

This question paper contains 3 printed pages]

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S. No. of Question Paper : 5535

Unique Paper Code : 2532012401

Name of the Paper : Advances in Cell Biology

Name of the Course : Microbiology

Semester : IV, Part-II

Duration : 3 Hours

Maximum Marks : 90

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt any five questions.

All questions carry equal marks.

Attempt all parts of a question together.

1. (a) With the help of a diagram explain how the eukaryotic cell ensures that DNA replication only once during the cell cycle. 7
- (b) What are tumor suppressor genes ? Describe their role in cancer citing an example. 5
- (c) Expand the following terms (any six) : 6×1=6
 - (i) GEF
 - (ii) CRE
 - (iii) SAC

P.T.O.

(iv) MCC

(v) HSC

(vi) PDGF

(vii) MPF.

2. (a) Briefly discuss the DNA damage check point of cell cycle. 6
- (b) Name various types of signalling molecules. 3
- (c) Discuss the cytokine receptor signaling pathway. 6
- (d) What are caspases ? Give an example. 3
3. (a) Differentiate between the following : 4×4=16
 - (i) Endocrine signalling and Paracrine signaling
 - (ii) Somatic stem cells and Embryonic stem cells
 - (iii) Proto-oncogenes and Oncogenes
 - (iv) Benign tumor and Malignant tumor
- (b) Give *two* examples of carcinogens. 2
4. (a) Discuss immune cell therapy as emerging cancer treatment strategy. 5
- (b) Mention any *five* hallmarks of cancer. 5
- (c) What do you understand by G₀ stage ? Write its significance. 4
- (d) Briefly discuss the G protein-coupled receptors signalling pathway. 4

5. (a) Write short notes on any *three* of the following : 3×5=15
- (i) Receptor protein tryosine kinase
 - (ii) Cancer stem cells
 - (iii) Regulation of Cdk/Cyclin complex
 - (iv) Intrinsic pathway of apoptosis.
- (b) Name any *three* viruses causing cancer. 3
6. (a) Comment on MAP Kinase pathway. 3
- (b) Describe any *two* approaches used for the diagnosis of cancer. 5
- (c) What are induced pluripotent stem cells ? Write their significance. 4
- (d) Expand APC. Write its targets in cell. 3
- (e) Define autophagy and its importance for the cell. 3