CELL - THE UNIT OF LIFE

1. .....was a German scientist, who observed that all plant tissues are made up of cells. At the same time....., British scientist studied different type of animal cells.

(1) Rudolf Virchow and Nageli respectively

(2) Mathias Schleiden and Theodore Schwann respectively

(3) Theodore Schwann and Mathias Schleiden respectively

(4) Robert Hooke and Schleiden respectively

2. Main arena of cellular activities in both plant and animal cells is :-

(1) Nucleus (2) Cell organelles

(3) Cytoplasm (4) Centriole

3. Who proposed *"Omnis cellula e cellula"* ?

(1) Robert Hooke

(2) Rudolf Virchow

(3) Schwann

(4) Anton Von Leeuwenhoek

4. Algal cell wall is made of :-

(1) Cellulose, hemicellulose and pectin

(2) Cellulose, galactans, mannans and minerals

(3) Hemicellulose and xylan

(4) Cellulose, Hemicellulose, protein and pectin

5. The detailed structure of the cell membrane was studied only after the advent of electron microscope in the year :-

(1) 1931 (2) 1913

(3) 1950 (4) 1973

6. Depending upon the....., membrane proteins can be classified as integral or peripheral :-

(1) Size

(2) Sedimentation rate

(3) Ease of extraction

(4) Molecular weight

7. An improved model of the structure of cell membrane was proposed by Singer and Nicolson in.... , widely accepted as.....

(1) 1959, Fluid mosaic model

(2) 1900, Lipoidal model

(3) 1938, Unit membrane model

(4) 1972, Fluid mosaic model

8. According to fluid-mosaic model, the quasi-fluid nature of.....enables lateral movement of.....within the overall bilayer. This ability to move within the membrane is measured as its...

(i) Carbohydrates

(ii) Lipids

(iii) Proteins

(iv) Fluidity

(v) Selective permeability

Correct sequence is :-

(1) ii, iii, iv (2) iii, i, iv

(3) iii, ii, v (4) i, ii, iv

9. The fluid nature of the membrane is also important from the point of view of functions like :-

(i) Cell growth

(ii) Formation of intercellular junctions

(iii) Secretions

(iv) Endocytosis

(v) Cell division

(1) i, iii, iv only (2) ii, iii, v only

(3) i, iii, iv, v only (4) i, ii, iii, iv, v

10. One of the most important functions of the plasma membrane is :-

(1) Formation of nuclear membrane

(2) Transport of molecules across it

(3) Exocytosis

(4) Detoxification

11. .....can not pass through the lipid bilayer, they require a carrier protein of the membrane to facilitate their transport across the membrane

(1) Nonpolar molecules

(2) Polar molecules

(3) Hydrophobic molecules

(4) Both (2) and (3)

12. Na^+/K^+ pump is an example of :-

(1) Passive transport

(2) Osmosis

(3) Active transport

(4) Simple diffusion

13. Mark the incorrect match for transport of molecules across the membrane :-

(1) Neutral solute – simple diffusion

(2) Water – osmosis

(3) Non polar molecules – facilitate diffusion

(4) ATP utilized – active transport

14. Mitochondria :-

(a) are easily visible under the microscope (without specifically stained)

(b) are typically sausage-shaped or cylindrical

(c) are double membrane bound structures

(d) have two aqueous compartments

(1) a, d correct and b, c incorrect

(2) a, b correct and c,d incorrect

(3) a incorrect and b, c, d correct

(4) a, d incorrect and b, c correct

15. Inner mitochondrial membrane forms infoldings called :-

(1) Thylakoid (2) Cisternae

(3) Oxysomes (4) Cristae

16. The number of mitochondria per cell is variable, depending on :-

(1) Size of cells

(2) Shape of cells

(3) Physiological activity of cells

(4) Type of genes present in mt DNA

17. Diameter of Golgi cisternae is :-

(1) 0.5 μm – 1.0 μm (2) 0.2 – 1.0 μm

(3) 1.0 – 4.1 μm (4) 10 – 50 nm

18. A Golgi complex has :-

(1) Fixed number of cisternae

(2) Varied number of cisternae

(3) One cisterna in higher plants

(4) Convex trans face and concave cis face cisternae

19. Which cell organelle divides the intracellular space into two distinct compartments, i.e. luminal (inside) and extra luminal (cytoplasm) compartments ?

(1) Golgibody

(2) Mitochondria

(3) Endoplasmic reticulum

(4) Lysosome

20. Which one of the following is not a component of endomembrane system ?

(a) Endoplasmic reticulum

(b) Golgibody

(c) Lysosome

(d) Vacuole

(e) Nucleus

(1) Both a and c (2) Only c

(3) d and e both (4) Only e

21. Membrane bound vesicular structures formed by the process of packaging in the Golgi apparatus and filled with hydrolytic enzymes, are called :-

(1) Vacuoles

(2) Transitional vesicles

(3) Lysosomes

(4) Centrosome

22. (a) Granular structure

(b) First observed under the electron microscope as dense particles by George Palade

(c) Composed of RNA and proteins

(d) Not surrounded by any membrane

Above given all statements are true for which cell organelle ?

