



Register Number:

Date:

ST. JOSEPH'S COLLEGE (AUTONOMOUS), BENGALURU-27
M.Sc. MICROBIOLOGY – I SEMESTER
SEMESTER EXAMINATION: OCTOBER 2019
MB 7218 - CELL BIOLOGY

Time- 2 1/2 hrs

Max Marks-70

This paper contains 2 printed pages and 4 parts

I. Answer any Five of the following

5 x 3 = 15

1. Give three characteristic features of Golgi apparatus.
2. What is the advantage of delayed GTP hydrolysis during polymerization of microtubules?
3. Write one example of how microorganisms can exploit host signals.
4. Min proteins are important for bacterial cell division. What will happen if min proteins are knocked out?
5. What is ligand occupancy? What is the effect of ligand occupancy?
6. Write the functions of A signal and C signal.
7. Where do you find a two-component system? State one example of a two-component system.

II. Answer any Five of the following

5 x 5 = 25

8. A pancreatic cell secretes many digestive enzymes. Which part/s of the pancreatic cell would be most well developed? Give reasons for your answer.
9. Compare and contrast inner membrane and outer membrane of mitochondria.
10. Explain the mechanism of bioluminescence.
11. Highlight the functions of the following- i. e DNA, ii. Fos, iii. DAG, iv. RGD sequence, v. Dynamin
12. Draw a neat labelled diagram representing structural organization of intermediate filaments.
13. What is Rb gene? Explain how mutation in this gene can cause cancer.
14. Write a note on role of Ca^{2+} in plant cells.

III. Answer any Two of the following

2 x 10 = 20

15. A. Some individuals have syndactyly i.e. webbed toes. Which process in these people must be defective or improperly happening? Explain the events that take place in the process. (5)
- B. What is quorum quenching? List some of its potential applications. (5)
16. When you do not water plants they wilt. Explain why and how it happens.
17. How does *Staphylococcus aureus* invade host cells? What molecule does it use for quorum sensing?

IV. Answer the following

1 x 10 = 10

18. A. Total protein extraction was done from a tissue; following are the concentrations of certain proteins found, identify the process that is taking place inside the cell, and write in brief about it. (4)

Protein kinase A- 0.005 mM
Glucagon – 0.000003 mM
cAMP – 0.0001 mM
Adenylyl cyclase- 0.00002 mM

- B. Study the pathway below and comment on the event taking place in a cell. What will happen at the end of the pathway? (6)

