Clinical Biochemistry - 2010

1. The cholesterol ($C_{27}H_{46}O$) content of a blood sample is 325 mg in 10.0 mL. What is the molarity of cholesterol ? (Atomic weights: C= 12.01, H = 1.008, O = 16.00).
   (a) 0.0841 (b) 0.841
   (c) 8.41 (d) 84.1

2. Which of the following compounds has zero dipole moment ?
   (a) Cis-2-Butene (b) Trans-2-Butene
   (c) 1-Butene (d) 2-methyl-1-propene

3. Which of the following compound would be optically active ?
   (a) ter-Butanol (b) sec-Butanol
   (c) n-Butanol (d) 1-Chloro-4-hydroxy butane

4. What is the pH value of M/1000 HCI solution ?
   (a) 1.5 (b) 2.5
   (c) 3.0 (d) 3.5

5. Numbers are stored and transmitted inside a computer in :
   (a) Decimal form (b) ASCll code form
   (c) Alphanumeric form (d) Binary form

6. Which of the following is not a computer antivirus ?
   (a) Symantec (b) AVG
   (c) Norton (d) None of the above

7. Glucose and Galactose are epimers that differ in configuration at :
   (a) C2 (b) C3
   (d) C4 (d) C5

8. Arachadonic acid contains :
   (a) 2 double bonds (b) 3 double bonds
   (c) 4 double bonds (d) 5 double bonds

9. Cyclopentano-phenanthrene is the nucleus of :
   (a) Cholesterol (b) Ceramides
   (c) Amino sugars (d) Gangliosides

10. Which of the following acids has the strongest conjugate base ?
    (a) CH_3COOH (b) H_2SO_4
    (c) HCOOH (d) HIO_4

11. A man wants to swallow a very bitter tablet. He must avoid the contact of the tablet with the :
    (a) Back of the tongue (b) Tip of the tongue
    (c) Sides of the tongue (d) Under the surface of the tongue

12. Rhodopsin is also is also called :
    (a) Visual red (b) Visual green
    (c) Visual purple (d) Visual violet

13. Which of the following is the most important marker for myocardial damage ?
    (a) Troponin (b) Lactate dehydrogenase
    (c) Alkaline phosphatase (c) Myoglobin

14. In Alkaptonuria there is defect in catabolism of which amino acid ?
    (a) Arginine (b) Alanine
    (c) Phenylalanine (d) Proline

15. Aspartate transaminase is also called :
    (a) Serum glutamic aspartic transaminase
    (b) Serum glutamic oxaloacetic transaminase
    (c) Serum aspartic oxaloacetic transaminase
    (d) Serum glutamine acetate transaminase

16. If two parents are homozygous for a genetically inherited recessive trait, what is the probability that they will have a child who does not have this trait in his or her phenotype ?
    (a) 0% (b) 25%
    (c) 7.5% (d) 100%

17. In humans pointed eyebrows are dominant to smooth eyebrows and widow's peak (downward pointed frontal hairline) is dominant to continuous hairline. What phenotypic ratio would you expect in the offspring from a cross between an individual heterozygous for both genes and an individual homozygous recessive for both genes ?
    (a) 9:3:3:1 (b) 9:3:4
    (c) 1:1:1:1 (d) 9:7

18. BMR (Basal Metabolic Rate) :

(a) Increases with age
(b) Decreases with age
(c) Remains the same
(d) No correlation between the BMR and age

19. Choose the odd one :

(a) Pentose phosphate pathway
(b) Hexose monophosphate shunt
(c) Phosphogluconate pathway
(d) None of the above

20. Which of the following is not a product of citric acid cycle ?

(a) NADH
(b) FADH2
(c) ATP
(d) Co2

21. The electrons in electron transport chain move from one carrier to another because :

(a) Carriers are present in decreasing order of reduction potential
(b) Carriers are present in increasing order of reduction potential
(c) Carriers are present in increasing order of oxidation potential
(d) None of the above

22. Palmitoyl-CoA (16 carbon) undergoes :

(a) 6 rounds of β oxidation
(b) 7 rounds of β oxidation
(c) 8 rounds of β oxidation
(d) 9 rounds of β oxidation

23. Ketone bodies originate from :

(a) Acetoacetate
(b) Acetone
(c) Beta hydroxy butyrate
(d) Acetyl Co A

24. Which of the following is not a true statement ?

(a) β oxidation occur in mitochondria
(b) Fatty acid biosynthesis occur in cytoplasm
(c) Fatty acid biosynthesis starts with Acetyl Co-A
(d) None of the above

25. Urea cycle occurs in :

(a) Mitochondria only
(b) Cytosol only
(c) Mitochondria & cytosol
(d) Mitochondria, cytosol, Lysosomes

26. Uric acid is :
    (a) Purine
    (b) Pyrimidine
    (c) Both (a) & (b)
    (d) Protein

27. Inosine monophosphate gives rise to :
    (a) ATP
    (b) GTP
    (c) Both (a) & (b)
    (d) None of the above

28. Binding of inhibitor directly to the enzyme substrate complex but not to free enzyme is an example of :
    (a) Competitive inhibition
    (b) Un-competitive inhibition
    (c) Allosteric inhibition
    (d) None of the above

29. If many enzymes catalyze the same reaction, what would be the basis for choosing the best one to perform the reaction for you ?
    (a) Low Km value
    (b) High Km value
    (c) Intermediate value of Km
    (d) None of the above

