QUESTION BANK

EXERCISE - 1

Q.1 State any one aspect of cells which applies to all cells without exception.

Q.2 Differentiate between a plant cell and an animal cell.

Q.3 Explain cell theory.

Q.4 Write the names of the following organelles
(A) Power house of the cell (B) Digestive (C) Protein factory of cell (D) Head quarter of cell

Q.5 Define cristae ?

Q.6 Which cell type probably evolved first ?

Q.7 What is the primary function of the plasma membrane ?

Q.8 Does facilitated diffusion occur against a concentration gradient ? Does it require energy ?

Q.9 Why does water diffuse out of a cell if it is placed in a hypertonic solution ?

Q.10 What are the structural differences between a prokaryotic cell and a normal eukaryotic cell ?

Q.11 Write functions of endoplasmic reticulum.

Q.12 How is a prokaryotic cell different from a eukaryotic cell?

Q.13 Which organelle is known as the powerhouse of the cell? Why?

Q.14 What is osmosis ?

Q.15 Give one main function of each of the following :
(a) Cell wall (b) Ribosomes (c) Mitochondria (d) Golgi bodies

Q.16 What will happen if all the mitochondria of a cell are destroyed ?

Q.17 What do you mean by "Semiautonomous genomes system"? In which organelle is it present ?

Q.18 Name process by which a cell engulfs its food ?

Q.19 What is the function of Ribosomes ?

Q.20 Urea is toxic waste produced inside liver cells. It diffuses from those cells into the blood and is eliminated from the body by the kidneys. What would happen to the intracellular and extracellular concentration of urea if the kidneys stopped functioning ?

Q.21 Vacuoles can have a wider variety of functions in plant cells than do lysosomes in animal cells. Describe one function that vacuoles perform in plant cells that lysosomes do not in animal cells.

Q.22 Describe one common characteristic shared by microtubules and actin filaments. Relate this characteristic to the function of these filaments in the cell.

Q.23 Which type of microscope would you use to study
(a) the changes in shape of a living human white blood cel1; (b) the finest details of surface texture of a human hair; (c) the detailed structure of an organelle in the cytoplasm of a human liver cell ?

Q.24 Using a light microscope to examine a thin section of a large spherical cel1,you find that it is 0.3 mm in diameter. The nucleus is about one fourth as wide. What is the diameter of the nucleus in micrometers ?

Q.25 How is the nucleoid region of a prokaryotic cell unlike the nucleus of a eukaryotic cell ?

Q.26 Which component of the cytoskeleton is most important in (a) holding the nucleus in place within the cell; (b) guiding chromosomes during cell division; (c) contracting muscle cells ?

Q.27 How do cilia and flagella bend ?

Q.28 Why do phospholipids tend to organize into a bilayer in an aqueous environment ?

Q.29 Explain why it is not enough just to say that a solution is "hypertonic."

Q.30 What is the energy source for active transport ?

Q.31 What is meant by the term "two-dimensional fluid" ?

Q.32 Schleiden, Schwann, and Virchow all contributed to the development of the Cell Theory in the nineteenth century. Formulate two statements that comprise the cell theory of the nineteenth century.

Q.33 As a cell increases in size, its surface-to-volume ratio decreases which causes the cell to function less efficiently. Discuss ways in which variations in cell structure can help overcome this problem.

Q.34 Why is the presence of organelles within eukaryotes significant? In other words, why are eukaryotes so complex and diverse as compared with prokaryotes?

Q.35 What three features of plant cells distinguish them from animal cells?

Q.36 Once regarded as depositories for waste products in plant cells, vacuoles now are known to play many different roles. What are some of those roles?

Q.37 Distinguish between rough endoplasmic reticulum and smooth endoplasmic reticulum, both structurally and functionally.

Q.38 Endoplasmic reticulum helps in membrane biogenesis. Explain how ?

HOTS QUESTIONS

Q.39 Carry out the experiment on osmosis note the observations and give answer of the following questions.

Experiment :- Take four peeled potato halves and scoop each one out to make potato cups. One of these potato cups should be made from a boiled potato. Put each potato cup in a trough containing water. Now,

(A) Keep cup A empty (B) Put 1 tsp sugar in cup B (C) Put 1 tsp salt in cup C

(D) Put 1 tsp sugar in the boiled potato cup D

Questions :- (1) Explain why water gathers in the hollowed portion of B and C.

(2) Why is potato A necessary for the experiment.

(3) Explain why water does not gather in the hollowed out portions of A and D ?

Q.40 Why is the cell called structural and functional unit of life?

Q.41 Why is osmosis a special type of diffusion ?

Q.42 What are the functions of vacuoles in plant cells and unicellular organisms ?

Q.43 The transport of glucose into most cells occurs by facilitated diffusion. Because diffusion occurs from a higher to a lower concentration, glucose cannot accumulate within these cells at a higher concentration than is found outside the cell. Once glucose enters a cell, it is rapidly converted to other molecules, such as glucose phosphate or glycogen. What effect does this conversion have on the ability of the cell to transport glucose ?

Q.44 Proteins embedded in the plasma membrane have several important functions in the life of the cell. Describe two of these functions and explain why they are important to the cell.

Q.45 How is the structure of a membrane related to its function?

Q.46 What are the basic features of cells ?

Q.47 Suggest a reason why it would be advantageous for eucaryotic cells to evolve elaborate internal membrane systems that allow them to import substance from the outside.

Q.48 Discuss the relative advantages and disadvantages of light and electron microscopy. How could you best visualize (a) a living skin cell, (b) a yeast mitochondrion, (c) a bacterium and (d) a microtubule ?

Q.49 There are three major classes of filaments that make up the cytoskeleton. What are they and what are the differences in their functions ?

