

EXERCISE-I

Cell theory and General

- Raphides are needle-like crystals of calcium oxalate which are specially common in
(A) *Asparagus* (B) *Dahlia*
(C) Balsam (D) Rose
- The smallest living cells with cell wall are
(A) Viroids (B) Algae
(C) Bacteria (D) Mycoplasma
- 'Micrographia' is a book authored by
(A) Leeuwenhoek (B) Jan Swammer Dan
(C) Robert Hooke (D) Rudolf Virchow
- Robert Hooke
(A) Lived in the 19th century
(B) Observed cork cells
(C) Invented lens
(D) Constructed a microscope
- The branch which deals with the study of cell structure and function is known as
(A) Histology (B) Ecology
(C) Morphology (D) Cytology
- Which one of the following is a prokaryote
(A) *Agaricus* (B) *Salmonella*
(C) Green algae (D) Bacteriophage
- Figures of cork cells as seen by Robert Hooke were published in his book
(A) Micrographia (B) Origin of species
(C) Plant kingdom (D) Genera plantarum
- The size of most of the cells is best expressed in
(A) Å (B) Millimeters (*mm*)
(C) Nanometers (*nm*) (D) Micrometers (μm)
- The word "Prokaryote" means a cell
(A) With many nuclei
(B) With one nucleus
(C) With diffused nucleus
(D) Without chloroplast
- 'Cell' was discovered by and given the term
(A) Grew (B) Brown
(C) Robert Hooke (D) Darwin
- Cystolith is made up of
(A) Calcium oxalate
(B) Calcium carbonate
(C) Calcium hydroxide
(D) Calcium oxide
- Which of the following is absent in prokaryotes
(A) Nuclear membrane
(B) Golgi bodies
(C) Endoplasmic reticulum
(D) All the above
- Smallest known cell is
(A) *Acetabularia*
(B) *Nostoc*
(C) *Chlamydomonas*
(D) *Pleuropneumonia* like organism
- Which of the following shows the absence of cytoplasmic streaming
(A) Eukaryotic cell (B) Prokaryotic cell
(C) Both (A) and (B) (D) None of the above
- Which of the following is absent in prokaryotes
(A) DNA (B) RNA
(C) Plasma membrane (D) Mitochondria
- Which of the following forms more than $\frac{1}{2}$ of cell
(A) Water (B) Mineral
(C) Protein (D) Carbohydrate
- The inherent capacity of a cell to regenerate a new whole organism is called
(A) Ontogeny (B) Totipotency
(C) Phycogeny (D) Differentiation
- Which of the following represents the correct sequence of relative sizes in descending order
(A) Cell, nucleus, chromosome, water molecule, oxygen atom
(B) Cell, nucleus, water molecule, oxygen atom, chromosome
(C) Chromosome, cell, nucleus, water molecule, oxygen atom
(D) Cell, nucleus, water molecule, chromosome, oxygen atom

19. Cytosomes are found in
(A) Chloroplasts (B) Bacteria
(C) Mitochondria (D) All of these
20. If living cells similar to those found on earth, were found on another planet where there was no oxygen. Which cell organelle would most probably be absent
(A) Cell membrane (B) Ribosomes
(C) Mitochondria (D) Chromosomes
21. Match the following and choose the correct combination from the options given

	Column I		Column II
A.	Robert Hooke	1.	Mutation theory
B.	Charles Darwin	2.	Swan-necked flask experiment
C.	Hugo de vries	3.	Origin of species
D.	Louis pasteur	4.	Micrographia

- (A) A-3, B-4, C-1, D-2 (B) A-2, B-1, C-3, D-4
(C) A-1, B-2, C-3, D-4 (D) A-4, B-3, C-1, D-2
22. Schleiden (1838) proposed that cell is the structural and functional unit of life. His idea was a
(A) Assumption (B) Generalization
(C) Hypothesis (D) Observation
23. Robert Hooke used the term cell in the year
(A) 1650 (B) 1665
(C) 1865 (D) 1960
24. Prokaryotic cell does not have
(A) Nucleolus
(B) Membrane bound organelles
(C) Centrioles
(D) All of these
25. With the increase in the shape of cell, its ratio of volume and surface area will be
(A) Unaltered
(B) Slightly increase
(C) Decrease
(D) Increase in many layers