(1) Nucleolus (2) Ribosomes

(3) Cristae (4) Chloroplast

23. Eukaryotes have 80S, while prokaryotes have 70S ribosomes in cytoplasm. Here "S" explains :-

(a) Sedimentation coefficient

(b) Measure of density

(c) Measure of size

(1) a only (2) a and b only

(3) b and c only (4) a, b and c

24. In r-RNA, "r" stands for :-

(1) Ribophorins (2) Ribozyme

(3) Ribosomal (4) Recognition

25. Find incorrect statement with regard to centrosome and centrioles :-

(a) Centrosomes are surrounded by amorphous pericentriolar material

(b) In centrosome, both centrioles lie parallel to each other in which each has an organisation like the cartwheel

(c) Centrioles are made up of nine unevenly spaced peripheral fibrils of tubulin

(d) Hub is the central proteinaceous part of centriole

(e) Proteinaceous radial spokes connect hub to peripheral triplets

(1) a,b, e (2) only b

(3) b, c (4) All are correct

26. An elaborate network of filamentous proteinaceous structures present in the cytoplasm which helps in the maintenance of cell shape is called :-

(1) Endoplasmic reticulum

(2) Plasmalemma

(3) Ribosomes

(4) Cytoskeleton

27. Carotenoid pigments are found in :-

(1) Chromoplast (2) Chloroplast

(3) Leucoplast (4) Both (1) and (2)

28. Interphase nucleus has a loose and indistinct network of nucleoprotein fibres called chromatin, but during different stages of cell division, cells show "*structured chromosomes*" in place of the:-

(1) Nucleus (2) Nucleosome

(3) Solenoid (4) Plasmosome

29. Nucleus as a "cell organelle" was first described by.....as early as.....

(1) Robert Hooke, 1665

(2) Robert Brown, 1831

(3) Flemming, 1931

(4) Strasburger, 1831

30. Term "chromatin" was given by Flemming, after staining of nucleus with.....dyes :-

(1) Acidic (2) Basic

(3) Neutral (4) Both (2) and (3)

31. Space between parallel nuclear membranes is called perinuclear space which is :-

(1) 10–50 nm (2) 0.1 – 0.4 μm

(3) 10 – 50 Å (4) 1 – 4 nm

32. A single human cell has approximately.....long thread of DNA distributed among its....chromosomes:-

(1) 2 cm, 46 (2) 2 metre, 46

(3) 2 cm, 23 (4) 2 metre, 23

33. Important site for formation of glycoproteins and glycolipid is :-

(1) Vacuole

(2) Golgi apparatus

(3) Plastid

(4) Lysosome

34. Peptide bond synthesis in cytoplasm of cell takes place on :-

(1) Chloroplast

(2) Mitochondria

(3) Chromoplast

(4) Ribosomes

35. In eubacteria, a cellular component that resembles eukarotic cell is :-

(1) Plasma membrane (2) Nucleus

(3) Cytoskelton (4) Cell wall

36. Basic unit of life is :-

(1) Cell (2) Tissue

(3) Organ (4) Organ system

37. Cristae are found in :-

(1) Golgi apparatus (2) ER

(3) Both 1 and 2 (4) Mitochondria

38. The physio-chemical approach to study and understand living organisms is called -

(1) Physiochemical biology

(2) Reductionist biology

(3) Fundamental biology

(4) Biochemical biology

39. Which of the following scientist explained that cells divided and new cells are formed from pre-existing cells?

(1) Schwann (2) Schleiden

(3) Rudolf Virchow (4) Robert Hooke

40. Which of the following scientist give the cell theory a final shape ?

(1) Leewenhoek

(2) Schleidin & Schwann

(3) Robert Hooke

(4) Rudolf Virchow

41. Which among the following is not a function of mesosome ?

(1) Synthesis of food

(2) Help in cell wall formation

(3) Help in DNA replication

(4) Distribution of DNA in daughter cells

42. In prokaryotes like cyanobacteria, besides mesosome other membranous extensions into cytoplasm is/are-

(1) GERL

(2) Chromatophores

(3) Ribosomes

(4) Mitochondria

43. Regarding to inclusion bodies - find out the incorrect statement

(1) It is site of food storage

(2) It is single membrane bounded

(3) They lie freely in cytoplasm

(4) May found in prokaryotic and eukaryotic cells

44. In plasma membrane of human erythrocyte which of the following is ratio of proteins and lipids respectively-

(1) 50 & 50 (2) 60 & 40

(3) 52 & 40 (4) 40 & 52

45. Fluidity of plasma membrane is due to -

(1) Lipids (2) Proteins

(3) Carbohydrates (4) Cholesterol

46. Regarding to cell membrane find out the odd one -

(1) Fluid mosaic model is widely accepted model

(2) Quasi fluid nature of lipids enables the lateral movement of proteins

(3) All types of molecules can easily pass through membrane

(4) Fluid nature of membrane is also important for cell growth & formation of intercellular junctions

47. Which type of solutes may move across plasma membrane from higher to lower concentration along concentration gradient without of help of transmembrane proteins?