Q.50 Five students in your class always sit together in the front row. This could be because (A) they really like each other or (B) nobody else in your class wants to sit next to them. Which explanation holds for the assembly of a lipid bilayer? Explain. Suppose that lipid molecules behaved in the other way. How would the properties of the lipid bilayer be different ?

Q.51 Organelles are the functional subunits of the cell. Indicate the functions associated with the following structure:

(a) Nucleus (b) Rough Endoplasmic Reticulum (c) Smooth Endoplasmic Reticulum

(d) Golgi body (e) Lysosomes (f) Mitochondrion

(g) Chloroplast (h) Peroxisomes

EXERCISE - 2

Fill in the blanks

Q.1 The organelle most vital for the survival of a cells ..... .
Q.2 Ribosomes are concerned with the synthesis of ..... .
Q.3 Cell wall is found only in ..... cells.
Q.4 DNA is the abbreviated form of ..... .
Q.5 Movement of water across cell membrane takes place by .....
Q.6 Part of cell between plasma membrane and nucleus is .....
Q.7 Genes are functional segments of .....
Q.8 Photosynthesis takes place in .....
Q.9 Vacuoles are surrounded by a single membrane called .....
Q.10 The double-membraned intercellular transport system with ribosomes is called the .....
Q.11 It was once believed that cellular organelles floated in the cytoplasm of cells. Today, however, it has been discovered that a ..... provides a site of attachment for many cellular organelles.
Q.12 Active transport is the movement of molecules against a diffusion gradient from ..... concentration to ..... concentration.
Q.13 Active transport and facilitated transport are alike in that they require ..... proteins, but they differ in that in active transport ..... is required.
Q.14 The type of endocytosis known as "cell feeding" is called .....
Q.15 As dividing cells contact one another this inhibits the cell from dividing further. This phenomenon is believed to be due to the cell surface ..... and .....
Q.16 The fundamental organisational unit of life is the .....
Q.17 Cells are enclosed by a plasma membrane composed of ..... and .....
Q.18 In plant cells, a cell wall composed mainly of ..... is located outside the cell membrane.
Q.19 Chromoplasts that contain chlorophyll are called ..... and they perform photosynthesis.
Q.20 The primary function of leucoplasts is .....

True-False Statements –

Q.21 Lysosomes synthesize hormones and enzymes.
Q.22 In animal cells, the mitochondria is the only cell organelle outside the nucleus that contains DNA
Q.23 All animal cells contain a cell wall.
Q.24 Protoplasm is the part of the cell which surrounds the nucleus.
Q.25 Amoeba is a multicellular organism.
Q.26 Ribosomes are present in eukaryotic cells only.
Q.27 Mitochondria do not have the ability to make some of their own proteins.
Q.28 Photosynthetic prokaryotic bacteria have chlorophyll pigments in membranous vesicles.
Q.29 Presence of cell wall enables bacteria to live in hypotonic medium without bursing.
Q.30 The first cells on earth were probably eukaryotic.
Q.31 The limiting factor in microscopy is magnification.
Q.32 In general, eukaryotic cells consist of a nucleus and a cytoplasmic region.
Q.33 The function of a cell is related to its structure.
Q.34 Diffusion is the movement of molecules from a place of higher concentration to a place of lower concentration in a liquid, solid, or gas.
Q.35 Osmosis is the passive transport of a solvent molecule, usually water, from a place of higher concentration through a membrane to a place of lower concentration.
Q.36 Facilitated transport requires the expenditure of energy.

Q.37 Plasma membranes are not the site of many cellular reactions; rather they are just static structures that separate cells from each other.
Q.38 Plants are composed of procaryotic cells.
Q.39 Nuclei and mitochondria are surrounded by a double membrane.
Q.40 Lipids in a lipid bilayer rotate rapidly around their long axis.
Q.41 Lipids in a lipid bilayer rapidly exchange positions with one another in the plane of the membrane.
Q.42 Lipids in a lipid bilayer do not flip-flop readily from one lipid monolayer to the other.
Q.43 Some membrane proteins are enzymes.
Q.44 The plasma membrane is highly impermeable to all charged molecules.
Q.45 The nucleus in eukaryotes is separated from the cytoplasm by double-layered membrane
Q.46 The ER functions both as a passageway for intracellular transport and as a manufacturing surface.
Q.47 Prokaryotic cells have no membrane-bound organelles.

EXERCISE - 3 (MCQ LEVEL 1)

Q.1 The honour of seeing, the structure of the cell for the first time is given to –
(A) Matthias Schleiden (B) Anton van Leeuwenhoek
(C) Robert Brown (D) Robert Hooke

Q.2 The example of a prokaryotic cell is –
(A) blue green algae (B) fungi (C) plants (D) animals

Q.3 The scientist who saw the living cell for the first time was–
(A) Leeuwenhoek (B) M.J. Schleiden (C) Kolliker (D) Palade

Q.4 Who proposed the cell theory ?
(A) Schleiden and Schwann (B) Watson and Crick
(C) Darwin and Wallace (D) Mendel and Morgan

Q.5 Which is called the 'digestive bag' ?
(A) Centrosome (B) Lysosome (C) Mesosome (D) Chromosome

Q.6 Solute concentration is higher in the external solution :
(A) Hypotonic (B) Isotonic (C) Hypertonic (D) None of above

Q.7 Which of the following organelles does not have membrane ?
(A) Ribosome (B) Nucleus (C) Chloroplast (D) Mitochondria

Q.8 The main function of a plasma membrane is to
(A) Prevent water from entering or leaving (B) Control what goes into and out of the cell
(C) Act as a seive, allowing only lipids to pass (D) Move the cell from place to place