Cell wall

26. A mature plant cell has
(A) Cell wall and protoplasm
(B) Protoplasm and vacuole
(C) Vacuole and cell wall
(D) Protoplasm, cell wall and vacuole
27. Cell wall in higher plants is made up of
(A) Cellulose + lignin
(B) Cellulose + pectine
(C) Cellulose + suberin
(D) Cellulose + lipid
28. In the middle lamella of plant cell walls, one of the main elements is
(A) Iron (B) Calcium
(C) Magnesium (D) Potassium
29. The chemical substance most abundantly present in the middle lamella is
(A) Pectin (B) Lignin
(C) Suberin (D) Cutin
30. Middle lamella is
(A) Present inside the primary wall
(B) Present inside the secondary wall
(C) Present outside the primary wall
(D) Present in between secondary and tertiary walls
31. The cell wall of plant cells are
(A) Single layered (B) Double layered
(C) Triple layered (D) Any of the above
32. The possibility of being outermost layer of cell is highest for which of the following
(A) Plasmalemma (B) Cell membrane
(C) Middle lamella (D) Primary wall
33. The plant cell wall is made up of cellulose. This is believed to be
(A) A liquid (B) A protein
(C) A polysaccharide (D) An amino acid
34. How many micelles combine to form a microfibril
(A) 10 (B) 20
(C) 40 (D) 60

35. Elementary fibrils of cellulose are also known as
(A) Micelles (B) Microfibrils
(C) Sub-micelles (D) Sub-microfibrils
36. How many microfibrils combine to form a fibril of cellulose
(A) 50 (B) 100
(C) 200 (D) 250
37. Tonofibrils are related to
(A) Nuclear membrane (B) Chloroplast
(C) Mitochondria (D) Plasmodesmata
38. Polygalacturonoids are the major constituents of
(A) Middle lamella (B) Primary cell wall
(C) Secondary cell wall (D) Cell membrane
39. Cell wall is absent in
(A) Gametes (B) *Amoeba*
(C) Mycoplasma (D) All of these
40. Cell wall is absent in
(A) Plants (B) Animals
(C) *Mucor* (D) Mango
- Plasma membrane**
41. According to Robertson, thickness of lipid zone in the cell membrane ranges from
(A) 10–20 Å (B) 25–35 Å
(C) 50–60 Å (D) 35–50 Å
42. Lipid molecule in plasma membrane are arranged in
(A) Scattered (B) Series
(C) Alternate (D) Head parallel
43. Phospholipids are
(A) Amphipathic (B) Amphibolic
(C) Hydrophobic (D) None of these
44. Ion carriers are located in
(A) Nucleus
(B) Cell wall
(C) Cellular space
(D) Plasma membranes
45. The plasma membrane is composed of
(A) Proteins
(B) Lipids
(C) Carbohydrates
(D) Both proteins and lipids
46. Every living cell has a
(A) Membrane (B) Food vacuole
(C) Chloroplast (D) Cell wall
47. When a cell engulfs or surrounds a particle and forms a vesicle around it, the phenomenon is known as
(A) Exocytosis (B) Phagocytosis
(C) Endocytosis (D) None of these
48. The main difference between pinocytosis and phagocytosis is
(A) Taking in of fluid substances and engulfing of food material and foreign bodies
(B) Taking in of small and large particles respectively
(C) Taking in of small amount of liquid and large volume of liquids
(D) None of the above
49. Who proposed the concept of unit membrane for tripartite structure
(A) Davson and Daniell (B) Robertson
(C) Sanger and Singer (D) Scifriz
50. Which one of the following is present outside the plasma membrane but inside the cell wall
(A) Sphaerosome (B) Peroxisome
(C) Lomasome (D) Golgi body
51. The process of cell eating is called
(A) Pinocytosis (B) Phagocytosis
(C) Endocytosis (D) Exocytosis
52. Which one statement regarding plasma membrane is correct
(A) Its outer and inner layer are electron dense while middle layer is electron transparent
(B) Its outer and middle layer are electron transparent while inner layer is electron dense
(C) Its outer and inner layer are electron transparent while middle one is electron dense
(D) All layers are electron dense

