

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2019
(First Semester)

Branch - BIOTECHNOLOGY

CELL BIOLOGY

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 1 = 10)

- 1 Cell theory was proposed by _____.
(i) Theodor Schwann (ii) Matthias Schleiden
(iii) Both (i) & (ii) (iv) None of (i) & (ii)
- 2 Eukaryotic DNA is tightly associated with histone proteins to form a complex material called _____.
(i) Chromatin (ii) Nucleoid
(iii) Nucleus (iv) Nucleolus
- 3 Suicidal bag of a cell is _____.
(i) Mitochondria (ii) Chloroplast
(iii) Golgi complex (iv) Lysosomes
- 4 Translocation of folded polypeptides into the organelles are done by _____.
(i) Peroxisomes (ii) Ribosomes
(iii) Nucleosomes (iv) Lysosomes
- 5 Cytokinesis is the process of _____.
(i) Degeneration of cytoplasm (ii) Division of cytoplasm
(iii) Deterioration of cytoplasm (iv) Division of nucleus
- 6 _____ is the process of which nuclear condition is reduced exactly into half.
(i) Interphase (ii) "S" phase
(iii) Mitosis (iv) Meiosis
- 7 _____ serves as a barrier to particles, moving towards plasma membrane.
(i) Ribosomes (ii) Lysosome
(iii) Glycocalyx (iv) Golgi complex
- 8 Which one of the following consists of a core protein molecular to which chains of glycosaminoglycans [GAG] are covalently attached.
(i) Proteoglycan (ii) Glycoproteins
(iii) Lipoprotein (iv) Nuclear protein
- 9 During _____ stimulation, the signaling molecule acts on the adjacent cells.
(i) Autocrine (ii) Paracrine
(iii) Endocrine (iv) Exocrine
- 10 _____ encodes proteins which promote the loss of growth control of a cell.
(i) Insulin gene (ii) Proto-oncogene
(iii) Growth hormone gene (iv) Oncogene

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SECTION - B (25 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks (5 x 5 = 25)

11 a Narrate on the structure of chloroplast.

OR

b Summarize the mechanism of action of Ca^{2+} channels.

12 a Enlist the functions of Golgi complex.

OR

b Describe the process "muscle contraction".

13 a Narrate on the interphase of cell cycle.

OR

b What does happen to cell during prophase I of Meiotic division?

14 a Describe on the functions of plasmodesmata.

OR

b Enlist the functions of selectins.

15 a Describe the role of Ca^{2+} ion in cell signaling.

OR

b How does signal transduction occur through protein tyrosine phosphorylation?

SECTION -C (40 Marks!)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks (5 x 8 = 40)

16 a Compare & contrast the Eukaryotic cell from prokaryotic cell.

OR

b Classify the transport systems based on energy requirement.

17 a Mitochondria is said to be the "Power house of the cell". Explain.

OR

b Discuss elaborately on microfilaments.

18 a Categorize the molecular mechanism involved in mitotic division.

OR

b How does a cell control its cell cycle? Explain.

19 a Summarise the functions of proteins found at extra cellular matrix in detail.

OR

b Outline the differentiation process of daughter cells after cell division with suitable diagrams.

20 a Summarize the role of PRB & P53 in tumor suppression.

OR

b Elucidate the structure and function of G-protein.