Q.9 Which of the following organelles would not be found in a plant cell –
(A) chloroplast (B) DNA (C) food vacuole (D) cell membrane

Q.10 Plastid that are white in colour (pigment free)
(A) Chloroplast (B) lysosome (C) leucoplast (D) Chromoplast

Q.11 The following are called 'Suicidal bags'
(A) Centrosomes (B) Lysosomes (C) Microsomes (D) Mesosomes

Q.12 Plant cell wall is mainly composed of
(A) Sugars (B) Cellulose (C) Proteins (D) Lipids

Q.13 Nucleus was discovered by
(A) Robert Brown (B) Robert Hooke (C) A.V. leeuwenhock (D) Schwaan

Q.14 The pair correctly matched in regard to a cell organelle and its function, is
(A) Ribosome – Synthesis of protein
(B) Endoplasmic reticulum – Production of ATP
(C) Golgi body – Carries hereditary information
(D) Mitochondria – Destroy foreign substances

Q.15 In the mitochondrion energy is stored in the form of
(A) adenosine triphosphate (ATP) (B) adenosine monophosphate (AMP)
(C) citric acid (D) adenosine diphosphate (ADP)

Q.16 The site of protein synthesis in plants is the
(A) Chloroplast (B) Ribosomes (C) Pyrenoids (D) Mitochondria

Q.17 Synthesis of any protein in a cell is determined by
(A) type of ribosomes (B) mitochondria
(C) sequence of nucleotides in DNA (D) sugar and phosphate of DNA

Q.18 The plasma membrane is
(A) permeable (B) semipermeable (C) differentially permeable (D) impermeable

Q.19 The infoldings of the inner membrane of mitochondria is referred to as
(A) Grana (B) Stroma (C) Oxysome (D) Cristae

Q.20 Thylakoids are present in
(A) Mitochondria (B) Chloroplast (C) Golgi complex (D) Polyribosomes

Q.21 The golgi bodies are related to
(A) Respiration (B) Excretion (C) Secretion (D) Circulation

Q.22 Rough endoplasmic reticulum is concerned with
(A) Protein synthesis (B) Fat synthesis (C) Respiration (D) Photosynthesis

Q.23 Which animal cell structure is characterized by selective permeability –
(A) chromosome (B) cell membrane (C) cell wall (D) ribosomes

Q.24 The most abundant compound in cytoplasm is
(A) fat (B) water (C) protein (D) carbohydrates

Q.25 Which organelle is usually found associated with the nucleus of the cell in animals ?
(A) centrosome (B) vacuole (C) chromosome (D) mitochondrion

Q.26 Mitochondria usually occur in
(A) Vegetative cells (B) Reproductive cells
(C) Both vegetative and reproductive cells (D) None of these

Q.27 If the cell wall is elastic instead of being rigid and if the cell is put in a medium of sugar solution of higher concentration than that of cell then
(A) The cytoplasm will shrink away from the wall
(B) The wall will break up as the cytoplasm shrinks
(C) The wall as well as the cytoplasm will shrink
(D) The cell size and shape will not change

Q.28 The smallest organelle in the cell is
(A) Lysosome (B) Ribosome (C) Mitochondria (D) Peroxisome

Q.29 If a plant cell is immersed in water, the water continues to enter the cell until the :
(A) Concentration of salt is the same inside the cell as well as outside
(B) Cell bursts
(C) Diffusion pressure is the same inside the cell as well as outside
(D) Concentration of water is the same inside the cell as outside.

Q.30 The dictum - "Omnis cellula a cellula" was proposed by :
(A) Schwann (B) Virchow (C) Schleiden (D) Robert brown

Q.31 Cynobacteria have-
(A) A well-defined nucleus and chloroplast
(B) A well-defined nucleus but no chloroplast
(C) Incipient nucleus and vesicles containing chlorophyll.
(D) Incipient nucleus but no chloroplast or pigment.

Q.32 Which of the following statements about the plasma membrane is true –
(A) It is a solid layer of protein that protects the contents of the cell.
(B) The plasma membrane of a bacterium has none of the same components as the plasma membrane of an animal cell.
(C) It is a rigid and unmoving layer of phospholipids and proteins.
(D) It allows selected molecules to pass into and out of the cell.

Q.33 Which of the following cellular components can be used to distinguish a prokaryotic cell from a eukaryotic cell –
(A) nucleus (B) plasma membrane (C) DNA (D) proteins

Q.34 One key function of nuclear pores is to –
(A) allow cells to communicate with one another.
(B) aid in the production of new nuclei.
(C) allow molecules such as proteins to move into and out of the nucleus.
(D) form connections between different organelles.

Q.35 Vesicles are essential for the normal functioning of the Golgi apparatus because –
(A) they provide energy for chemical reactions.
(B) they move proteins and lipids between different parts of the organelle.
(C) they contribute to the structural integrity of the organelle.
(D) they produce the sugars that are added to proteins.

Q.36 Which of the following statements is not true –
(A) Both mitochondria and chloroplasts provide energy to cells in the same way.
(B) Both mitochondria and chloroplasts have more than one membrane.
(C) Only chloroplasts contain the pigment chlorophyll.
(D) Both animal and plant cells contain mitochondria.

Q.37 Which of the following clues would tell you whether a cell is prokaryotic or eukaryotic –
(A) the presence or absence of a rigid cell wall
(B) whether or not the cell has a nucleus
(C) the presence or absence of a plasma membrane
(D) whether or not the cell produces proteins

Q.38 Which of the following organelles is least closely associated with the endomembrane system –
(A) chloroplast (B) plasma membrane (C) rough ER (D) Gogli

Q.39 Prokaryotic cells are characteristic of –
(A) plants (B) protists (C) animals (D) bacteria.

