclins in cell cycle regulation? |
| e. | Define apoptosis. |
| f. | Name any two types of cell surface receptors. |
| g. | What is cAMP? |
| h. | Define PCR and mention one application. |
| i. | What is pharmacogenomics? |
| j. | Define biosimilars. |

SECTION B

2. Attempt any two parts of the following:

2 x 10 = 20

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| a. | Describe the structure and functions of cell organelles. Explain cell cycle and its regulation. |
| b. | Explain classification of receptors and describe the mechanism of any two intracellular signaling pathways. |
| c. | Discuss principles and applications of recombinant DNA technology and gene therapy. |

SECTION C

3. Attempt any five parts of the following:

7 x 5 = 35

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| a. | Explain gene expression and its regulation with suitable examples. |
| b. | Differentiate between apoptosis, necrosis and autophagy. |
| c. | Describe secondary messengers and their role in cell signaling. |
| d. | Write a short note on PCR, gene sequencing and microarray technique. |
| e. | Explain the role of genetic polymorphism in drug metabolism and transporters. |
| f. | Describe basic cell culture techniques and applications of cell culture in drug research. |
| g. | Write a note on immunotherapeutics and their clinical applications. |