

P-102 (CELL BIOLOGY AND CANCER)

1. Answer the following questions.

[1 mark]

1. What is a cell?

- a) smallest and advanced unit of life
- b) smallest and basic unit of life**
- c) largest and basic unit of life
- d) largest and advanced unit of life

2. Which of the following is a functional unit of a body?

- a) Mitochondria
- b) Cytoplasm
- c) Spleen
- d) Cell**

3. What is cell biology?

- a) Study of cell division only
- b) Study of cancerous cell
- c) Study of cell structure and function**
- d) Study of metaphase of a cell

4. Which of the following is used by cells to interact with other cells?

- a) Cell tubules
- b) Cell junctions**
- c) Cell adhesions
- d) Cell detectors

5. In which of the following type of cells the cell junction is abundant?

- a) Cardiac cells
- b) Prokaryotic cells
- c) Hepatic cells
- d) Epithelial cells**

6. What is epithelial mesenchymal transistion?

- a) Loss of migration and gain of adhesion
- b) Formation of mesenchymal cells
- c) Loss of adhesion and gain of migration**
- d) Lysis of cell

7. In which of the following type of cells the Gap junctions are absent?

- a) Sperm cells**
- b) Brain cells
- c) Reproductive cells
- d) Cardiac cells

8. In which of the following type of cells Sarcoplasmic reticulum is found?

- a) **muscle cells**
- b) liver cells
- c) kidney cells
- d) neurons

9. Which of the following are phagocytic cells?

- a) neutrophils, mast cells
- b) mast cells, macrophages
- c) mast cells, antibodies
- d) **neutrophils, macrophages**

10. Which of the following is known as the powerhouse of a cell?

- a) **Mitochondria**
- b) Cytoplasm
- c) Lysosome
- d) Nuclei

11. Which of the following is known as the suicide bag of a cell?

- a) Mitochondria
- b) Golgi Complex
- c) **Lysosome**
- d) Nuclei

12. Lysosomes are produced by which of the following cell organelles?

- a) Mitochondria
- b) Endoplasmic Reticulum
- c) **Golgi Complex**
- d) DNA

13. Which of the following cell organelle is responsible for transporting, modifying, and packaging proteins and lipids?

- a) Mitochondria
- b) Endoplasmic Reticulum
- c) **Golgi Complex**
- d) DNA

14. Which of the following cell doesn't contain a cell wall?

- a) Plant cell
- b) Bacteria
- c) Fungi
- d) **Animal cell**

15. Who is the father of cell biology?

- a) George N. Papanicolaou
- b) **George Emil Palade**
- c) Robert Hooke

d) None of the above

16. DNA is stored in which of the following cell organelle?

- a) Cell wall
- b) Cell Membrane
- c) Nucleus**
- d) Cytoplasm

17. In which of the following cell nucleus is not present?

- a) Eukaryotic cell
- b) Prokaryotic cell**
- c) Both of the above
- d) None of the above

18. Which of the following organisms doesn't have a cell?

- a) Virus**
- b) Bacteria
- c) Fungi
- d) Algae

19. Who proposed the cell theory?

- a) Theodor Schwann, Watson and Robert Hooke
- b) Theodor Schwann, Matthias Schleiden and Robert Hooke
- c) Theodor Schwann, Matthias Schleiden and Rudolf Virchow**
- d) Theodor Schwann, Rudolf Virchow and Robert Hooke

20. RNA is present in which of the following cell organelles?

- a) Cell wall
- b) Ribosome**
- c) Nucleus
- d) Cytoplasm
- d) Golgi complex

21. A cell organelle that is present in animal cells but not present in plant cells is?

- a) Cytoplasm
- b) Centrosome**
- c) Mitochondrial
- d) Cytoplasm
- d) Golgi complex

22. Which of the following cell is found in the brain?

- a) Neuron**
- b) Hepatocyte
- c) Nephron
- d) Epithelial cell

23. Protein synthesis takes place in which of the following cell organelle?

- a) Cell wall
- b) Ribosome**
- c) Nucleus
- d) Cytoplasm

24. Which of the following cells are found in the intestinal lining?

- a) RBCs
- b) Neurons
- c) Epithelial cells**
- d) Hepatocytes

25. Which of the following polysaccharide is not present in the eukaryotic plant cell wall?

- a) Chitin
- b) Hemicellulose
- c) Pectin
- d) Cellulose**

26. Which of the following is the process of synthesis of glucose?

- a) saccharification
- b) glycolysis
- c) gluconeogenesis**
- d) neogenesis

27. Which of the following site is represented by Loops in lampbrush chromosomes?

- a) Crossing over
- b) Cell division
- c) Replication
- d) Transcription**

28. Which of the following part of a neuron receives information from other neurons?

- a) myelin sheath
- b) dendrites**
- c) cell body
- d) axon

29. Which of the following is not a component of cell membranes?

- a) Phosphotriglycerides**
- b) Cholesterol
- c) Sphingolipids
- d) Phosphodiglycerides