Q.40 Cellular respiration is to ..... as ..... is to chloroplasts
(A) nucleus; cytoplasm (B) mitochondria; photosynthesis
(C) ATP; light (D) grana; cristae

Q.41 Which best describes the structure of the plasma membrane?
(A) proteins sandwiched between two layers of phospholipid
(B) proteins embedded in two layers of phospholipid
(C) a layer of protein coating a layer of phospholipid
(D) phospholipids embedded in two layers of protein

Q.42 The total solute concentration in a red blood cell is about 2%. Sucrose cannot pass through the membrane, but water and urea can. Osmosis would cause such a cell to shrink the most when the cell is immersed in which of the following –
(A) a hypertonic sucrose solution (B) a hypotonic sucrose solution
(C) a hypertonic urea solution (D) a hypotonic urea solution

Q.43 What process links reception of cell signals to responses within the cell ?
(A) a signal transduction pathway
(B) protein synthesis by ribosomes
(C) budding of transport vesicles from the Golgi
(D) active transport of the signal into the cell

Q.44 Active transport through the plasma membrane occurs through the action of –
(A) diffusion (B) membrane proteins (C) DNA (D) Water

Q.45 The following is a characteristic of a plasma membrane –
(A) It separates the cell contents from its environment.
(B) It is permeable to certain substances.
(C) It is a lipid bilayer with embedded proteins.
(D) all of the above

Q.46 If an animal cell is placed into a solution whose concentration of dissolved substances is higher than that inside the cell –
(A) the cell will swell (B) the cell will shrivel
(C) the solution is described as hypertonic (D) both (B) and (C) are correct

Q.47 Which of the following would be least likely to diffuse through a lipid bilayer –
(A) water (B) oxygen (C) carbon dioxide (D) sodium ions

Q.48 Which of the following processes causes substances to move across membranes without the expenditure of cellular energy –
(A) endocytosis (B) exocytosis (C) active transport (D) diffusion

Q.49 The outermost boundary of an animal cell is the –
(A) plasma membrane (B) nucleus (C) cytoplasm (D) cytoskeleton

Q.50 A series of membrane-enclosed channels studded with ribosomes are called –
(A) lysosomes (B) Golgi complex (C) rough endoplasmic reticulum (D) mitochondria

Q.51 Cells that lack membrane-bound organelles are called –
(A) Prokaryotic (B) Eukaryotic (C) Sperm (D) Egg

Q.52 The rough endoplasmic reticulum owes its rough surface to –
(A) Mitochondria (B) Proteins (C) Ribosomes (D) DNA particles

Q.53 The energy necessary for active transport across cytoplasmic membranes is believed to come from –
(A) ATP (B) Diffusion (C) Osmosis (D) Kinetic energy

Q.54 The cell membrane is composed primarily of –
(A) Cellulose (B) Chitin (C) Lipids (D) Lipids and proteins

Q.55 Transport proteins are required for –
(A) Diffusion (B) Osmosis
(C) Facilitated transport (D) Facilitated transport and active transport

Q.56 What scientific evidence do the current models of membrane structure take into account –
(A) Membranes are dynamic systems. (B) Proteins are globular units embedded in a lipid matrix.
(C) Many complex energy reactions occur on membranes. (D) All of the above.

Q.57 Cells were determined to be the basic structural units of plants and animals in which century –
(A) 1600's (B) 1700's (C) 1800's (D) 1900's

Q.58 Organelles were not clearly evident in cells until the invention of the ..... microscope
(A) light (B) electron (C) scanning probe (D) None of these.

Q.59 Which structure is not found in prokaryotes –
(A) flagella (B) ribosomes (C) nucleoid (D) All of these are found in prokaryotes.

Q.60 Which organelle holds all components in place while proteins are manufactured –
(A) chloroplast (B) nucleus (C) ribosomes (D) endoplasmic reticulum

Q.61 Which organelle is made up of flat, membrane-enclosed sacs and functions as a processing center.
(A) chloroplast (B) smooth endoplasmic reticulum
(C) rough endoplasmic reticulum (D) Golgi body

Q.62 The cell's "garbage disposals" are the –
(A) lysosomes. (B) peroxisomes. (C) mitochondria. (D) vacuoles.

Q.63 The organelles that help the cell use oxygen, and also contain a variety of enzymes that help the cell degrade rare biochemicals, among other things, are the –
(A) lysosomes. (B) peroxisomes. (C) mitochondria. (D) vacuoles.

Q.64 Phospholipids are –
(A) lipid molecules with a phosphate group attached.
(B) a type of nucleic acid found only within ribosomes.
(C) phosphate groups dissolved in lipid molecules.
(D) All of the above are correct.

Q.65 Choose the best definition of 'diffusion'.
(A) Passive movement from an area of greater concentration to one of lesser concentration.
(B) Active movement from an area of greater concentration to one of lesser concentration.
(C) Passive movement from an area of lesser concentration to one of greater concentration.
(D) Active movement from an are of lesser concentration to one of greater concentration.