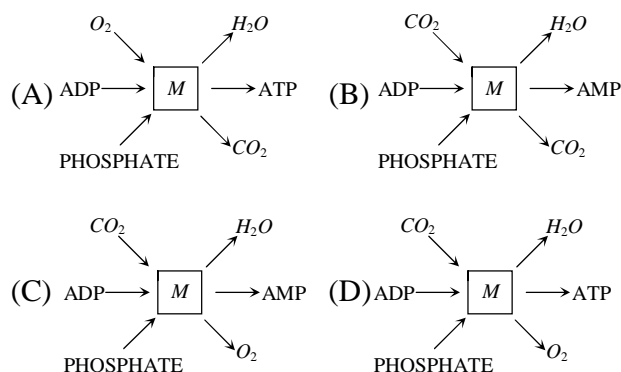
Protoplasm and Cytoplasm

53. One of the fundamental characteristic of cell membrane is
(A) Amino acid regulation
(B) Fat regulation
(C) Glucose regulation
(D) Ion regulation
54. According to mosaic model, plasma membrane is made up of
(A) Cellulose and hemicellulose
(B) Phospholipid and integrate protein
(C) Phospholipid, extrinsic and intrinsic protein
(D) Phospholipid and hemicellulose
55. Nature of plasma membrane is
(A) Permeable (B) Semipermeable
(C) Impermeable (D) None of the above
56. Ephagy refers to
(A) Removal of metabolic waste by exocytosis
(B) Removal of metabolic waste by endocytosis
(C) Exudation of secretory products
(D) None of these
57. Pinocytosis and phagocytosis are concerned with
(A) Cell wall (B) Protoplasm
(C) Nucleus (D) None of these
58. Carbohydrates are present in the plasmalemma in the form of
(A) Starch
(B) Cellulose
(C) Hemicellulose
(D) Phospholipids (glycolipids) and phosphoproteins (glycoproteins)
59. Lomasomes are found in
(A) Algal cell (B) Fungal cell
(C) Yeast (D) *E. coli*
60. Desmosome is modification of
(A) Plasma membrane
(B) Nucleous
(C) Golgi bodies
(D) ER-Nucleus complex
61. Cyclosis is
(A) Circular movement of cytoplasm inside the cell
(B) Up and down movement of protoplasm
(C) To and fro movement of nucleoplasm
(D) None of the above
62. The best material for demonstrating streaming movement of protoplasm within living cells is
(A) Onion peel
(B) Staminal hairs of *Tradescantia*
(C) Pith cells
(D) Cortical cells
63. Protoplasm is made up mainly of
(A) Oxygen, carbon, hydrogen and nitrogen
(B) Oxygen, phosphorus and minerals
(C) Carbon, hydrogen and iron
(D) Iron, carbon, oxygen and nitrogen
64. Contribution of protoplasm to the total weight of the body is
(A) 10% (B) 45%
(C) 7% (D) 95%
65. "Plasma gel" is the name of
(A) Ectoplasm (B) Endoplasm
(C) Protoplasm (D) None of these
66. Protoplasm found inside the nucleus is known as
(A) Nucleoplasm (B) Amyloplast
(C) Elaioplast (D) Cytoplasm
67. The amount of which of the element is greatest in protoplasm
(A) Hydrogen (B) Oxygen
(C) Nitrogen (D) Carbon
68. Which one of the following is a non-protoplasmic cell inclusion
(A) Ribosomes (B) Mitochondria
(A) Lysosomes (D) Cystoliths
69. Protoplasm is a
(A) True solution
(B) Suspension
(C) Emulsion
(D) Polyphasic colloidal system

70. Protoplasm was regarded as the "physical basis of life" by
 (A) Huxley (1868) (B) Corti (1772)
 (C) Hardy (1899) (D) Malpighi (1903)

