

01. Organ of Bojanus refers to :
- | | |
|-----------|-------------------|
| (1) Heart | (2) Metanephridia |
| (3) Lung | (4) Gonads |
02. Hardest part of tooth is :
- | | |
|-------------|-----------|
| (1) Dentine | (2) Pulp |
| (3) Enamel | (4) Nerve |
03. The small green plant that live inside the body of Hydra as a symbiont is :
- | | |
|-------------|-------------------|
| (1) Volvox | (2) Chlamydomonas |
| (3) Euglena | (4) Zoochorellae |
04. Which of the following is steroid :
- | | |
|--------------|---------------|
| (1) Insulin | (2) Glucagon |
| (3) Androgen | (4) Thyroxine |
05. Deficiency of thyroid hormone causes :
- | | |
|---------------|-----------------------|
| (1) Cretinism | (2) Addison's Disease |
| (3) Gigantism | (4) Cryptorchidism |
06. During apoptosis which of the following protein level decreases :
- | | |
|-----------|---------------|
| (1) Bax | (2) p53 |
| (3) Bcl-2 | (4) Caspase-3 |
07. Reflex action is controlled by :
- | | |
|------------|-----------------|
| (1) Pineal | (2) Spinal cord |
| (3) Testes | (4) Follicles |
08. One of the following is not found in RNA :
- | | |
|-------------|--------------|
| (1) Thymine | (2) Uracil |
| (3) Guanine | (4) Cytosine |

09. The G1 phase of cell cycle is signified by :
- (1) Cell growth
 - (2) Cytoplasmic division
 - (3) DNA replication
 - (4) Cell plate formation
10. Trypanosomiasis disease is transmitted by :
- (1) Sand fly
 - (2) May fly
 - (3) Tse-tse fly
 - (4) Louse
11. The enzyme responsible for primary carboxylation in C3 plants is :
- (1) Pyruvate carboxylase
 - (2) Succinic dehydrogenase
 - (3) Hexokinase
 - (4) RuBP carboxylase oxygenase
12. Primary precursor of IAA is :
- (1) Methionine
 - (2) Adenine
 - (3) Tryptophan
 - (4) Alanine
13. With reference to enzymes, which one of the following statements is true ?
- (1) Apoenzyme = Holoenzyme + Coenzyme
 - (2) Holoenzyme = Apoenzyme + Coenzyme
 - (3) Coenzyme = Apoenzyme + Holoenzyme
 - (4) Holoenzyme = Coenzyme - Apoenzyme
14. A person with phenylketonuria is advised not to consume which of the following products ?
- (1) Glycine containing foods
 - (2) Fat containing food
 - (3) Glucose
 - (4) Aspartame

15. Three dimensional images of the surface of the cells and tissues could be visualized through :
- (1) Transmission electron microscope
 - (2) Scanning electron microscope
 - (3) Compound microscope
 - (4) Fluorescence microscope
16. The dipeptide Lys-Glu on an electrophoresis at pH 6.0 would :
- (1) Move towards anode (+)
 - (2) Move towards cathode (-)
 - (3) Remain stationary
 - (4) Get degraded
17. Protein binding regions of DNA are identified by one of following techniques :
- | | |
|-----------------------|----------------------|
| (1) Finger printing | (2) Foot printing |
| (3) Southern blotting | (4) Western blotting |
18. LINEs and SINEs are :
- | | |
|-------------------|----------------------------|
| (1) micro-RNA | (2) transposable elements |
| (3) ribosomal-RNA | (4) 3' untranslated region |
19. Yeast two hybrid :
- (1) Protein expression
 - (2) For cloning large pieces of DNA
 - (3) Identification of exons and intron
 - (4) Protein-protein interaction
20. From what cellular material is the cDNA library derived ?
- | | |
|----------|--------------|
| (1) tRNA | (2) mRNA |
| (3) DNA | (4) Pre mRNA |

21. Human genetic disease that is attributed to defects in DNA repair of replication :
- (1) Parkinson's disease (2) Xenoderma pigmentosum
(3) DMD (4) Huntington's chorea
22. Post transcriptional insertion or deletion of nucleotides is called as :
- (1) Trans splicing (2) RNA editing
(3) Alternate splicing (4) Cis splicing
23. Which is not a proto-oncogene ?
- (1) APC (2) c- myc
(3) ras (4) n-myc
24. Which of the following vitamins would most likely be deficient in a person who develops a completely carnivorous lifestyle ?
- (1) Thiamine (2) Niacin
(3) Cobalamine (4) Vitamin C
25. An enzymatic reaction has a standard free energy change (ΔG^0) of - 7 kcal/mol, the equilibrium constant is :
- (1) greater than one
(2) less than one
(3) zero
(4) dependent upon enzyme concentration
26. Which of the following is an important intermediate in the biosynthesis of fatty acids ?
- (1) Malonyl -CoA (2) Cholesterol
(3) Glucose (4) Acetyl-CoA