Q.66 If a red blood cell (interior concentration of 0.9% salt) was placed into a test tube of 10% salt, what would happen to the red blood cell –
(A) It would fill with water and burst.
(B) Nothing - the solution is isotonic to the interior of the red blood cell.
(C) The red blood cell would shrink as it loses water to the salt solution in the test tube.
(D) None of these

Q.67 What part of the cell is responsible for breaking down and digesting things –
(A) ribosomes (B) lysosomes (C) endoplasmic reticulum (D) vacuole

Q.68 Identify the organelle pictured.
(A) chloroplast
(B) endoplasmic reticulum
(C) golgi apparatus
(D) mitochondria

Q.69 What part of the cell serves as the intracellular highway?
(A) endoplasmic reticulum (B) golgi apparatus
(C) cell membrane (D) mitochondria

Q.70 Which of the following would you not find in a bacterial cell –
(A) DNA (B) cell membrane (C) golgi apparatus (D) ribosomes

Q.71 Which of the following is found in plant cells, but not animal cells?
(A) cell wall (B) vacuole (C) mitochondria (D) endoplasmic reticulum

Q.72 The jellylike interior of the cell is called the:
(A) vacuole (B) cytoplasm (C) cytoskeleton (D) nucleus

Q.73 Where are ribosomes usually located in animal and plant cells –
(A) inside the nucleus (B) near the cell membrane
(C) on the endoplasmic reticulum (D) inside the vacuole

Q.74 What part of the cell serves to process, package and export proteins –
(A) mitochondria (B) endoplasmic reticulum
(C) nucleolus (D) golgi apparatus

Q.75 Which of the following is NOT a type of passive transport?
(A) diffusion (B) osmosis (C) endocytosis (D) facilitated diffusion

Q.76 Chamber A contains 40% helium and Chamber B contains 20% helium. Chambers are connected by a tube the molecules are free to cross. Which of the following will occur
(A) some helium will move from chamber A to chamber B
(B) some helium will move from chamber B to chamber A
(C) helium will remain concentrated in chamber A
(D) all of the helium will move into chamber B

Q.77 What will happen to an animal cell placed in a salt water solution?
(A) The cell will shrink
(B) the cell will expand
(C) the cell will burst
(D) the cell will shrink and then expand and then shrink again

Q.78 An animal cell placed in a hypotonic solution will:
(A) die (B) take on water (C) lose water (D) divide

Q.79 Which of the following is a type of active transport?
(A) sodium potassium pump (B) endocytosis
(C) exocytosis (D) all of these

Q.80 Active transport requires:
(A) a concentration gradient (B) osmosis
(C) energy (D) a hypertonic solution

Q.81 The door to your house is like the ___ of a cell membrane?
(A) phospholipid bilayer (B) gated channel
(B) receptor protein (D) recognition protein

Q.82 The phospholipid bilayer of the cell membrane is like a(n):
(A) screen door (B) plate glass window
(C) hot water heater (D) oven

Q.83 Facilitated diffusion ____ require energy and uses the help of _____
(A) does, transport proteins (B) does, cytoplasm
(C) does not, transport proteins (D) does not, sodium pumps

Q.84 A semi permeable membrane is stretched across a chamber filled with water. The membrane is only permeable to water. 60 mg of salt is added to the left side of the chamber. Which of the following will happen?
(A) water will move toward the right side (B) salt will move toward the right side
(C) water will move toward the left side (D) salt will move toward the left side

Q.85 The lipid bilayer keeps the inside of the cell membrane:
(A) bipolar (B) protein saturated (C) dry (D) wet

Q.86 Which of the following could be found in BOTH the nucleus and the cytoplasm
(A) nucleolus (B) ribosomes (C) RNA (D) both RNA & ribosomes

Q.87 Amino acid chains built by the ribosomes then move to the:
(A) golgi apparatus (B) lysosome (C) endoplasmic reticulum (D) mitochondria

Q.88 Which of the following structures has a 9 + 2 arrangement?
(A) flagella (B) ribosome (C) mitochondria (D) golgi apparatus

Q.89 The centriole is most like the:
(A) lysosome (B) flagella (C) mitochondria (D) chromatin

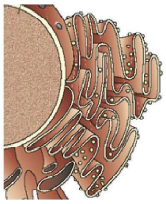
Q.90 Which of the following is composed of a large and a small subunit –
(A) golgi apparatus (B) endoplasmic reticulum
(C) mitochondria (D) ribosome

Q.91 A cell that is missing lysosomes would have difficulty doing what –
(A) digesting food (B) storing energy (C) packaging proteins (D) moving cytoplasm

Q.92 Which of the following cell parts is described as a "fluid mosaic" –
(A) chloroplast (B) vacuole (C) cell membrane (D) endoplasmic reticulum

Q.93 Some cells take in large molecules through the process of:
(A) protein synthesis (B) endocytosis
(C) cytoplasmic streaming (D) ATP

Q.94 Which one of the following organelle in the figure correctly matches with ts function?



(A) Rough endoplasmic reticulum, protein synthesis
(B) Rough endoplasmic reticulum,formation of glycoproteins.
(C) Golgi apparatus, protein synthesis
(D) Golgi apparatus, formation of glycolipids.

Q.95 The osmotic expansion of a cell kept in water is chiefly regulated by –
(A) Mitochondria (B) Vacuoles (C) Plastids (D) Ribosomes

Q.96 Nuclear envelope is a derivative of :
(A) Membrane of Golgi complex. (B) Microtubules.
(C) Rough endoplasmic reticulum (D) Smooth endoplasmic reticulum.

EXERCISE - 4 (MCQ LEVEL 2)

MATCH THE COLUMN–

Each question contains statements given in two columns which have to be matched. Statements(A,B,C,D) in **column I** have to be matched with statements (p, q, r, s) in **column II**.

Q.1 Match them correctly.

Column I	**Column II**
(A) Robert Hooke	(p) Mutation theory
(B) Charles Darwin	(q) Swan-necked flask experiment
(C) Hugo devries	(r) Origin of species
(D) Louis Pasteur	(s) Micrographia

Q.2 Match them correctly –

Column I	**Column II**
(A) Structures with one unit membrane	(p) Lysosome
(B) Structures with two membrane	(q) Ribosome
(C) Structures without membrane	(r) Plastids
(D) Structure with three unit membrane	(s) Transosome

Q.3 Match them correctly –

Column I	**Column II**
(A) Lysosome	(p) Ribonucleus
(B) Golgi body	(q) DNA polymerase
(C) Mitochondria	(r) Glucose-6 Phosphatase
(D) E.R.	(s) Ascorbic acid synthetase

Q.4 Match them correctly.