30. Which of the following promote curvature of cell membrane?

- a) Phosphatidyl serine (PS)
- b) Phosphatidyl inositol (PI)
- c) Phosphatidyl choline (PC)

d) Phosphatidyl ethanolamine (PE)

31. Which of the following is not a type of chromosomal aberration?

- a) duplication
- b) translocation
- c) mutations**
- d) inversion

32. Which of the following cells release insulin when glucose levels elevate in the body?

- a) gamma cells
- b) beta cells**
- c) alpha cells
- d) zeta cells

33. Which of the following cells are pluripotent?

- a) embryonic stem cells**
- b) nucleosomes
- c) hepatocytes
- d) neurons

34. Which of the following cells do not lack the ability to divide?

- a) red blood cells
- b) muscle cells
- c) skin cells**
- d) nerve cells

35. Which of the following cells do not usually divide but can be induced to divide?

- a) liver cells**
- b) red blood cells
- c) hair cells
- d) hair follicles

2. Answer the following questions within 2-3 sentences.

[1.5 mark]

1. What are peripheral membrane proteins ?
2. State about integral membrane proteins.
3. Name the factors affecting fluidity of lipid bilayer ?
4. What are membrane lipids ?
5. What are carrier proteins ?
6. What is function of RER and SER ?
7. Why are lysosomes are called as suicide bags of the cell ?
8. Briefly describe the structure of mitochondria.
9. What is protofilament.
10. What is MTOC ?
11. State about singlet , doublet and triplet microtubules.
12. What is function of myosin ?

13. What are the functions of intermediate filaments ?
14. What is nuclear envelope ?
15. What is NOR ?
16. What is apoptosis ? Give its significance .
17. Name some proteins that help in regulation of cell-cycle.
18. Differentiate between benign and malignant tumor .
19. What do you understand by metastasis ?
20. What is contact inhibition ?

3. Answer the following questions within 75-100 words. [2 marks]

1. What is the chemical composition of plasma membrane.
2. What is function of membrane lipids ?
3. What are cadherins ?
4. What is the role of different cell adhesion molecules ?
5. Give some functions of ER .
6. What are functions of golgi apparatus.
7. State the function of lysosome.
8. Give the function of mitochondria.
9. Mention the formation of the actin filament.
10. What are the function of microtubules.
11. Explain briefly about nuclear pore complex.
12. Write a short note on chromosomes.
13. What is karyotype and its significance.
14. What are caspases ?
15. State some properties of cancer cells.
16. What are oncogenes ?
17. Differentiate between invasiveness and metastasis .
18. Name some viruses causing cancer.
19. What are tumor suppressor genes.
20. What is tumor ? Differentiate between primary and secondary tumor.

4. Answer the following questions within 500 words. [6marks]

1. What are the structure and function of membrane protein ?
2. Explain about membrane lipid and membrane fluidity .
3. What is the chemical composition of plasma membrane ? Add a note on membrane dynamics.
4. Give a detailed account on membrane transport.
5. What do you understand by junctional complexes ?
6. What is the general principles of cell communication ?
7. What is cell adhesion ? what are the role of different cell adhesion molecules ?
8. What is the structure and function of endoplasmic reticulum ?
9. Write a short note on Golgi Bodies.
10. Write about the structure and function of Lysosomes .
11. Give a brief account on structure and function of mitochondria .

12. What are the different types and major function of cytoskeleton ?
13. Elaborate nuclear envelope , nuclear pore complex and nucleolus.
14. What is karyotype and its significance ?
15. Write a short note on Chromosomes .
16. Explain about nuclear packaging .
17. Explain cell-cycle in-vivo . Add a note on its regulation and checkpoints.
18. State about apoptosis .
19. State about biology of cancer cell .
20. What are genetic arrangements in progenitor cells?
21. What are oncogenes and tumor suppressor genes.
22. Write short note on cancer and the cell cycle .
23. What do you understand by virus –induced cancer ?
24. Give an account on metastasis .
25. How cancer cells interact with normal cells ?
26. What are the therapeutics interventions of uncontrolled cell growth ?