PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 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 Identify the non-membranous organelle from the following ;
(i) Endoplasmic reticulum (ii) Nucleus
(iii) Ribosome (iv) Chloroplast

2 Photosynthetic pigments are located in_____ .
(i) Thylakoids (ii) Grana
(iii) Stroma (iv) Cytoplasm

3 H_2O_2 clearance inside the cell is carried out by_____ .
(i) glyoxysome - isocitrate lyase (ii) glyoxysome - catalase
(iii) peroxisome - amino oxidase (iv) peroxisome - catalase

4 Which of the following organelle is called as the 'Sorting Centre' of the cell?
(i) Endoplasmic reticulum (ii) Golgi apparatus
(iii) Lysosome (iv) Polysomes

5 In mitosis, centromere divides during_____ .
(i) prophase (ii) metaphase
(iii) anaphase (iv) telophase

6 Cytoplasmic division of a cell is called_____.
(i) Cytokinesis (ii) Mitosis
(iii) Meiosis (iv) Synapsis

Which of the following proteins is a transmembrane protein responsible for anchoring the ECM?
(i) Fibronectin (ii) Collagen
(iii) Integrin (iv) Laminin

8 Each of the following is true of both cadhesin and integrin EXCEPT
(i) transmembrane glycoproteins (ii) associate with actin cytoskeleton
(iii) found in zonula adheres junction (iv) involved in cell adhesion

9 Which of the second messengers listed below remains bound to the plasma membrane?
(i) DAG (ii) Ca^{2+}
(iii) IP_3 (iv) cAMP

10 Oncogenes do not encode for_____
(i) growth factors (ii) cytoplasimc G ptn and protein kinases
(iii) DNA dependent RNA polymerase
(iv) transmembrane protein receptors

SECTION - B (25 Marks)

Answer **ALL** questions

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

11 a Sketch the structure of nucleus and add a note on its functions.

OR

b Show the two photosystems involved in the photosynthesis.

12 a Describe the structure and functions of mitochondria.

OR

b Discuss the structure and functions of Golgi apparatus.

13 a Outline the role of MPF and G1 cyclin.

OR

b Sketch the events in mitosis and role of mitotic apparatus.

14 a Explain the glycocalyx proteins.

OR

b Discuss on Gap junctions.

15 a Prepare a diagrammatic representation of JAK / STAT signal transduction pathway.

OR

b What is proto oncogene? How proto oncogenes are activated?

SECTION -C (40 Marks)

Answer **ALL** questions

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

16 a Summarize the active transport occurring in cell membranes.

OR

b Examine the cell structure with its organelles and functions.

17 a Elucidate the mechanism of muscle contraction.

OR

b Explain the structure and functions of cilia and flagella.

18 a Enumerate the chromosomal events during each stage of meiosis.

OR

b Highlight the various stages of cell cycle.

19 a Outline the cell-cell interactions.

OR

b Discuss the proteins present in ECM.

20 a Describe the role of cAMP and Ca^{2}" as second messengers in signal transduction.

OR

b Summarise the mechanism of programmed cell death.

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END