Column I	Column II
(A) cell wall	(p) external support and protection, made of cellulose
(B) cell membrane	(q) containment of cytoplasm, osmosis
(C) nucleus	(r) location of chromatin
(D) ribosomes	(s) workbench for proteinsynthesis.

Q.5 Match them correctly.

Column I	Column II
(A) endoplasmic reticulum	(p) production &segregation of proteins to be secreted.
(B) chloroplast	(q) organelle of photosynthesis
(C) Golgi body	(r) sorting, packaging, labeling of cell products
(D) lysosomes	(s) digestion of nutrients and worn-out cell parts.

Q.6 Match them correctly.

Column I	Column II
(A) mitochondria	(p) site of energy production
(B) vacuoles	(q) storage of water
(C) cytoplasm	(r) internal fluid of a cell
(D) microtubules	(s) filaments that separate chromosomes during cell division.

ASSERTION & REASON TYPE

Each question contains STATEMENT-1 (Assertion) and STATEMENT-2 (Reason).
Each question has 5 choices (A), (B), (C), (D) and (E) out of which ONLY ONE is correct.
(A) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1.
(B) Statement-1 is True, Statement-2 is True; Statement-2 is not a correct explanation for Statement-1.
(C) Statement -1 is True, Statement-2 is False.(D) Statement -1 is False, Statement-2 is True.
(E) Statement -1 is False, Statement-2 is False.

Q.7 **Statement 1 :** Larger cells are less efficient

Statement 2 : Surface volume ratio is more in large cells.

Q.8 **Statement 1 :** Schleiden and Schwann were the first to observe the cells and to put forward cell theory.

Statement 2 : The cells are always living unit.

Q.9 **Statement 1 :** Lysosomes help in photorespiration.

Statement 2 : Lysosome have basic enzyme.

Q.10 **Statement 1 :** Cell wall is not found in animal cell.

Statement 2 : Animal cells are covered by cell membrane.

Q.11 **Statement 1 :** It is important that the organisms should have cell.

Statement 2 : A cell keeps its chemical composition steady within its boundary.

Q.12 **Statement 1 :** Mitochondria and chloroplasts are semiautonomous organelles.

Statement 2 : They are formed by division of pre-existing organelles as well as contain DNA but lack protein synthesizing machinery.

Q.13 **Statement 1 :** Chloroplast is a cell organelle.

Statement 2 : An organelle is a distinct part of a cell which has a particular structure and function.

Q.14 **Statement 1 :** Cell wall is present in plant

Statement 2 : Animal cells lack cell wall.

Q.15 **Statement 1 :** Fluid mosaic model was proposed by Singer and Nicolson.

Statement 2 : The 'mosaic' is the intricate composite of protein and lipids of the membrane.

Q.16 **Statement 1 :** Diffusion is a passive process of membrane transport.

Statement 2 : Osmosis is an active process of membrane transport.

EXERCISE - 5 (PREVIOUS YEARS COMPETITION MCQ)

Q.1 A compound microscope tube has generally lenses –
(A) 4 (B) 2 (C) 1 (D) 3

Q.2 One micron is equal to –
(A) one-tenth of a millimeter (B) one-hundredth of a millimeter
(C) one-thousandth of a millimeter (D) One-millionth of a millimeter

Q.3 Nuclear material without cover is found in –
(A) mycoplasma and green algae (B) bacteria and fungi only
(C) bacteria and blue green algae (D) None above

Q.4 The word 'prokaryote' means a cell –
(A) with many nuclei (B) with one nucleus
(C) with diffused nucleus (D) without chloroplast

Q.5 Who suggested that plant cell is different from animal cell in having cell wall –
(A) Schleiden (B) Schwann (C) Hooke (D) Robertson

Q.6 Cells were seen for the first time by –
(A) Leeuwenhoek (B) Robert Hooke (C) Waksman (D) Flemming

Q.7 Minute structures on bacterial cell are called –
(A) hair (B) cilia (C) flagella (D) pili

Q.8 Living cell can be studied by –
(A) phase contrast microscope (B) fluorescent microscope
(C) electron microscope (D) light microscope

Q.9 The prokaryotic cells are characterised by –
(A) the presence of distinct chromosome (B) the presence of distinct nuclear membrane
(C) absence of genetic material (D) absence of nuclear membrane

Q.10 Cells having secretory function will have abundant –
(A) Lysosome (B) ER (C) dictyosomes (D) vacuoles

Q.11 Schleiden and Schwann gave the cell theory in –
(A) 1836-1837 (B) 1840-1841 (C) 1901-1902 (D) 1831-1832

Q.12 Cell theory was proposed by –
(A) Schleiden & Schwann (B) Robert Brown
(C) Leeuwenhoeck (D) Parkinje

Q.13 Which of the following is not present in prokaryotes –
(A) Ribosomes (B) Cell wall (C) Plasma membrane (D) Nuclear membrane

Q.14 Chemical nature of carrier molecules facilitating transport across plasma membrane is –
(A) starchy (B) sugary (C) proteinaceous (D) fatty acidic

Q.15 The plasma membrane of an animal cell is composed of –
(A) glycoproteins, lipids and disaccharides (B) lipids, proteins and oligosaccharides
(C) proteins, lipids and polysaccharides (D) lipids, proteins and monosaccharides

Q.16 Thickness of plasma membrane (unit membrane) is –
(A) 75 Å (B) 100 Å (C) 125 Å (D) 150 Å