- 27.** The unit for Michaelis constant K_m is :
- (1) Time, in seconds or minutes (2) Moles/sec
(3) Moles/litre (4) Moles/liter-sec
- 28.** Anaphase-promoting complex degrades a protein called :
- (1) cohesion (2) separase
(3) securin (4) Cdk 1
- 29.** Phosphatidylinositol 4,5-bisphosphate (PIP₂) is hydrolyzed by :
- (1) Protein kinase A (2) Phospholipase C
(3) PI 3-kinase (4) Protein kinase C
- 30.** Enzyme used in PCR is from :
- (1) Extremophilic algae (2) Extremophilic fung
(3) Extremophilic bacteria (4) Extremophilic archaea
- 31.** Cyanobacteria differs from bacteria :
- (1) Evolves oxygen
(2) Possess peptidoglycan in cell wall
(3) Possess nucleus
(4) Possess chloroplast
- 32.** Zygotene is characterized by :
- (1) Synapsis, crossing over, tetrad formation
(2) Synapsis, bivalents, crossing over
(3) Recombination nodules, synapsis and bivalents
(4) Bivalents, synapsis, Tetrad formation
- 33.** Which of the following is arginine rich ?
- (1) H1 (2) H2A
(3) H2B (4) H3

34. Cytoskeleton term is applied to :
- (1) Golgi-bodies and Endoplasmic reticulum of the cells
 - (2) Golgi-bodies and microtubules of the cells
 - (3) Fabric of microtubules, microfilaments and golgi bodies
 - (4) Fabric of microtubules, microfilaments and intermediate filaments.
35. Anaphase II chromosome of Meiosis II differs from that of Anaphase I of Meiosis I by :
- (1) Presence of two chromatid in each chromosome
 - (2) Presence of one chromatid in each chromosome
 - (3) Presence of the chromosomes at the centre
 - (4) Presence of the chromosome at the periphery
36. Which of the following combinations is true as proponents of 'Synthetic theory of Evolution' ?
- (1) T.Dobzhansky, RA Fisher, Lamark, JBS Haldane, Ernst Myr
 - (2) T.Dobzhansky, RA Fisher, Darwin, JBS Haldane, Ernst Myr
 - (3) T.Dobzhansky, RA Fisher, Hugo De Vries, JBS Haldane, Ernst Myr
 - (4) T.Dobzhansky, RA Fisher, JBS Haldane, Ernst Myr, Sewall Wright.
37. Suicidal bags are associated with :
- | | |
|------------------------|------------------------|
| (1) Hydrolytic enzymes | (2) Parasitic activity |
| (3) Food vacuoles | (4) Catabolic enzymes |
38. The flow of energy in an ecosystem is :
- (1) Multidirectional
 - (2) Bidirectional
 - (3) Unidirectional
 - (4) No flow of energy in ecosystem

39. Nitrosomonas and Nitrobacter are the bacteria of :
- | | |
|---------------------|-------------------|
| (1) Deamination | (2) Nitrification |
| (3) Denitrification | (4) Decomposition |
40. PSII oxidizes water to O_2 in the ?
- | | |
|---------------------|------------------------|
| (1) Stroma | (2) Thylakoid membrane |
| (3) Thylakoid lumen | (4) Stroma lamellae |

Short Answer Questions

Note: Attempt any **five** questions. Write answer in **150-200** words. Each question carries **16** marks. Answer each question on separate page, after writing Question Number.

01. What are different methods of enzyme immobilization and its advantages ?
02. Explain the difference between tertiary and quaternary structure of proteins.
03. What are different steps and tools of proteome analysis ?
04. Differentiate between siRNA and miRNA.
05. A balanced chromosomal translocation can either activate an oncogene or inactivate a tumour suppressor gene. Discuss in support of the above statement with suitable examples.
06. Why minisatellites and microsatellites are the most useful sequences for DNA fingerprinting ?
07. Explain the Mendel's law of independent assortment with suitable examples (s).
08. Define linkage. Describe mechanism of crossing over in a cell.

- 09.** How photosystem I and II cooperate in photosynthesis ? Discuss with suitable illustration.
- 10.** Describe mechanism of gene transfer in bacteria.