

**CBCS**  
**2020**  
**BIOTECHNOLOGY**  
**MODEL QUESTION PAPER FOR ODD SEMESTER EXAMINATION 2020**  
**MULTIPLE CHOICE (MCQ)**

**UNIT-I**

1. A genophore (nucleoid) consists of
  - a) Histone and RNA
  - b) A single double stranded DNA
  - c) A single stranded DNA
  - d) Histone and non-histone
  
2. Which one of the following organelles digests the old organelles that are no longer useful to the cells?
  - a) Ribosomes
  - b) Mitochondria
  - c) Lysosomes
  - d) Chromatin
  
3. Plasmodesmata are located in narrow areas of \_\_\_\_\_.
  - a) Cell walls
  - b) Protoplasm
  - c) Cellulose
  - d) Nuclei
  
4. Cell sap is a
  - a) Living content of the cell
  - b) Non-living content of the vacuole
  - c) Non-living content of the protoplasm
  - d) Living content of the cytoplasm
  
5. What do prokaryotic cells lack?
  - a) Cell membrane
  - b) Cytoplasm
  - c) Cell wall
  - d) membrane-bound nucleus
  
6. Which of the following is an example of cell devoid of nuclear membrane and mitochondria is
  - a) Bacterial cell
  - b) Sperm
  - c) Protist
  - d) Sponge cell

7. Lampbrush chromosomes are seen in

- a) Prophase
- b) Mitotic metaphase
- c) Mitosis
- d) Meiotic prophase

8. Which one of the following is not considered as a part of the endomembrane system?

- a) Vacuole
- b) Lysosome
- c) Golgi complex
- d) Peroxisome

9. Animal cell differs from plant cells in possessing

- a) Plastid
- b) Golgi body
- c) Vacuole
- d) Centrosome

10. The spherical structured organelle that contains the genetic material is

- a) Cell walls
- b) Ribosomes
- c) Nucleus
- d) Mitochondria

## UNIT-II

1. Erythrocyte glucose transporter is an example of \_\_\_\_\_

- a) Ion driven active transport
- b) Facilitated diffusion
- c) Active transport
- d) Simple diffusion

2. Which out of the following is not mediated transport?

- a) Facilitated diffusion
- b) Primary active transport
- c) Secondary active transport
- d) Simple diffusion

3. Na<sup>+</sup> glucose transporter is an example of \_\_\_\_\_

- a) Symport
- b) Antiport
- c) Facilitated diffusion
- d) ATP driven active transport

4. Which of the following is energy independent?

- a) Active transport
- b) Primary active transport
- c) Secondary active transport
- d) Passive transport

5. Semipermeable membrane allows \_\_\_\_\_

- a) Solute to pass
- b) Solution to pass
- c) Solvent to pass
- d) Proteins to pass

6. When does saturation occur?

- a) When molecules are moved by the use of vesicles
- b) When the energy from a high-energy bond is required to move molecules
- c) When a group of carrier proteins is operating at its maximum rate
- d) When a carrier molecule has the ability to transport only one molecule or a group of closely related molecules

7. In which of the following means of transport a cell expels large molecules out of it?

- a) Phagocytosis
- b) Exocytosis
- c) Endocytosis
- d) Diffusion

8.  $\text{HCO}_3^- - \text{Cl}^-$  transporter is an example of \_\_\_\_\_

- a) Uniport
- b) Antiport
- c) Symport
- d) Facilitated diffusion

9. Which of the following transports only one kind of substrate?

- a) Uniport carriers
- b) Symport carriers
- c) Antiport carriers
- d) Membrane proteins

10. Which of the following induces conformational change in protein?

- a) Uniport
- b) Symport
- c) Antiport
- d) Facilitated diffusion

### UNIT-III

1. Energy has different forms which include

- a) heat
- b) work
- c) all of the mentioned
- d) none of the mentioned

2. Work input is directly proportional to heat and the constant of proportionality is called

- a) joule's equivalent
- b) mechanical equivalent of heat
- c) all of the mentioned
- d) none of the mentioned

3. The value of constant of proportionality, J, has the value

- a) 1
- b) 0
- c) -1
- d) infinity

4. It was Joule who first established that heat is a form of energy, and thus laid the foundation of the first law of thermodynamics.

