

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION DECEMBER 2018
(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 x1 = 10)

- 1 Plant cell wall mainly composed of _____.
(i) Starch (ii) Cellulose
(iii) Protein (iv) Lipid
- 2 The protein network that lines the inner side of nuclear membrane is called
(i) Nucleolus (ii) Nuclear matrix
(iii) Nuclear Lamina (iv) Nuclear proteins
- 3 Which of the following organelle is involved in lipid metabolism?
(i) Golgi bodies (ii) RER
(iii) SER (iv) Peroxisomes
- 4 Polysomes are _____.
(i) Multiple units of ribosomes
(ii) Lysosomal aggregations
(iii) Attachment of many mRNA to a common ribosome
(iv) Attachment of many ribosome to a common mRNA.
- 5 The spindle fibre contracts in _____.
(i) Metaphase I (ii) Anaphase II
(iii) Prophase II (iv) Telophase II
- 6 During mitosis ER and nucleolus begin to disappear at _____.
(i) Early prophase (ii) Late Prophase
(iii) Early metaphase (iv) Late Metaphase
- 7 Which of the following statement about desmosomes is true?
(i) They are portion of functional complex close to lumen.
(ii) Encircle the entire cell forming an adhesion belt.
(iii) Function as a diffusion barrier
(iv) Associated with intermediate filaments.
- 8 Pore like connections between adjacent cells is an example of _____.
(i) Desmosome (ii) Gap junction
(iii) Tight junction (iv) Cell junction
- 9 Programmed cell death is termed as _____.
(i) Metasis (ii) Apoptosis
(iii) Proliferation (iv) Mitotic termination
- 10 P is a _____ which encodes a gene regulatory protein that can repair the DNA damage in cancer.
(i) Transformed cell (ii) Proto oncogene
(iii) Oncogene (iv) Tumor Suppressor gene.

SECTION - B (25 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 5 = 25)

- 11 a Explain the working principle of Ca^{2+} ATPase.
OR
b Bring out the difference between Prokaryotic and Eukaryotic cell.
- 12 a Compare the sacromere units in relaxed and contracted state.
OR
b Sketch the structure of lysosome and mention its functions.
- 13 a Outline the Eukaryotic cell cycle and its phases.
OR
b State the role of MPF and cd proteins in cell cycle.
- 14 a Describe the cell-cell interactions.
OR
b Explain desmosomes and plasmosemata in brief.
- 15 a Prepare a diagrammatic representation on receptor tyrosine Kinase pathway.
OR
b Summarize the steps involved in apoptosis.

SECTION -C (40 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 8 = 40)

- 16 a Summarize the preparation of starch by the plants in detail.
OR
b Elaborate the working mechanism of Na^+/K^+ pump.
- 17 a Discuss the structure and functions of Cilia and flagella.
OR
b Outline the structure of mitochondria. Add a note on its functions.
- 18 a Differentiate between the events of mitosis and meiosis.
OR
b Highlight the cell division by mitosis.
- 19 a Enumerate the proteins present in ECM.
OR
b Distinguish between Gap junction and Tight junction.
- 20 a Describe G-protein coupled receptors with suitable examples.
OR
b Illustrate the JAK/STAT pathway in detail.