

## U.G./P.G. ENTRANCE EXAMINATION, APRIL 2021

## BIOCHEMISTRY

Time : Two Hours

Maximum : 100 Marks

*Answer all questions.  
Each question carries 2 marks.*

1. Which one is a structure data base ?
  - a) PDB.
  - b) Swiss Prot.
  - c) NCBI.
  - d) DDBJ.
2. BLAST stands for :
  - a) Basic local alignment search tool.
  - b) Ballistic local alignment search tool.
  - c) Basic leader alignment search tool.
  - d) Basic local alignment separation tool.
3. One of the principal alkaloids of the tobacco plant is \_\_\_\_\_.
  - a) Cotinine.
  - b) Nicotine amide.
  - c) Carotene.
  - d) Nicotine.
4. Separation of two complimentary strands of DNA is done by :
  - a) Helicase.
  - b) Ligase.
  - c) Topoisomerase.
  - d) Hexonuclease.
5. Which of the following is not a chain termination codon ?
  - a) UAA.
  - b) UGA.
  - c) UAG.
  - d) UGG.
6. The codon AUG, which codes for the amino acid methionine, also serves as :
  - a) A lac operon.
  - b) A start codon.
  - c) A stop codon.
  - d) A promoter.
7. Some tRNAs can recognize more than one codon This relaxation is called :
  - a) The Levene's Hypothesis.
  - b) Sutton-Boveri Hypothesis.
  - c) The Wobble Hypothesis.
  - d) The Monkey-Man Hypothesis.
8. ddNTP is different from dNTP in having :
  - a) H in the place of OH in 3 position of dNTP.
  - b) OH in the place of H in 3 position of dNTP.
  - c) OH in the place of H in 2 position of dNTP.
  - d) CH<sub>3</sub> in the place of OH in 3 position of dNTP.

**Turn over**

9. The Michaelis constant,  $K_m$  is :
- Numerically equal to  $\frac{1}{2} V_{max}$ .
  - Dependent on the enzyme concentration.
  - Independent of pH.
  - Numerically equal to the substrate concentration that gives half maximal velocity.
10. Coenzymes for carboxylation reactions :
- CoA.
  - Pyridoxal phosphate.
  - Biotin.
  - NAD.
11. Programmed cell death is \_\_\_\_\_.
- Apoptosis.
  - Necrosis.
  - Cell death.
  - Cell digestion.
12. Colorimeter works on the principle of :
- Beer-Lambert law.
  - Beer's law.
  - Lambert's law.
  - Snell's law.
13. Fructose 1 phosphate is split into glyceraldehyde and dihydroxy acetone phosphate by :
- Enolase.
  - Aldolase.
  - Dihydroxylase.
  - Phospho fructokinase.
14. The synthesis of glucose from lactate, glycerol, or amino acids is called :
- Glycogenolysis.
  - Glycolysis.
  - Lipolysis.
  - Gluconeogenesis.
15. Restriction endonucleases are enzymes :
- Capable of cutting DNA at random sites.
  - Capable of cutting DNA at specific sites.
  - Capable of joining DNA molecules.
  - Capable of adding nucleotides to 3'OH ends.

16. Glucagon is secreted by :
- a) Adrenal.
  - b) Pancreas.
  - c) Pituitary.
  - d) Hypothalamus.
17. The level of Hb Alc is a useful marker of :
- a) Myocardial infarction.
  - b) Liver disease.
  - c) Diabetes mellitus.
  - d) Thyroiditis.
18. Vitamin helps blood clotting is :
- a) Vit A.
  - b) Vit C.
  - c) Vit K.
  - d) Vit B6.
19. Which among the following is a cyclic amino acid ?
- a) Glycine.
  - b) Tryptophan.
  - c) Asparagine.
  - d) Proline.
20. The change in optical rotation of freshly prepared solution of glucose is known as :
- a) Tautomerism.
  - b) Racemization.
  - c) Specific rotation.
  - d) Mutarotation.
21. The alignment procedure that tries to align the entire sequence is :
- a) Multiple sequence alignment.
  - b) Pair wise alignment.
  - c) Global alignment.
  - d) Local alignment.
22. Which of the following is a polymer of fructose ?
- a) Inulin.
  - b) Glycogen.
  - c) Starch.
  - d) Cellulose.
23. What type of glycosidic bond is present in cellulose ?
- a)  $\alpha(1 \rightarrow 2)$ .
  - b)  $\beta(1 \rightarrow 2)$ .
  - c)  $\alpha(1 \rightarrow 4)$ .
  - d)  $\beta(1 \rightarrow 4)$ .