30. Group 3 enzymes according to enzyme classification are :
    (a) Oxido redutases
    (b) Transferases
    (c) Hydrolases
    (d) Lyases

31. High density lipoproteins are the carriers of :
    (a) Endogenous cholesterol from tissue to liver
    (b) Endogenous triacylglycerol from tissue to liver
    (c) Endogenous cholesterol from liver to tissue
    (d) Endogenous triacylglycerol from liver to tissue

32. Symport indicates :
    (a) Transport of two different molecules in opposite direction
    (b) Transport of same molecules in opposite direction
    (c) Transport of two different molecules in same direction
    (d) Transport of molecule against concentration gradient

33. P53 is a :
    (a) Tumor inducer gene
    (b) Tumor suppressor gene
    (c) Mutagen which leads to tumors
    (d) None of the above

34. Which form of DNA is left handed ?

(a) A-DNA (b) B-DNA
(c) C-DNA (d) Z-DNA

35. While deciphering genetic code, Marshall Niemberg used which of the following polynucleotides ?

(a) Cytosine (b) Adenine
(c) Gaunine (d) Uracil

36. Which mode of replication is ruled out after first generation in Meselson and Stahl experiment ?

(a) Conservative (b) Dispersive
(c) Semi conservative (d) All of the above

37. Which of the following is not outcome of glycolysis ?

(a) NADH (b) ATP
(c) Pyruvate (d) None of the above

38. Which antibody is present as a pentamer ?

(a) IgA (b) IgG
(c) IgM (d) IgE

39. MHC II (Major Histocompatibility Complex) presents antigens to T-Cells which are :

(a) Endogenous in nature (b) Exogenous in nature
(c) Both (a) & (b) (d) None of the above

40. Complement system kills the bacteria mostly by :

(a) Lysozymes (b) Formation of pores
(c) Removing the cell wall (d) All of the above

41. Choose the odd one :

(a) Macrophage (b) B-lymphocytes
(c) T-lymphocytes (d) None of the above

42. The α helix of proteins contain :

(a) 1.6 residues per turn (b) 2.6 residues per turn
(c) 3.6 residues per turn (d) 4.6 residues per turn

43. When DNA is denatured its UV absorbance capacity :

(a) Increases (b) Decreases

(c) Remains same (d) DNA does not absorb UV

44. Choose the odd one :

(a) AUU (b) AUC

(c) AUA (d) AUG

45. The callus is defined as a mass of cells in which there is :

(a) Auxin concentration greater than Cytokinin concentration

(b) Auxin concentration less than Cytokinin concentration

(c) Auxin concentration is equal to Cytokinin concentration

(d) None of the above

46. Which of the following is not the feature of a cloning vector ?

(a) Origin of replication (b) Selectable marker

(c) Restriction sites (d) None of the above

47. The most common media used for plant tissue culture is

(a) Eagles media (b) Whites media

(c) Murashige and Skoog media (d) B5 media

48. Stearic acid contains :

(a) 16 carbons (b) 18 carbons

(c) 20 carbons (d) 22 carbons

49. Which of the following activities is/are associated with DNA polymerase 1 ?

(a) $3 \rightarrow 5$ exonuclease activity (b) $5 \rightarrow 3$ exonuclease activity

(c) Adding nucleotides (d) All of the above

50. Which organelle sorts the cellular proteins ?

(a) Endoplasmic reticulum (b) Peroxisomes

(c) Golgi body (d) All of the above

51. Nucleolus contains :

(a) DNA (b) RNA

(c) Proteins (d) All of the above.

52. If an individual is suffering from Xeroderma Pigmentosum then there is problem in :
    (a) Melanin biosynthesis
    (b) Regulation of lipid biosynthesis
    (c) Inability to repair the UV induced DNA Damage
    (d) All of the above

53. The role of sigma factor in transcription is :
    (a) To recognise the promoter sequence
    (b) To carry out polymerization
    (c) To terminate the process of transcription
    (d) None of the above

54. Which type of cap does not exist in eukaryotic m-RNA ?
    (a) Cap-0 (b) Cap-1
    (d) Cap-2 (d) None of the above

55. Choose the group containing only the peptide hormones :
    (a) Vasopressin, Oxytocin, Epinephrine
    (b) Vasopressin, Testosterone, Glucagon
    (c) Oxytocin, Vasopressin, Throxine
    (d) Oxytocin, Vasopressin, Somatostatin

56. Icosahedral symmetry is most prevalent in :
    (a) Bacteria (b) Viruses
    (c) Fungi (d) All of the above

57. Ciprofloxacin acts on :
    (a) DNA gyrase (b) DNA Polymerase
    (c) Reverse transcriptase (d) Amino acyl t-RNA synthase

58. Which of the following is not the property of Ascorbate ion in human body ?
    (a) Acts as an anti-oxidant
    (b) Acts as a cofactor
    (c) Acts in the biosynthesis of collagen
    (d) None of the above

59. What is the molality of a solution made by dissolving 120 g of $MgSO_4$ in 200.0 mL of water (Molecular weight of $MgSO_4$ is 120) ?

(a) 5 (b) 10

(c) 15 (d) 20

60. Watson and Crick bonding specificity between bases can be observed at the level of :

(a) Free bases in solution (b) Mononucleotide solution

(c) Polynucleotide solutions (d) All of the above