Mitochondria

71. Mitochondria are related to
 (A) Prokaryotes (B) Plasmids
 (C) Plastids (D) Viruses
72. F_1 particles / oxysome/ elementary particles are present in
 (A) Endoplasmic reticulum
 (B) Chloroplast
 (C) Mitochondria
 (D) Golgi complex
73. The number of mitochondria increases in cells of
 (A) Dormant seeds
 (B) Germinating seeds
 (C) Dry seeds
 (D) Dead seeds
74. In prokaryotes, the mitochondria are absent. Even then Krebs cycle takes place. What is the site of Krebs cycle in bacteria
 (A) Ribosomes (B) Nucleoid
 (C) Cytoplasm (D) Mesosomes
75. The site for cellular respiration is
 (A) Nucleus (B) Ribosome
 (C) Mitochondria (D) ER
76. Glycogen occurs in
 (A) Mitochondria (B) Krab's cycle
 (C) Cytoplasm (D) None of these
77. Which of the following representation correctly explain the function of mitochondrion



78. The proteins, forming the membranes of mitochondria are called
 (A) Mitochondrial proteins
 (B) Structural proteins
 (C) Skeletal proteins
 (D) All the above
79. Mitochondria are non-existent in
 (A) Red algae (B) Some bacteria
 (C) Green algae (D) Brown algae
80. Mitochondria supply most of the necessary biological energy by
 (A) Breaking down of sugar
 (B) Oxidizing substrates of TCA cycle
 (C) Reducing NADP
 (D) Breaking down of protein
81. Centre of phosphorylation
 (A) Peroxisome (B) Oxysome
 (C) Ribosome (D) Mitochondria
82. In which part of mitochondria, ATP is generated
 (A) Matrix
 (B) Cristae
 (C) Outer membrane
 (D) F_1 particles (oxysomes)
83. The reaction of ATP formation is
 (A) Exergonic (B) Endergonic
 (C) Spontaneous (D) Reversible
84. Function of mitochondria is
 (A) To provide CoA
 (B) To synthesize PGA
 (C) To release energy during respiration
 (D) All the above
85. Single mitochondrion is found in
 (A) *Microsteria* (B) *Rhizopus*
 (C) *Nostoc* (D) *Ulothrix*
86. Mitochondria are the site for
 (A) Photophosphorylation
 (B) Oxidative phosphorylation
 (C) Transpiration
 (D) Carboxylation

87. Which of the following cell organelle is considered to be rich in catabolic enzymes
(A) Endoplasmic reticulum
(B) Lysosome
(C) Golgi body
(D) Mitochondria
88. The size of mitochondrion is
(A) 5–10 μ (B) 50–100 μ
(C) 0.5–1.0 μ (D) 150–300 μ
89. The presence of DNA in mitochondria and chloroplast supports the hypothesis that
(A) Mitochondria and chloroplast both originated as independent free living organisms
(B) Glycolysis occurs in mitochondria and chloroplast both
(C) ATP is produced in mitochondria and chloroplast both
(D) Mitochondria and chloroplast undergo meiosis and mitosis independent of nucleus
90. Percentage of mitochondrial DNA in the cells is
(A) 10% of total cellular DNA
(B) 1% of total cellular DNA
(C) 2.5% of total cellular DNA
(D) None of the above
- Plastids**
91. A well organised system of grana and stroma in plastids of normal barley plant was reported by
(A) de Von Wettstein (B) Peter Satir
(C) P. Armond (D) Grell
92. The chloroplasts of algae usually lack
(A) Grana (B) Pigments
(C) Quantasomes (D) Lamellae
93. "Quantasomes" were discovered by
(A) Garner and Allard
(B) Muller and Morgan
(C) Lederberg and Tatum
(D) Park and Biggins
94. Plant cells differ from animal cells in having
(A) Centrosome (B) Golgi body
(C) Vacuole (D) Plastid
95. Chromatophores contain
(A) Chlorophyll
(B) Pigments other than chlorophyll
(C) Chlorophyll and other pigments where colour of chlorophyll is masked by another pigment
(D) None of the above
96. From recent studies it has been found that pre-existing plastids arise from
(A) Bodies called proplastids
(B) The nucleus
(C) The vacuole
(D) The cell wall
97. The term chromatophore was coined by
(A) Schmitz
(B) Comparethi
(C) W. Pfeffer
(D) Singer and Nicolsan
98. Mark the incorrect statement
(A) All cells do not contains a true nucleus
(B) Respiration occurs in mitochondria
(C) Cell walls are generally made up of cellulose
(D) All living plant cells contains chlorophyll
99. The main difference between chlorophyll 'a' and 'b' is
(A) Chlorophyll 'a' is linear chain compound and 'b' is branched chain
(B) Chlorophyll 'a' has no Mg^{+} ion in centre of molecule
(C) In chlorophyll 'a' there is CH_3 group whereas in 'b' it is $-CHO$ group
(D) All of the above
100. Cytochrome is found in
(A) Cytoplasm (B) Golgi body
(C) Nucleus (D) Plasmalemma
101. Number of thylakoids per granum is one in
(A) Red algae (B) Green algae
(C) Leaf of pea plant (D) Leaf of gram