(1) Positively charged solutes

(2) Negatively charged solutes

(3) Neutral solutes

(4) Any of the above

48. Select out the wrong statement -

(1) Neutral solute can move according to concentration gradient across the nonpolar lipid bilayer

(2) Water can also move according to concentration gradient across the nonpolar lipid bilayer.

(3) Non polar molecules can not pass through non polar lipid bilayer

(4) Na^+ & K^+ can move across membrane through active transport

49. Which of the following is not a function of cell wall ?

(1) Protection from mechanical damage and infection

(2) Cell to cell interaction

(3) Barrier to undesirable macromolecules

(4) Secretion

50. Which of the following component is not a constituent of algal cell wall ?

(1) Cellulose (2) Galactans

(3) Mannans (4) Hemicellulose

51. Which of the following constituent is right for endomembrane system ?

(1) ER, Golgi complex, lysosome & nucleus

(2) ER, Golgi complex, lysosome & vacuole

(3) ER, Golgi complex, lysosome & microbodies

(4) ER, Golgi complex, plastids & vacuole

52. Regarding to endoplasmic reticulum which of the following statement is wrong -

(1) ER divides the intra cellular space into two distinct compartments

(2) RER frequently observed in cells actively involved in secretion

(3) In animals steroidal hormones are synthesized in RER

(4) SER is the major site of lipid synthesis

53. Golgi complex receives proteins for modification from RER at which face -

(1) Cis face

(2) Trans face

(3) Concave face

(4) Maturing face

54. Which of the following reasons explains best, the close association of Golgi complex with ER ?

(1) Its enzymes works close to ER

(2) It receives material from ER for packaging

(3) It becomes active close to ER

(4) All of the above

55. In plant cells how much volume of cell can be occupied by vacuole ?

(1) 10% (2) 50%

(3) 90% (4) 80%

56. Classification of plastids into chloroplast, chromoplast and leucoplast is based on -

(1) Stored food (2) Pigments

(3) Structure (4) Size

57. Chloroplast of higher plants contains -

(1) Only chlorophyll

(2) Only carotenoids

(3) Both chlorophyll and carotenoids

(4) Phycobillins

58. Regarding to cilia and flagella which of the following statement is incorrect -

(1) Cilia is small and flagella is long

(2) Cilia can move either cell or surrounding fluid

(3) Flagella is responsible for movement of surrounding fluid

(4) Cilia work like oars

59. Plasma membrane covering of flagella and cilia surrounds the central core, that is known as -

(1) Shaft (2) Axonema

(3) Radial spoke (4) Arms

60. Radial spokes of flagella helps in connection between-

(1) Peripheral doublets

(2) Central singlet microtubules

(3) One of the peripheral doublet and central sheath

(4) Two successive peripheral doublets

61. What is the orientation of centrioles in centrosome?

(1) Parallel (2) Perpendicular

(3) Oblique (4) None of the above

62. Match the following -

(A) Robert Brown	(I) Ribonucleoproteins
(B) Flemming	(II) Nucleus as cell organelle
(C) Palade	(III) Packaging of materials
(D) Camillo Golgi	(IV) Staining of nucleus material

(1) A - (II) B - (IV) C - (I) D - (III)

(2) A - (II) B - (IV) C - (III) D - (I)

(3) A - (I) B - (II) C - (III) D - (IV)

(4) A - (IV) B - (III) C - (II) D - (I)

63. Nucleolus is the site of -

(1) Synthesis of r - RNA

(2) Synthesis of m - RNA

(3) Synthesis of t- RNA

(4) Synthesis of n- RNA

64. Classification of chromosomes with respect to shape based on -

(1) Structure

(2) Number of telomere

(3) Position of centromere

65. Chromosome with centromere slightly away from center is known as -

(1) Metacentric (2) Submetacentric

(3) Acrocentric (4) Telocentric

66. Match the following -

(A) Metacentric	(I) Terminal Centromere
(B) Submetacentric	(II) Centromere very close to its end
(C) Acrocentric	(III) Centromere sligthly away from the center
(D) Telocentric	(IV) Middle centromere

(1) A-(IV) B-(II) C-(III) D-(I)

(2) A-(IV) B-(III) C-(II) D-(I)

(3) A-(I) B-(II) C-(III) D-(IV)

(4) A-(I) B-(IV) C-(III) D-(II)

67. Find out the incorrect statement about secondary constriction -

(1) Non staining

(2) Constant position

(3) Known as satellite

(4) Present in some chromosomes

ANSWERS KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	2	3	2	2	3	3	4	1	4	2	2	3	3	3	4	3	1	2	3	4
Que.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans.	3	2	4	3	3	4	4	1	2	2	1	2	2	4	1	1	4	2	3	4
Que.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	1	2	2	3	1	3	3	3	4	4	2	3	1	2	3	2	3	3	2	3
Que.	61	62	63	64	65	66	67													
Ans.	2	1	1	3	2	2	3													