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SARDAR PATEL UNIVERSITY

M. Sc. (Genetics) – First Semester Examination (CBCS)

Monday, 25th March, 2019

10:00 a.m. to 1:00 p.m.

PS01CGEN23: Cell Biology

Total Marks: 70

Note: (1) Figures to the right indicate marks.
(2) Draw a neat and labeled diagram, wherever necessary.

Q. 1 Choose the most appropriate answer from the four alternatives given: [08]

i. **Bacterial cell having many/cluster of flagella at only one end is known as.....**

(a) Peritrichous (b) Monotrichous (c) Lophotrichous (d) Amphitrichous

ii. **In eukaryotic cells, ATP synthase found in.....**

(a) Chloroplast (b) Endoplasmic reticulum (c) Mitochondria (d) Both 'a' and 'c'

iii. **Rapid translocation of phospholipids across the ER membrane is governed by .....**

(a) Diacylglycerol (b) Flippases (c) Peptidases (d) Protein disulfide isomerases

iv. **KDEL is a best characterized retention/retrieval signal consist of.....amino acids.**

(a) Lys – Asp – Glu – Leu (b) Asp – Glu – Leu - Lys

(c) Glu – Leu - Lys – Asp (d) Leu - Lys – Asp – Glu

v. **.....polymer is not connected by covalent bond.**

(a) DNA (b) RNA (c) Microtubules (d) Proteins

vi. **..... signaling receptors are generally activated by dimerization induced by binding to two sites on their ligand?**

(a) Gated ion channels (b) G protein-coupled receptors

(c) Receptor tyrosine kinases (d) Steroid hormone

vii. **.....is useful for isolation of cells in the G1, S, G2 and M phases of cell cycle.**

(a) Electron microscope (b) Flow cytometer

(c) Light microscope (d) Phase contrast microscope

viii. **The term apoptosis derived from the Greek word describing the.....**

(a) Falling of fruits from a tree (b) Falling of petals from a flowers

(c) Falling of leaves from a tree (d) Both 'b' and 'c'

Q.2 Answer any SEVEN from the following: [14]

i. What are plasmodesmata?

ii. Define the terms phagocytosis and pinocytosis.

iii. What are peroxisomes? Write its functions.

(P.T.O.)

iv. Draw labelled diagram for compartmentalization of Golgi apparatus.

v. Write names of the intermediate filaments present in muscle and nerve cells.

vi. Write functions of microfilaments.

vii. What is Philadelphia chromosome?

viii. Differentiate between apoptosis and necrosis.

ix. What are stem cells? Write its importance.

Q.3(a) Differentiate between eukaryotic and prokaryotic cells. **[6]**

(b) What are the different types of cell membrane transport? Explain structural organization and functions of Gap junctions. **[6]**

OR

(b) Explain Miller and Urey experiment for evolution of the first cell. **[6]**

Q.4(a) Describe structure and functions of the nuclear pore complex. **[6]**

(b) Give overall comparison between chloroplast and mitochondria. **[6]**

OR

(b) Describe protein folding and processing in endoplasmic reticulum. **[6]**

Q.5(a) Discuss secondary messangers. **[6]**

(b) Discuss the structural organization and functions of actin filaments. **[6]**

OR

(b) Discuss the importance of G- protein coupled receptors (GPRs). **[6]**

Q.6(a) Discuss cell cycle check points. **[6]**

(b) Write a detailed note on tumor suppressor genes. **[6]**

OR

(b) Justify that "Caspases are the effectors and executioners of apoptosis". **[6]**

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