Endoplasmic reticulum and Golgi body

- 102.** Amyloplast is
(A) Green plastid (B) Yellow plastid
(C) Red plastid (D) Colourless plastid
- 103.** When green tomatoes fruits turn to red, then
(A) Chloroplasts are disintegrated and get converted into chromoplasts
(B) New chromoplasts are formed
(C) Chromoplasts are changed to chloroplasts
(D) None of the above
- 104.** Fret channels are associated with
(A) Two grana of a chloroplast
(B) Two lamellae of a granum
(C) Two plastids of a cell
(D) Two quantasomes
- 105.** All plastids have essentially same structure because
(A) They have to perform same function
(B) They are localized in aerial parts of plant
(C) All plastids store starch, lipid and proteins
(D) One type of plastids can be differentiated into another type of plastid depending on cell requirements
- 106.** Chromoplast may be of
(A) Orange colour (B) Red colour
(C) Yellow colour (D) All the above
- 107.** The thylakoid in chloroplast are arranged as
(A) Interconnected disc
(B) Interconnected sacs
(C) Stacked discs
(D) None of these
- 108.** To which of the following aleuroplast is concerned
(A) Photosynthesis (B) Protein storage
(C) Lipid storage (D) ATP storage
- 109.** Which one of the following pigments does not occur in the chloroplast
(A) Carotene (B) Chlorophyll 'b'
(C) Xanthophyll (D) Anthocyanin
- 110.** The amyloplasts look like
(A) Proplastids (B) Elioplast
(C) Aleuroplast (D) Chloroplast
- 111.** GERL system was proposed by
(A) Aschoff (B) Metchnikoff
(C) Novikoff (D) None of these
- 112.** Sarcoplasmic reticulum is related with
(A) Protein synthesis
(B) Hormone synthesis
(C) Release of Ca^{++} ions and contraction of muscles
(D) None of these
- 113.** During ultracentrifugation the ER and bodies associated with it are separated as a fraction known as
(A) Microsome (B) Polysome
(C) Quantosome (D) Episome
- 114.** The most important function of endoplasmic reticulum is
(A) Protein synthesis
(B) Nourishing the nucleus
(C) Secretion of materials
(D) To give shape to the cell
- 115.** In rapidly dividing cells, endoplasmic reticulum is
(A) Highly developed (B) Poorly developed
(C) Absent (D) Non-functional
- 116.** The fine network of single unit membrane distributed extensively throughout the cytoplasm in a cell is referred to as
(A) Golgi bodies
(B) Peroxisome
(C) Lysosome
(D) Endoplasmic reticulum
- 117.** The endoskeleton of cell is made up of
(A) Cell wall
(B) Endoplasmic reticulum
(C) Cytoplasm
(D) Mitochondria
- 118.** "Endoplasmic reticulum" was discovered by
(A) Porter (B) Altmann
(C) Golgi (D) Benda

