B.Sc. MICROBIOLOGY
THIRD SEMESTER (REPEAT)
CELL BIOLOGY
BMB-302

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs. **Full Marks: 70**

(Objective)

Time: 30 mins. **Marks: 20**

Choose the correct answer from the following: ***1×20=20***

1. Who was the principle scientist behind the term "Omnis cellula-e-cellula?
   a. Rudolf Hooke
   b. Rudolf Virchow
   c. Rudolf Kin
   d. Rudolf Brown
2. Identify the secretory organelle from the following:
   a. Endoplasmic Reticulum
   b. Golgi
   c. Nucleus
   d. Ribosome
3. Microfilaments are composed of a protein called:
   a. Tubulin
   b. Actin
   c. Myosin
   d. Chitin
4. Which of the following organelle takes part in protein modification?
   a. Cytoplasm
   b. Ribosomes
   c. ER compartments
   d. Golgi apparatus
5. Which among the following does not contain genetic material?
   a. Mitochondria
   b. Chloroplast
   c. Nucleus
   d. Lysosome
6. Plasma membrane is made up of:
   a. A protein, a lipid and a cellulose layer
   b. Bimolecular lipid layer embedded by protein
   c. A protein layer between two lipid layers
   d. A lipid layer between two protein layers
7. The following sentence is true about cellular theory:
   a. It's not applicable to virus
   b. It's not applicable to fungi
   c. It's not applicable to bacteria
   d. It's not applicable to algae
8. Human cell differs from plant cells in possessing:
   a. Vacuole
   b. Golgi
   c. Cell wall
   d. Peroxisomes
9. Who among the following observed first living cell?
   a. Rudolf Virchow
   b. Anton Von Leeuwenhoek
   c. Robert Brown
   d. None of the above
10. Which of the following methods does not require any carrier or channel for transport of substances?
    a. Simple diffusion
    b. Primary active transport
    c. Facilitated diffusion
    d. Secondary active transport

11. DNA replicates takes place during:
    a. G1 phase
    b. G2 phase
    c. S phase
    d. Prophase

12. The common pathway of entry into the endoplasmic reticulum (ER) of secretory, lysosomal and plasma membrane proteins is best explained by which of the following?
    a. Binding of their mRNAs to a special class of ribosome attached to the ER
    b. Addition of a common sorting signal to each type of protein after completion of synthesis
    c. Addition of oligosaccharides to all three types of proteins
    d. Presence of a signal sequence that targets each type of protein to the ER during synthesis

13. Which type of cancer form in bone and soft tissues, including muscle fat, lymph vessels, etc?
    a. Leukemia
    b. Sarcoma
    c. Lymphoma
    d. Carcinoma

14. Which type of movement occurs when Na/K pump is used?
    a. Na ions moves out of the cell and K+ move in
    b. Both Na and K+ ions move inside the cell
    c. Both Na and K+ move out of the cell
    d. K+ ion moves out of cell and Na ion move in

15. Which among is following is a nuclear protein found in Nuclear pore complex?
    a. Nuclear lamina
    b. Nuclear importin
    c. Nucleoporins
    d. Karyherins

16. A malignant tumor is characterized by:
    a. Slow simple expansion of cells
    b. Protooncogenes expression
    c. Atypical tissue structure and uncontrolled growth and proliferation
    d. No chromosomal abnormalities

17. p53 protein is associated with all the following, except:
    a. Tumor suppression
    b. Programmed cell death
    c. Apoptosis
    d. Post-transcription modifications

18. Ribosomes are made up of:
    a. RNA s and DNAs
    b. RNAs and glycolipids
    c. RNAs and protein
    d. RNAs and lipid

19. The proteins encoded by cell cycle that are static and are required throughout the cell cycle in equal proportion are:
    a. S Cyclin
    b. G1/S Cyclin
    c. M Cyclin
    d. G1 Cyclin

20. At which cell cycle checkpoint, cell cycle is halted if cell's DNA is damaged:
    a. $G_1 - S$
    b. $S - G_2$
    c. $G_2 - M$
    d. $G_0 - G_1$

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Descriptive

Time : 2 hr. 30 mins. Marks : 50

[Answer question no.1 & any four (4) from the rest]

1. Illustrate the function of cell organelles in fungal cell with appropriate diagram. 10

2. a) Who demonstrate the cell theory? Explain the contributions made by eminent scientist towards cell theory. 6+4=10
   b) Elaborate the mechanism of transport across the plasma membrane.

3. a) What do you mean by cell cycle? 3+7=10
   b) What are the regulatory checkpoints of cell cycle?

4. a) Where does ATP synthesis takes place and how? 7+3=10
   b) What do you mean by endosymbiotic theory?

5. a) Describe the effect of tumour suppressor gene towards abnormal cell proliferation. 6+4=10
   b) Explain the important feature of cancer causing genes.

6. a) How Golgi is associated with protein translocation. Explain with suitable diagram. 6+4=10
   b) Which cellular organelles is known as the controlling centre of the cell and why?

7. a) What are the major difference between microtubules and microfilaments? 4+6=10
   b) Discuss the significance of molecular motor in muscle contraction.

8. a) Explain the function of lysosome and peroxisome. 4+6=10
   b) Elaborate the function of Extra cellular matrix in cellular organizations.

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