RAN-1803001101030002

# B

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## B. Sc. (Biotechnology) (Sem. - I) Examination

## March - 2023

## BT - 02 : Cell Biology

**સૂચના : / Instructions**

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
**Fill up strictly the details of ☛ signs on your answer book**

Name of the Examination:

☛ **B. Sc. (Biotechnology) (Sem. - I)**

Name of the Subject :

☛ **BT - 02 : Cell Biology**

Subject Code No.: **1803001101030002**

Seat No.:

Student's Signature

(2) All questions are compulsory.

***O.M.R. Sheet* ભરવા અંગેની અગત્યની સૂચનાઓ આપેલ *O.M.R. Sheet*ની પાછળ છાપેલ છે.**
***Important instructions to fillup O.M.R. Sheet are given on back side of the provided O.M.R. Sheet.***

**SET - A**

**Q. 1.** Which of the following conditions is not related, according to the fluid mosaic model?

A. Lipid enable the lateral movements of proteins in the membrane.
B. Fluid nature of membrane helps in secretion.
C. Lipid can show flip flop movement from one layer of membrane to other.
D. The fluidity of membrane is mainly due to oligosaccharides.

**Q. 2.** Glycolipids are often found where in the plasma membrane?

A. It varies according to the cell types.
B. Inner leaflet of the plasma membrane.
C. The outer leaflet of the plasma membrane.
D. Evenly distributed in both outer and inner leaves of plasma membrane.

**Q. 3.** In the plasma membrane

A. Carbohydrate faces outwards, towards extracellular space.
B. Carbohydrate directed to all sides in the membrane randomly.
C. Carbohydrate always faces to the lumen of cells.
D. Carbohydrate always faces inward to the nonpolar portion of the membrane.

**Q. 4.** Which substance have difficulty in crossing the cell membrane?

A. Water B. Sugar
C. Ions D. Gases

**Q. 5.** More than 90% of the carbohydrate covalently linked to Protein to form?

A. Glycolipid B. Glycoprotein
C. Phospholipid D. Lipid

**Q. 6.** The carbohydrate content of plasma membrane in eukaryotes is?

A. 2-10% by weight B. 20-25% by weight
C. 30-35% by weight D. 60-70% by weight

**Q. 7.** Plasmodesmata are

A. Cell wall connection B. pore in cell wall
C. Pore in PM D. Protoplasmic connections

**Q. 8.** The average thickness of PM is

A. 200 Angstrom B. 25 Angstrom
C. 75-100 Angstrom D. 100-200 Angstrom

**Q. 9.** Example of non-ionic detergent which is needed to remove the integral protein

A. SDS
B. Sodium lauryl sulphate
C. Cetyl peridium
D. Triton X 100

**Q. 10.** The role of carbohydrate in cell membrane is?

A. Cell adhesion
B. Cell Cell recognition
C. Transport through cell membrane
D. Storage

**Q. 11.** Plasma membrane helps in?

A. transportation of only water in and out of cell
B. Protein synthesis
C. Osmoregulation
D. Nucleic acid synthesis

**Q. 12.** This is not the function of plasma membrane

A. Energy transduction
B. Intercellular interactions
C. Responding to external stimuli
D. Assisting in chromosome segregation

**Q. 13.** The most effective way to examine the characteristics of integral membrane proteins in the plasma membrane is

A. Atomic force microscopy
B. Freeze-fracture analysis and electron microscopy
C. Cryo-sectioning and electron microscopy
D. Florescent microscopy

**Q. 14.** Which of the following cannot be used to cause two different cell plasma membranes to fuse?

A. Electric shock
B. Inactivated viruses
C. Polyethylene glycol
D. Emulsifier

**Q. 15.** Which of the following hereditary conditions is caused by mutations in a membrane protein?

A. Alzheimer's disease
B. Parkinson's disease
C. Anaemia
D. Hemolytic anaemia

**Q. 16.** Which of the following techniques doesn't require a carrier or pathway for the transportation of substances?

A. Secondary active transport
B. Facilitated diffusion
C. Simple diffusion
D. Primary active transport

**Q. 17.** What kind of movement takes place when Na/K pump is employed?

A. Na ions moves out of the cell and K+ move in
B. K+ ion moves out of cell and Na ion move in
C. Both Na and K+ ions move inside the cell
D. Both Na and K+ move out of the cell

**Q. 18.** Which technique allows water molecules to flow more easily?

A. Simple diffusion
B. Facilitated diffusion
C. Osmosis
D. Primary active transport

**Q. 19.** When are transporters referred to be antiporters?

A. When 2 substances move in same direction
B. When 2 move in same direction and 1 in opposite
C. When 3 move in same direction
D. When 2 substances move in opposite direction