- a) true
- b) false
- c) not predicted
- d) Not feasible

5. Which of the following represents the energy in storage?

- a) heat
- b) work
- c) internal energy
- d) none of the mentioned

6. By first law of thermodynamics,

- a)  $Q = \Delta E - W$
- b)  $Q = \Delta E + W$
- c)  $Q = -\Delta E - W$
- d)  $Q = -\Delta E + W$

7. The expression  $(\Sigma W)_{\text{cycle}} = (\Sigma Q)_{\text{cycle}}$  applies only to systems undergoing cycles.

- a) true
- b) false
- c) not predicted
- d) Not feasible

8. Which of the following is the first law for a closed system undergoing a cycle?
- $\int dW = \int dQ$
  - $\int dW = -\int dQ$
  - $\int dW = \int dQ$
  - none of the mentioned
9. Which of the following can be considered as the definition of energy?
- $Q = \Delta E + W$
  - $Q - W = \Delta E$
  - first law of thermodynamics
  - all of the mentioned
10. The first law of thermodynamics gives only the change in energy  $\Delta E$  for the process.
- true
  - false
  - not predicted
  - Not feasible

#### UNIT-IV

1. Which biomolecule is distributed more widely in a cell?
- Chloroplast
  - RNA
  - DNA
  - Sphaerosomes
2. Which is a reducing sugar?
- Galactose
  - Gluconic acid
  - Sucrose
  - $\beta$ -methyl galactosidase
3. Most abundant RNA in the cell
- rRNA
  - mRNA
  - tRNA
  - tRNA threonine
4. Name the simplest amino acid
- Alanine
  - Tyrosine
  - Asparagine
  - Glycine
5. Mineral associated with cytochrome is
- Mg
  - Cu and Ag
  - Fe
  - Cu

6. The most common secondary structure of proteins is

- a)  $\beta$ -pleated sheet
- b)  $\beta$ -pleated sheet parallel
- c)  $\beta$ -pleated sheet non-parallel
- d)  $\alpha$ -helix

7. The term enzyme was coined by

- a) Urey Miller
- b) Pasteur
- c) Kuhne
- d) Buchner

8.  $\beta$ -oxidation occurs in

- a) Nucleus
- b) Cytoplasm
- c) Mitochondria
- d) Chloroplast

9. Koshland's theory of enzyme action is known as

- a) Lock and key theory
- b) Reduced fit theory
- c) Induced fit theory
- d) Enzyme coenzyme theory

10. A high content of triglycerides are found in

- a) VLDL
- b) LDL
- c) HDL
- d) Chylomicrons

#### **UNIT-V**

1. A hydrophobic compound will preferentially partition into an aqueous solvent.

- a) True
- b) False
- c) Can't be decide
- d) can be decide later

2. A particular compound has a distribution ratio,  $K_d$ , of 1.2. When mixed with an organic and an aqueous solvent, into which phase is it most likely to partition?

- a) Organic phase
- b) Aqueous phase
- c) Inorganic phase
- d) Colloidal Phase

3. The process of passing a mobile phase through a chromatography column is called which one of the following?

- a) Flushing
- b) Washing
- c) Elution
- d) Partitioning

4. SDS-PAGE separates molecules on the basis of which of the following characteristics?
- Electrical charge
  - Size
  - Three-dimensional shape
  - Shape
5. The pH at which a protein carries a net zero charge is termed which of the following?
- pKa
  - pKb
  - pI
  - K
6. What is the first stage of the two-stage two-dimensional PAGE?
- SDS-PAGE
  - HPLC
  - Isoelectric focussing
  - Sedimentation
7. Spectroscopy measures the change in behaviour of a molecule when it is exposed to which of the following?
- A centrifugal force
  - Electromagnetic radiation
  - An electrical charge
  - Acidic conditions
8. Which of the following types of spectroscopy can tell us the most about the carbon framework of an organic compound?
- UV-visible spectroscopy
  - Infra-red spectroscopy
  - NMR spectroscopy
  - Mass spectrometry
9. Infra-red spectroscopy exploits the change in what kind of behaviour in the molecules it is used to study?
- Molecular vibrations
  - Nuclear spins
  - Electron spins
  - Electronic transitions
10. Which of the following techniques is used to study the three-dimensional structure of a molecule?
- Infra-red spectroscopy
  - Mass spectrometry
  - UV-visible spectroscopy
  - X-ray crystallography