Q.17 The main function of the cell membrane is to –
(A) regulate the flow of materials into and outside the cell
(B) maintain the cell shape and size
(C) control of all cellular activities
(D) store cell material

Q.18 Plasma membrane particularly in animal cells, is elastic due to –
(A) carbohydrates (B) proteins (C) lipids (D) none of the above

Q.19 The entry of mineral ions in a plant cell during absorption is by –
(A) passive absorption (B) active absorption (C) osmosis (D) endocytosis

Q.20 According to fluid mosaic model plasma membrane is composed of –
(A) phospholipids , extrinsic and intstrinsic proteins (B) phospholipids and oligosaccharides
(C) phospholipids and hemicellulose (D) phospholipids and integral glycoproteins

Q.21 In fluid mosaic model the plasma membrane has –
(A) a central bilayer of proteins (B) a bilayer of phospholipids
(C) hydrophobic nonpolar tails (D) hydrophilic polar heads

Q.22 Golgi bodies help in –
(A) excretion of steroids (B) storage and secretion
(C) translation (D) transcription

Q.23 Which of the following organelles contain enzymes that have digestive action –
(A) Lysosomes (B) Ribosomes (C) Plastids (D) Polysomes

Q.24 The cell organelle containing the flattened membrane bounded cisternae are located near the nucleus are–
(A) mitochondria (B) Golgi (C) centrioles (D) nucleolus

Q.25 Animal cells differ from plant cell in having –
(A) centrosome (B) Golgi body (C) vacuole (D) plastid

Q.26 Major function of mitochondria in a cell is –
(A) secretion (B) excretion (C) osmoregulation (D) fat synthesis

Q.27 The cell membrane does not allow Na^+ to go in and K^+ to come out, this –
(A) causes disruption in neighbouring cells through desmosomes
(B) maintsin electrostatic neutrality of cells
(C) maintains cell sap (D) All above

Q.28 Membrane bound organelles occur in –
(A) eukaryotes (B) prokaryotes (C) akaryotes (D) All the above

Q.29 ER remains associated with –
(A) dictyosomes (B) mitochondria (C) karyotheca (D) chloroplast

Q.30 Which one of the following is the smallest membrane bound organelle –
(A) Ribosome (B) Lysosome (C) Saphaerosome (D) Nucleolus

Q.31 Storage of enzymes for the digestion of cellular components, proteins and carbohydrates is carried out by
(A) mitochondria (B) lysosomes (C) centrioles (D) ribosomes

Q.32 Vacuole is surrounded by –
(A) plasmalemma (B) cell wall (C) tonoplast (D) plasmodesmata

Q.33 The presence of ..... organelle is only revealed by electron microscope –
(A) chloroplast (B) mitochondria (C) Golgi bodies (D) lysosome

Q.34 Lysosomes are formed by –
(A) ER (B) mitochondria (C) ribosomes (D) none of the above

Q.35 One of these is single membrane organelle –
(A) lysosome (B) mitochondria (C) nucleus (D) ER

Q.36 Golgi bodies originate from –
(A) ER (B) plasma membrane (C) Ribosomes (D) Mitochondria

Q.37 Nucleus was discovered by –
(A) Robert Hook (B) Robert Brown (C) Robert Dixen (D) Robert Koch

Q.38 One of these is the smallest in size –
(A) Ribosome (B) Lysosome (C) Mitochondria (D) Chloroplast

EXERCISE - 6

PREVIOUS YEARS SA (SUMMATIVE ASSESSMENT) QUESTIONS

Q.1 Identify the single celled organisms from the following :
Cockroach, *Chlamydomans*, snake, mosquito, bacteria.

Q.2 Name the scientist who discovered cells. List any two single-celled (unicellular) organisms.

Q.3 Name the organelle of the cell which has membrane bound sac filled with powerful digestive enzymes. Write its any one function in the cell.

Q.4 Which cell organelle detoxifies poisons and drugs in liver of vertebrates ?

Q.5 Name the cell organelle, other than mitochondria, that has its own ribosomes.

Q.6 Name the cell organelles that help to keep the cell clear by digesting the worn out cell organelles.

Q.7 Name the plastid involved in conversion of a green brinjal to violet.

Q.8 List the constituents of plasma membrane.

Q.9 State the significance of membrane biogenesis.

Q.10 Name : (i) The cells which have changing shape.
(ii) The cells which have a typical shape.

Q.11 Name the two cell organelles having double-membrane envelope.

Q.12 Identify and name the following cell structures :
(a) The undefined nuclear region of prokaryotic cell. (b) Site of energy release inside the cell.

Q.13 State the function of chromosome in cell.

Q.14 Draw a neat diagram of a plant cell and label the following parts :
(i) Cell wall (ii) Nucleus (iii) Vacuole (iv) Golgi apparatus
(v) Mitochondrion (vi) Lysosome (vii) Chloroplast

Q.15 Give the functions of the following organelles in a cell :
(i) Chloroplast (ii) Nucleus (iii) Ribosomes

Q.16 Explain the structural difference between plastids and mitochondria. Write one similarity between the two.

Q.17 Draw a neat diagram of an animal cell. Label the following parts :
(a) The organelle that contains powerful digestive enzymes.
(b) The organelle that has its own DNA.
(c) The organelle that forms cytoplasmic framework.
(d) The organelle that helps in expelling out excess water in Amoeba.

Q.18 Who gave the term Golgi apparatus ? Name one cell organelle that is formed by Golgi apparatus. Write any two functions of Golgi apparatus.

Q.19 (a) Which cell organelle would you associate with ATP production ? How is this organelle able to make its own proteins ?
(b) A student performed an experiment by placing the de-shelled egg in a concentrated salt solution for five minutes. What changes did he observe in the egg ? Give reason for the same.