Turn over

24. The phenomenon of osmosis is opposite to that of :
- a) Diffusion.
  - b) Effusion.
  - c) Affusion.
  - d) Coagulation.
25. The enzymes involved in Phosphorylation of glucose to glucose 6-phosphate are :
- a) Hexokinase.
  - b) Glucokinase.
  - c) Phosphofructokinase.
  - d) Both (a) and (b).
26. At neutral pH, a mixture of amino acids in solution would be predominantly :
- a) Dipolar ions.
  - b) Nonpolar molecules.
  - c) Positive and monovalent.
  - d) Hydrophobic.
27. The movement of charged particles towards one of the electrodes under the influence of electrical current is :
- a) Gel filtration.
  - b) Molecular sieving.
  - c) Gas liquid chromatography.
  - d) Electrophoresis.
28. The initiation site for transcription is recognized by :
- a)  $\alpha$ -Subunit of DNA-dependent RNA polymerase.
  - b)  $\beta$ -Subunit of DNA-dependent RNA polymerase.
  - c) Sigma factor.
  - d) Rho factor.
29. Which of the following sugars give a positive test with Selliwanoff test ?
- a) Glucose.
  - b) Galactose.
  - c) Mannose.
  - d) Fructose.
30. In a symporter system :
- a) The transported molecule travels with the sodium ion into a cell.
  - b) The transported molecule travels with the sodium ion out of a cell.
  - c) The transported molecule travels into the cell while the sodium ion travels out of the cell.
  - d) The transported molecule travels out of the cell while the sodium ion travels into the cell.

31. If a double stranded DNA has 20% Thymine, the percentage of Guanine in the DNA :
- a) 30%.
  - b) 10%.
  - c) 90%.
  - d) 40%.
32. Peptidyl transferase :
- a) Is a 23s rRNA.
  - b) Forms peptide bonds.
  - c) Component of ribosome.
  - d) All the three.
33. Statins are :
- a) Competitive inhibitors of HMG CoA synthetase.
  - b) Non-competitive inhibitors of HMG CoA reductase.
  - c) Competitive inhibitors of acetyl CoA carboxylase.
  - d) Competitive inhibitors of HMG CoA reductase.
34. The rate limiting step of urea cycle is mediated by :
- a) Arginase.
  - b) Carbamoyl phosphate synthetase I.
  - c) Arginosuccinate synthetase.
  - d) Ornithine transcarbamoylase.
35. Albinism is caused by the deficiency of :
- a) Tyrosinase.
  - b) HMG CoA reductase.
  - c) Phenylalanine hydroxylase.
  - d) Arginase.
36. Malonyl-CoA is an inhibitor of :
- a) Carnitine Acyl Transferase II.
  - b) Carnitine Acyl Transferase I.
  - c) Fatty acid synthase.
  - d) Thiokinase.
37. The source of all the carbon atoms in cholesterol is :
- a) Acetyl-CoA.
  - b) Bicarbonate.
  - c) Propionyl-CoA.
  - d) Succinyl-CoA.
38. Maximum enzyme activity is observed at :
- a) Acidic pH.
  - b) Neutral pH.
  - c) Basic pH.
  - d) Optimum pH.

Turn over

39. Trypsin has no action on :
- a) Myoglobin.
  - b) Albumin.
  - c) Histone.
  - d) DNA.
40. When ATP forms AMP ?
- a) Inorganic pyrophosphate is produced.
  - b) Inorganic phosphorous is produced.
  - c) Phsophagen is produced.
  - d) No energy is produced.
41. Nitrogen fixed by bacteria can be taken up by plants to produce :
- a) Nitrogen oxides.
  - b) Carbohydrates.
  - c) Proteins.
  - d) Energy.
42. Cobalt is essential component of :
- a) Vitamin B1.
  - b) Vitamin B6.
  - c) Vitamin B12.
  - d) Vitamin 3.
43. Sigmoidal oxygen dissociation curve is characteristic of :
- a) Carboxyhaemoglobin.
  - b) Myoglobin.
  - c) Methaemoglobin.
  - d) Haemoglobin.
44. Thyroid hormones are synthesized by the iodination of the amino acid :
- a) Glycine.
  - b) Phenylalanine.
  - c) Lysine.
  - d) Tyrosine.
45. DNA ligase :
- a) Connects the end of two DNA chains.
  - b) Unwinds the double helix.
  - c) Synthesises RNA primer.
  - d) Synthesises lagging strand.
46. Mutations can be caused by :
- a) Ultraviolet radiation.
  - b) Ionising radiation.
  - c) Alkylating agents.
  - d) All of these.

47. Frederick Sanger won Nobel prize in 1980 for sequencing phage  $\phi$ X 174. But he was already a recipient of Nobel prize in 1958 for :
- a) Discovery of Sangers method.
  - b) Elucidating amino acid sequence of insulin.
  - c) Elucidating nucleotide of insulin gene.
  - d) Elucidating amino acid sequence of somatostatin.
48. Western blotting is used for the separation of :
- a) Lipids.
  - b) Carbohydrates.
  - c) Proteins.
  - d) DNA.
49. Which is the powerhouse of a cell :
- a) Nucleus.
  - b) Mitochondria.
  - c) Golgi complex.
  - d) Cell membrane.
50. The number of moles of a solute per litre of a solution is :
- a) Molality.
  - b) Normality.
  - c) Molarity.
  - d) None.