

Biology for Engineers**Total Marks: 30****MID-SEM-EXAM 2024 (Course Code: NS2001)****Note:** All the questions are compulsory**Question: 1 True & False Questions: (Each question carries 1 mark)**

- 1) Enzymes are protein but all the proteins are not enzymes (True/False)
- 2) X-ray crystallography is used to determine the protein structures? (True/False)
- 3) Smooth Endoplasmic Reticulum is involved in protein synthesis (True/False)
- 4) The pilus is a hair-like appendage found on the external surface of the most Eukaryotes (True/False)
- 5) Mitochondria is involved in the production of Adenosine Triphosphate (True/False)

Question: 2: Multiple Choice Questions (MCQ): (Each question carries 1 mark)**1. Fluid Mosaic Model refers to the following**

- (A). Cytoplasm
- (B). Cell Membrane
- (C). Mitochondrial DNA
- (D). Golgi Apparatus

2. Cellulose is a main component of

- (A). Plant cell
- (B). Animal cell
- (C). Fungal cell wall
- (D). Bacterial cell wall

3. The acidic pH of Lysosomes is due to:

- (A). Peptidase
- (B). Hydrolase
- (C). Recombinase
- (D). Lactase

4. Apoptosis is a

- (A). Accidental Cell death
- (B). Programmed cell death
- (C). Cell growth phenomenon
- (D). Stage of cell division

5. Necrosis is related to the following:

- (A). Death of Tissue
- (B). Growth of Tissue
- (C). Yellow Spot-on leaves
- (D). Darkening of Green Color of leaves

6. The function of cell membrane is

- (A). to separate the contents of cell from its external environment
- (B). to help in locomotion
- (C). to help in photosynthesis
- (D). to help in digestion

7. Endoplasmic reticulum gives rise to:

- (A). Centrosomes
- (B). Ribosomes

(C). Peroxisomes

(D). Lysosomes

8. Deoxyribonucleic Acid is a

- (A). Amino Acid
- (B). Double helical structure
- (C). Protein
- (D). All of the above

9. How many amino acids make up a protein?

- (A). 40
- (B). 25
- (C). 20
- (D). 35

10. Peptide bond is related to:

- (A). Benzoic Acid
- (B). Amino Acid
- (C). Acetic Acid
- (D). Ascorbic Acid

11. The protein synthesis takes place in the following cell organelles:

- (A). Nucleus
- (B). Nucleoplasm
- (C). Axoplasm
- (D). Cytoplasm

12. Nerve Cell is related to

- (A). Liver
- (B). Brain
- (C). Gut
- (D). Pancreas

13. Which of the following is a causative agent of COVID19

- (A). SARS-CoV1
- (B). SARS-CoV2
- (C). Influenza Virus
- (D). Polio virus

14. Binary Fission is a mode of reproduction in

- (A). Prokaryotes
- (B). Eukaryotes
- (C). Fishes
- (D). All of the Above

15. Plasmid is a

- (A). Genomic DNA
- (B). Extrachromosomal DNA
- (C). RNA
- (D). None of the above

Question 3: Write Short Note (Each Question Carries 2 marks)

1. Lysosomes
2. Cell Membrane
3. Eukaryotic Cell
4. Enzymes
5. Cell Imaging

Biology for Engineers (Course Code: NS2001) Total Marks: 70

Note: All the questions are compulsory

Question: 1 True & False Questions: (Each question carries 2 mark)

- 1) Enzymes are carbohydrate (True/False).....☒ F
- 2) X-ray crystallography is used to determine the protein structures? (True/False).....☒ T
- 3) Mitochondria is involved in process of protein synthesis (True/False).....☒ F
- 4) The pilus is a hair-like appendage found on the external surface of most prokaryotes and it helps the organism to attach itself to various environments (True/False).....☒ T
- 5) With few exceptions, cellular membranes are made of glycerophospholipids (True/False).....☒ T

Question: 2 Multiple Choice Questions: (Each question carries 2 marks)

1. Which of the following systems protects our body against disease-causing microbes?

- (A) Digestive System
- ☒ (B) Immune system
- (C) Reproductive system
- (D) Respiratory system

2. Smooth endoplasmic reticulum contains

- (A). detoxification enzymes
- (B). enzymes for cell wall synthesis
- (C). enzymes for Cellulose synthesis
- ☒ (D). enzymes for Glycogen formation

3. Lysosomes are known as "suicidal bags" because of their:

- (A). Haemolytic activity
- ☒ (B). Anabolic Activity
- (C). Catalytic activity
- (D). Hydrolytic activity

4. Histones are

- ☒ (A). the main proteins of chromatin
- (B). the main proteins of Endoplasmic Reticulum
- (C). the main proteins of Golgi Apparatus
- (D). the main proteins of cytoplasm

5. What is the pH of a lysosome?

- (A). Neutral
- (B). Basic
- ☒ (C). Acidic
- (D). Depends on the cell type

6. Why are lysosomes considered the "garbage trucks" of a cell?

- (A). Because they transport materials between two cell organelles
- ☒ (B). Because they remove all unwanted cellular materials
- (C). Because they synthesize cellular materials
- (D). Because they transport materials from one cell to another

7. Lysosomes arise from:

- ☒ (A). Golgi apparatus
- (B). Endoplasmic reticulum
- (C). Peroxisomes

(D). Chromosomes

8. Which of the following statements is true about proteins?

- (A). Proteins are made up of amino acids.
- (B). Proteins are essential for the development of skin, teeth and bones.
- (C). Protein is the only nutrient that can build, repair and maintain body tissues.
- ☒ (D). All of the above

9. Cisternae are

- ☒ (A). the Disc-shaped sacs in Golgi apparatus
- (B). section of lysosomes
- (C). present in side endoplasmic reticulum
- (D). part of ribosomes

10. The bond between amino acids is called as:

- (A). Ionic bond
- ☒ (B). Peptide bond
- (C). Acidic bond
- (D). Hydrogen bond

11. The protein synthesis takes place in the following cell organelles:

- (A). Nucleus
- ☒ (B). Cytoplasm
- (C). Axoplasm
- (D). Nucleoplasm

12. The process of excision and insertion of a gene is called

- ☒ (A). Biotechnology
- ☒ (B). Genetic engineering
- (C). Stem Cell Engineering
- (D). Geriatrics

13. Cristae are

- ☒ (A). infoldings of mitochondria
- (B). infoldings of nucleus
- (C). part of virus
- (D). infoldings of lysosomes

14. Nucleotides are made up of

- ☒ (A) Base, Sugar and Phosphate
- (B) Base and Sugar
- (C) Base, acetic acid and humic acid
- (D) Base, Sugar and Keratin

15. In RNA pyrimidine bases are

- ☒ (A). Cytosine and Thymine
- ☒ (B). Cytosine and Uracil
- (C). Cytosine and benzene
- (D). Cytosine and Toluene

Question 3: Write Short Note (Each Question Carries 5 marks)

1. Phases of Clinical Trials
2. Eukaryotic Cell
3. Chromosomes
4. Recombinant Protein
5. Use of AI and Machine learning in Biology
6. Endoplasmic Reticulum