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AR-19

M.Sc

M.Sc 1ST SEMESTER REGULAR EXAMINATIONS, NOV/DEC 2019-20

LSPC102 – CELL BIOLOGY & GENETICS

Time: 3 Hours

Max Marks: 80

The figures in the right hand margin indicate marks.

SECTION A

Q.1 Answer any four of the following:

[4 x 4 = 16]

- a How asymmetry of lipid bilayer of cell membrane is functionally important? 4
- b Comment on the genetic system of mitochondria and chloroplast. 4
- c What is the role of G-proteins in cell signaling pathways? 4
- d What is euploidy? Describe with examples. 4
- e Describe cytoplasmic inheritance? 4
- f What are cell cycle check points and how do they regulate cell cycle? 4

OR

2. Answer all questions from the following

[8 x 2 = 16]

- a What are desmosomes? 2
- b Who mediates transient cell-cell adhesion in bloodstream? 2
- c How inversion causes mutation? 2
- d What is the role of protein kinases in cell cycle? 2
- e What are lysosomes? How cell itself is protected from lytic enzymes of lysosomes? 2
- f What is the role of centrosomes in the cell? 2
- g Where do you find the ribosomes and what is its significance? 2
- h What do you mean by gene frequency? 2

SECTION-B

3. Answer all Questions:

[4 x 16 = 64]

- a Give the structure of Golgi Apparatus and describe the modification of proteins which takes place inside it. 16

OR

- b Give an account of ultrastructure of mitochondrion and its role in ATP generation. 16
- 4. a What are the different types of cytoskeletal elements you have studied? Describe the common features of all the types of cytoskeletal filaments. 16

OR

- b What is the mechanism of cell-cell adhesion by cadherins? Describe briefly the role of actin cytoskeleton in cell adhesions mediated by cadherins. 16
- 5. a What is homologous recombination? How it results in patch and splice recombinants? Give suitable diagrams to describe it. 16

OR

- b What is Hardy-Weinberg principle? What are the different assumptions for attainment of Hardy-Weinberg equation? What will be the change in frequency when selection is involved? 16
- 6. a Give an overview of cell cycle. What are the control system that can arrest cell cycle at specific check points. 16

OR

- b What is apoptosis? How is it mediated by intracellular proteolytic cascade and what is the role of caspases in it? 16