Q.20 (a) What is a cell ? Why is a cell called the structural and functional unit of life ?
(b) Why is the plasma membrane called as selectivity permeable membrane ? Write one function of it.
Q.21 (a) What are lysosomes ? Why are they called "suicide bags of a cell" ?
(b) What happens to the dry raisins when we put them in plain water for some time ? State the reason for whatever is observed. What would happen if these raisins are then placed in concentrated salt solution?
Q.22 List any five differences between a prokaryotic and eukaryotic cell.
Q.23 (a) Differentiate between : (i) Nucleus and nucleoid (ii) Plant cell and animal cell.
(b) What is osmosis ?
Q.24 (a) Categorise plastids based on their colours and functions.
(b) Mention the strange similarity between plastids and mitochondria with reference to synthesis of their own materials. What do they synthesise ?
Q.25 (a) What is lacking in a virus which makes it dependent on a living cell to multiply ?
(b) Expand RER and SER. Differentiate between them on the basis of structure and function.
Q.26 State two points of differences between osmosis and diffusion.

VALUE BASED QUESTIONS

Q.27 Two beakers A and B contain plain water and concentrated sugar location respectively. Equal number of dried raisins are kept in them for a few hours and then taken out.
(i) Explain the reason for the difference in the physical appearance of raisins which were taken out of the two beakers.
(ii) On the basis of above observation, categorise the two solutions as hypotonic and hypertonic.
Q.28 Explain what happens when a drop of concentrated sugar solution is placed on a rheo leaf peel mounted on a glass slide. Name this phenomenon. Would the same happen if the rheo leaf was boiled before mounting? Give reason for your answer.

ANSWER KEY

EXERCISE - 1

(4) (A) Mitochondria (B) Lysosome (C) Ribosome (D) Nucleus
(6) Prokaryotic cell. **(8)** No. No. **(24)** About 75 μm
(26) (a) intermediate filaments; (b) microtubules; (c) microfilaments **(30)** ATP

EXERCISE - 2

(1) Nucleus	**(2)** Protein	**(3)** Prokaryotic	**(4)** Deoxyribo nucleic acid
(5) Osmosis	**(6)** Cytoplasm	**(7)** DNA	**(8)** Chloroplasts
(9) Tonoplast	**(10)** rough endoplasmic reticulum		**(11)** cytoskeleton
(12) lower, higher	**(13)** Carrier, energy	**(14)** phagocytosis	**(15)** proteins, carbohydrates
(16) cell.	**(17)** lipids, proteins	**(18)** cellulose	**(19)** chloroplasts
(20) storage.	**(21)** True	**(22)** False	**(23)** False
(24) True	**(25)** False	**(26)** False.	**(27)** False.
(28) True	**(29)** True	**(30)** False	**(31)** False
(32) True	**(33)** True	**(34)** True	**(35)** True
(36) False	**(37)** False	**(38)** False	**(39)** True
(40) True	**(41)** True	**(42)** True	**(43)** True
(44) False	**(45)** True	**(46)** True	**(47)** True

EXERCISE - 3

Q	1	2	3	4	5	6	7	8	9	10	11
A	D	A	A	A	B	C	A	B	C	C	B
Q	12	13	14	15	16	17	18	19	20	21	22
A	B	A	A	A	B	C	C	D	B	C	A
Q	23	24	25	26	27	28	29	30	31	32	33
A	B	B	A	C	C	A	D	B	C	D	A
Q	34	35	36	37	38	39	40	41	42	43	44
A	C	B	A	B	A	D	D	D	A	A	B
Q	45	46	47	48	49	50	51	52	53	54	55
A	D	D	D	D	A	C	C	C	A	D	D
Q	56	57	58	59	60	61	62	63	64	65	66
A	D	C	B	D	C	D	A	B	A	A	C
Q	67	68	69	70	71	72	73	74	75	76	77
A	A	D	A	D	A	B	C	D	C	A	A
Q	78	79	80	81	82	83	84	85	86	87	88
A	B	D	C	B	A	C	C	D	D	D	A
Q	89	90	91	92	93	94	95	96			
A	B	D	A	C	B	A	B	C			

EXERCISE - 4

(1) (A) → s (B) → c (C) → a (D) → b **(2)** (A) → p (B) → r (C) → q (D) → s
(3) (A) → p (B) → r (C) → q (D) → r **(4)** (A) → p (B) → q (C) → r (D) → s
(5) (A) → p (B) → q (C) → r (D) → s **(6)** (A) → p (B) → q (C) → r (D) → s
(7) (C) **(8)** (E) **(9)** (E) **(10)** (A) **(11)** (A)
(12) (C) **(13)** (A) **(14)** (B) **(15)** (B) **(16)** (C)

EXERCISE - 5

Q	1	2	3	4	5	6	7	8	9	10	11
A	B	C	C	C	B	B	D	A	D	C	B
Q	12	13	14	15	16	17	18	19	20	21	22
A	A	D	C	B	A	A	C	B	A	B	B
Q	23	24	25	26	27	28	29	30	31	32	33
A	A	B	A	D	B	A	C	B	B	C	D
Q	34	35	36	37	38						
A	D	A	A	B	B						

EXERCISE - 6

(1) *Chlamydomans*, bacteria. **(2)** Robert Hooke (i) *Amoeba*, (ii) *Paramoecium* **(3)** Lysosome
(4) Endoplasmic reticulum **(5)** Plastid **(6)** Lysosomes. **(7)** Chromoplast
(8) Lipids and proteins **(10)** (i) *Amoeba* (ii) Nerve cell
(11) Nucleus, Mitochondria **(12)** (a) Nucleoid (b) Mitochondria