**Q. 20.** During saltatory conduction, a nerve impulse jumps from one _____to another.

A. Synapse
B. Axon
C. Node of Ranvier
D. Myelin sheath

**Q. 21.** The division of cytoplasm is known as

A. Mitosis
B. Synapsis
C. Cytokinesis
D. Karyokinesis

**Q. 22.** DNA replication occurs in which stage of cell cycle?

A. Gl phase
B. S phase
C. G2 phase
D. M phase

**Q. 23.** In which phase of cell cycle chromosome arrange themselves along the equator of cell?

A. Prophase
B. Metaphase
C. Anaphase
D. Telophase

**Q. 24.** In which sub- phase of prophase, chiasmata formation appears?

A. Leptotene.
B. Zygotene
C. Pachytene
D. Diplotene

**Q. 25.** Synapsis is pairing of?

A. Analogous chromosome
B. Homologous chromosome
C. Non-homologous chromosome
D. Acentric chromosome

**Q. 26.** Which of the following chemical is used to supress the cell division?

A. Colchicine
B. Ethydium bromide
C. Auxin
D. Uv rays

**Q. 27.** Crossing over take place in

A. Zygotene
B. Pachytene
C. Diplotene
D. Diakinesis

**Q. 28.** Nuclear envelope reappears at

A. Prophase
B. Metaphase
C. Anaphase
D. Telophase

**Q. 29.** Active mitosis can be observed in

A. Base of Nails
B. Apex of hairs
C. Dermis of Skin
D. Glans

**Q. 30.** In Anaphase 1, each chromosome is composed of

A. One chromatid
B. Two chromatid
C. Four chromatid
D. Many chromatid

**Q. 31.** In which stage of cell cycle, nucleus becomes bigger?

A. Gl
B. S
C. G2
D. M

**Q. 32.** The word meiosis means

A. Addition
B. Reduction
C. Mutation
D. Physical change

**Q. 33.** Cyclin means

A. The concentration of regulatory protein rises and falls
B. Take part in cell division without affect the activity
C. The concentration of this regulatory protein suddenly increases
D. Activate during breakdown of necessary proteins

**Q. 34.** Bacterial cell is considered as

A. Unicellular
B. Multicellular
C. Non living
D. Artificial cell

**Q. 35.** Who gave conclusions about animal plant cells & similar structures?

A. Matthias Schleiden
B. Theodor Schwann
C. Rudolf Virchow
D. Rudolf Virchow and Matthias Schleiden

**Q. 36.** Cyanobacteria almost certainly appeared by

A. 5.4 billion years ago
B. 4.4 billion years ago
C. 2.4 billion years ago
D. 3.4 billion years ago

**Q. 37.** Nucleoprotein, tightly present in nuclear structure is called

A. Chromatin
B. Microtubule
C. Microfilaments
D. Intermediate filaments

**Q. 38.** The cytoplasm of a eukaryotic cell is extremely crowded, leaving very little space for the soluble phase of the cytoplasm, which is called

A. Vacuole
B. ER
C. Cytosol
D. Tonoplast

**Q. 39.** Plant cell is considered as

A. Unicellular
B. Multicellular
C. Non living
D. Protoplamic

**Q. 40.** The description about cell given by Robert Hook after observation in microscope was actually a

A. Cytoplasm
B. Cell organelle
C. Empty Cell wall
D. Nucleus

**Q. 41.** From the following, which statement is correct for a cell?

A. Cells are not capable of producing more of themselves.
B. Cells do not require energy to develop & maintain complexity.
C. Cells do not require enzymes for metabolic process.
D. Cells are not dependent on external factors for self regulation.

**Q. 42.** Which organism is referred as extremophiles?

A. Mycoplasma
B. Cyanobacteria
C. Methanogens
D. Fungi

**Q. 43.** Which organelle is filled with digestive enzymes?

A. Golgi body
B. Nucleus
C. RER
D. Lysosome

**Q. 44.** The smallest infectious particle is

A. Fungi
B. Bacteria
C. Viroid
D. Plasmodium

**Q. 45.** Why are proteins and lipids allowed to move around freely in membranes?

A. Liquid water is present inside of the membrane.
B. The membrane contains no covalent connections between lipid and protein.
C. The inside of the membrane contains the hydrophilic lipids.
D. The interior of the membrane only has mild hydrophobic interactions.

**Q. 46.** What will the lipid bilayer's fluidity be when the length of the fatty acid chain increases?

A. Increases
B. Decreases
C. Depends on the osmolarity
D. No change in fluidity

**Q. 47.** Which function would likely be hampered in an animal cell missing oligosaccharides on the exterior of its plasma membrane?

A. Transporting ions against an electrochemical gradient.
B. Cell-cell recognition.
C. Maintaining fluidity of the phospholipid bilayer.
D. Attaching to the cytoskeleton

**Q. 48.** The tail of the phospholipid molecule

A. Is hydrophilic and composed of unsaturated fatty acids.
B. Is hydrophilic and composed of saturated fatty acids.
C. Is hydrophobic and composed of unsaturated fatty acids.
D. Is hydrophobic and composed of saturated fatty acids.

**Q. 49.** Which of the following best explains how unsaturated fatty acids contribute to any membrane's ability to remain more fluid at lower temperatures?

A. The double bonds form kinks in the fatty acid tails, forcing adjacent lipids to be further apart.
B. Unsaturated fatty acids have higher cholesterol content and therefore more cholesterol in membranes.
C. The double bonds block interaction among the hydrophilic head groups of the lipids.
D. Unsaturated fatty acids permit more water in the interior of the membrane.

**Q. 50.** Which of the following has to be valid for a protein to be an integral membrane protein?

A. Hydrophilic
B. Hydrophobic
C. Amphipathic
D. Completely covered with phospholipids

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**SPACE FOR ROUGH WORK**