- 119.** RER is mainly concerned with
 (A) Proteolysis
 (B) Fatty acids synthesis
 (C) Peptide bond formation
 (D) Cholesterol synthesis
- 120.** Which of the following is responsible for mechanical support, enzyme transport and protein synthesis
 (A) Dictyosomes
 (B) Cell membrane
 (C) Mitochondria
 (D) Endoplasmic reticulum
- 121.** Main function of dictyosomes is
 (A) Respiration
 (B) Storage
 (C) Secretion
 (D) Breakdown of fats
- 122.** The scattered sacs of golgi in plants are called as
 (A) Dictyosome (B) Ribosome
 (C) Cisternae (D) Microsome
- 123.** Zone of exclusion is associated with
 (A) Golgi complex
 (B) Endoplasmic reticulum
 (C) Mitochondria
 (D) Chloroplast
- 124.** Cell wall materials are synthesized by
 (A) Dictyosomes (B) Ribosomes
 (C) Lysosomes (D) Centrosomes
- 125.** Which of the following structure is the functional unit in a golgi complex
 (A) Cristae (B) Cisternae
 (C) Thylakoid (D) None of the above
- 128.** Lysosome along with the food content is called
 (A) Primary lysosome
 (B) Secondary lysosome
 (C) Residual bodies
 (D) Cytosome
- 129.** The cell organelle showing extensive polymorphism is
 (A) Dictyosomes (B) Chloroplasts
 (C) Lysosomes (D) Ribosomes
- 130.** Lysosomes are known as *suicidal bags* because of
 (A) Catalytic enzymes
 (B) Hydrolytic enzymes
 (C) Parasitic on nucleus
 (D) Proteolytic enzymes
- 131.** The 80S ribosomes are present in
 (A) Eucaryotic cells
 (B) Procaryotic cells
 (C) Bacterial cells
 (D) Cyanobacterial cells
- 132.** 'Palade granules' are
 (A) Ribosomes (B) Microbodies
 (C) Sulphur granules (D) Lipid granules
- 133.** Which of the following cell organelle lacks DNA and bounding membrane
 (A) Ribosome (B) Plastid
 (C) Nucleolus (D) Plasmid
- 134.** Which of the following organelle is called as "protein factory of the cell"
 (A) Lysosome (B) Mitochondria
 (C) Golgi body (D) Ribosome
- 135.** Which of the following affects the association and dissociation of sub-units of ribosomes
 (A) *Mg* (B) *Ca*
 (C) *Fe* (D) *K*
- 136.** 70S type of ribosome shows two units whose sedimentation constants are
 (A) 40 S and 30 S (B) 50 S and 20 S
 (C) 50 S and 30 S (D) 60 S and 20 S

Lysosome and Ribosomes

- 126.** The cellular role for lysosome is not
 (A) Ingestion of foreign bodies
 (B) Digestion of aged organelles
 (C) Cell destruction during development
 (D) Osmoregulation
- 127.** Which is concerned with autolysis
 (A) Ribosome (B) Golgi bodies
 (C) Lysosome (D) Oxyosome.

Sphaerosomes, Peroxisomes, Glyoxysomes and Vacuoles

- 137.** Which of the following structures carries out a similar function in both plant and animal cell
 (A) Chloroplasts
 (B) Ribosomes
 (C) Cell wall
 (D) Contractile vacuoles
- 138.** Eukaryotic 80 S ribosome breaks into
 (A) 40 S and 40 S (B) 60 S and 40 S
 (C) 60 S and 50 S (D) 50 S and 30 S
- 139.** Which of the following pairs is correct
 (A) Svedberg unit — Biomembranes
 (B) Polyribosomes — RNA
 (C) Dictyosomes — Suicidal sacs
 (D) Cisternae — Mitochondria
- 140.** Ribosomes are attached to E.R. through
 (A) Riboplasm
 (B) rRNA
 (C) tRNA
 (D) Hydrophobic interaction
- 141.** The functional unit in the synthesis of protein is
 (A) Peroxisome (B) Dictyosome
 (C) Lysosome (D) Polysome
- 142.** The site of protein synthesis in plants is the
 (A) Chloroplast (B) Ribosomes
 (C) Pyrenoids (D) Mitochondria
- 143.** The bacterial ribosomes are of
 (A) 50 S type (B) 70 S type
 (C) 30 S type (D) 80 S type
- 144.** All are membrane bound cell organelles except
 (A) Mitochondria (B) Lysosomes
 (C) Sphaerosomes (D) Ribosomes
- 145.** Ribosomes that occur exclusively in mitochondria is
 (A) 70S (B) 55S
 (C) 30S (D) 50S
- 146.** What is degraded by Peroxisomes
 (A) Carbon dioxide
 (B) Hydrogen peroxide
 (C) Lithium oxide
 (D) Carbon monoxide
- 147.** Peroxisomes in plant cells are called
 (A) Oxyosomes (B) Glyoxysomes
 (C) Condriosomes (D) Autosomes
- 148.** Enzymes concerning H_2O_2 metabolism are present in
 (A) Golgi bodies (B) rRNA
 (C) Peroxisomes (D) Chloroplasts
- 149.** Peroxisomes do not have
 (A) *D*-amino acid oxidase
 (B) β -hydroxy acid oxidase
 (C) Urate oxidase
 (D) Amylase
- 150.** Which of the following are included in the category of microbodies
 (A) Peroxisomes (B) Sphaerosomes
 (C) Glyoxysomes (D) All the above
- 151.** In plant cells the site of storage of minerals is
 (A) Golgi body (B) Mitochondria
 (C) Peroxisomes (D) Vacuole
- 152.** *pH* of vacuolar cell sap is
 (A) Neutral and isotonic
 (B) Alkaline and hypotonic
 (C) Acidic and hypertonic
 (D) Equal to cytoplasm and isotonic
- 153.** The tonoplast is
 (A) Impermeable
 (B) Permeable
 (C) Semipermeable
 (D) Differentially permeable
- 154.** Tonoplast is a
 (A) Covering layer of golgi complex
 (B) Covering layer of vacuoles
 (C) Covering layer of microbodies
 (D) Non-living cytoplasmic content

- 155.** The colour of rose petals is due to water soluble pigments present in the
 (A) Cytoplasm (B) Nucleus
 (C) Intercellular spaces (D) Vacuoles

**Centrosomes / Centriole
Cilia, Flagella and Microtubules**

- 156.** The main structure of centriole is
 (A) 9 + 3 fibrils
 (B) 9 + 2 fibrils
 (C) Nine triplets
 (D) 13 globular subunits
- 157.** A plant cell usually differs from an animal cell in the absence of
 (A) Ribosomes (B) Centriole
 (C) Mitochondria (D) E.R.
- 158.** Each peripheral fibril on the centriole is made up of
 (A) 1 microtubule (B) 2 microtubule
 (C) 3 microtubule (D) 4 microtubule
- 159.** A centrosome is
 (A) A cytoplasmic organelle present in plant cells
 (B) A cytoplasmic organelle present in animal cells
 (C) A cytoplasmic organelle present in plant and animal cells
 (D) A nuclear structure present in animal cells
- 160.** Plant cells lack
 (A) Spindle fibres
 (B) Centrioles
 (C) Asters
 (D) Centrioles and asters
- 161.** The basal bodies at the base of flagella and cilia are
 (A) Ribosome (B) Kinetosome
 (C) Kinetoplast (D) Dictyosome
- 162.** The filaments associated with cilia and flagella are constituted by
 (A) Microtubules (B) Microfilaments
 (C) Microfibrils (D) Microvilli

- 163.** Prokaryotic flagella possess
 (A) Helically arranged protein molecule
 (B) Protein membrane enclosed fibre
 (C) Unit membrane enclosed fibre
 (D) Microtubular 9+2 membrane enclosed structure
- 164.** Microtubule is involved in the
 (A) Cell division
 (B) DNA recognition
 (C) Muscle contraction
 (D) Membrane architecture
- 165.** Which one of the following are mainly concerned with the spindle fibre formation
 (A) Sphaerosomes
 (B) Microtubules
 (C) Golgi bodies
 (D) Endoplasmic reticulum

Nucleus and Chromosomes

- 166.** The nucleoplasm is continuous with the cytoplasm of a cell through
 (A) Centriole
 (B) Endoplasmic reticulum
 (C) Nuclear pores
 (D) Golgi apparatus
- 167.** The term 'nucleolus' was coined by
 (A) R. Brown (B) H. Hooks
 (C) Bowman (D) Hanstein
- 168.** Karyolymph is a
 (A) Nuclear sap (B) SPM membrane
 (C) Nuclear pore (D) None of these
- 169.** The nuclear spindle consists of
 (A) One type of fibre
 (B) Two types of fibres
 (C) Three types of fibres
 (D) Four types of fibres
- 170.** Watson has calculated the nuclear pores of the mammalian cells to be of the total surface area of the nucleus
 (A) 5 percent (B) 50 percent
 (C) 25 percent (D) 10 percent

- 171.** The "master mind" of the cell is
 (A) Protoplast (B) Nucleolus
 (C) Nucleus (D) Plastid
- 172.** Pars amorpha is associated with
 (A) Nucleus (B) Chloroplast
 (C) Mitochondria (D) Nucleolus
- 173.** Nucleoli are rich in
 (A) DNA and RNA
 (B) DNA, RNA and proteins
 (C) DNA
 (D) RNA
- 174.** Histone proteins found in nuclei of eukaryotes are
 (A) Acidic (B) Basic
 (C) Neutral (D) Amphoteric
- 175.** The structure of nuclear membrane facilitates
 (A) Synapsis of homologous chromosomes at meiosis
 (B) Nucleo-cytoplasmic exchange of materials
 (C) Anaphasic separation of daughter chromosomes
 (D) Organization of spindles
- 176.** Amount of which one of the following is more in the nucleus but less in the chromosome
 (A) DNA
 (B) RNA
 (C) Histone proteins
 (D) Non-histone proteins
- 177.** In nucleoplasm, a conspicuous body of spherical shape attached to a particular chromosome on a definite position is called
 (A) Plasmid
 (B) Karyolymph
 (C) Nucleolus
 (D) Nuclear reticulung
- 178.** Width of perinuclear space is
 (A) 30 to 50 Å (B) 50 to 80 Å
 (C) 100 to 300 Å (D) 300 to 1000 Å
- 179.** Who showed that the nuclear membrane has many pores or circular structures or annuli
 (A) Fawcell
 (B) Strasburger
 (C) Butchen
 (D) Callan and Tomlin
- 180.** Nucleolemma is a part of
 (A) Nuclear membrane
 (B) Nuclear reticulum
 (C) Nucleolus
 (D) Nucleoplasm
- 181.** The condition when a large number of nucleus are found due to the absence of cytoplasmic division (which happens after telophase stage). This condition are called
 (A) Polyploidy (B) Syncytium
 (C) Heterokaryon (D) None of these
- 182.** Which type of protein is found in nucleus
 (A) Simple protein
 (B) Structural protein
 (C) Conjugated protein
 (D) Derived protein
- 183.** Which of the following regulates and governs the physiological processes of the cell
 (A) Protoplast (B) Nucleolus
 (C) Mitochondria (D) Nucleus
- 184.** Nucleus is enclosed in
 (A) Double and non-porous layer
 (B) Double and porous layer
 (C) Single and non-porous layer
 (D) Single and porous layer
- 185.** DNA is mainly found in
 (A) Nucleus only
 (B) Nucleus and cytoplasm
 (C) Cytoplasm only
 (D) All of these
- 186.** In which kind of study is banding done
 (A) Creation of new species
 (B) Production of disease resistant variety
 (C) Mapping of chromosomes
 (D) Artificial pollination
- 187.** Minimum haploid numbers of chromosomes in plant kingdom
 (A) 3 (B) 2
 (C) 1 (D) 4
- 188.** A chromosome in which the centromere is situated near one end is known as
 (A) Telocentric (B) Acrocentric
 (C) Submetacentric (D) Metacentric

189. L-shaped chromosomes are called

- (A) Sex chromosome (B) Acrocentric
(C) Telocentric (D) Sub-metacentric

190. Spindle chromosomes have

- (A) Centriole (B) Kinetochore
(C) Chromocentre (D) Chromomere

191. Which of the following are used to define the karyotype of a species

1. The number of chromosomes
2. The chromosome length
3. The positions of the centromeres

Code :

- (A) 1, 2 and 3 are correct
(B) Only 1 and 2 are correct
(C) Only 2 and 3 are correct
(D) Only 1 and 3 are correct

192. Chromosomes always exist

- (A) In pairs
(B) In association with mitochondria
(C) Singly
(D) None of these

193. Spindle fibres attach to chromosomes at their

- (A) Telomeres (B) Chromomeres
(C) Kinetochores (D) Centromeres

194. In a cell that is not dividing, the chromosomes are visible as a tangle of fine threads called

- (A) Microtubules (B) Chromatin
(C) Microfilaments (D) Nucleotin

195. A tetrad consists of

- (A) Four non-homologous chromatids
(B) Four non-homologous chromosomes
(C) Two sets of homologous chromosomes, each with two chromatids
(D) Four homologous pairs of chromosomes