MCQ FOR BIOCHEMISTRY

1. A drug which prevents uric acid synthesis by inhibiting the enzyme xanthine oxidase is
    (A) Aspirin
    (B) Allopurinol
    (C) Colchicine
    (D) Probenecid
2. Which of the following is required for crystallization and storage of the hormone insulin?
    (A) Mn++
    (B) Mg++
    (C) Ca++
    (D) Zn++
3. Oxidation of which substance in the body yields the most calories
    (A) Glucose
    (B) Glycogen
    (C) Protein
    (D) Lipids
4. Milk is deficient in which vitamins?
    (A) Vitamin C
    (B) Vitamin A
    (C) Vitamin B2
    (D) Vitamin K
5. Milk is deficient of which mineral?
    (A) Phosphorus
    (B) Sodium
    (C) Iron
    (D) Potassium
6. Synthesis of prostaglandinsis is inhibited by
    (A) Aspirin
    (B) Arsenic
    (C) Fluoride
    (D) Cyanide
7. HDL is synthesized and secreted from
    (A) Pancreas
    (B) Liver
    (C) Kidney
    (D) Muscle
8. Which is the cholesterol esters that enter cells through the receptor-mediated endocytosis of lipoproteins hydrolyzed?
    (A) Endoplasmin reticulum
    (B) Lysosomes
    (C) Plasma membrane receptor
    (D) Mitochondria

9. Which of the following phospholipids is localized to a greater extent in the outer leaflet of the membrane lipid bilayer?
    (A) Choline phosphoglycerides
    (B) Ethanolamine phosphoglycerides
    (C) Inositol phosphoglycerides
    (D) Serine phosphoglycerides
10. All the following processes occur rapidly in the membrane lipid bilayer except
    (A) Flexing of fatty acyl chains
    (B) Lateral diffusion of phospholipids
    (C) Transbilayer diffusion of phopholipids
    (D) Rotation of phospholipids around their long axes
11. Which of the following statement is correct about membrane cholesterol?
    (A) The hydroxyl group is located near the centre of the lipid layer
    (B) Most of the cholesterol is in the form of a cholesterol ester
    (C) The steroid nucleus form forms a rigid, planar structure
    (D) The hydrocarbon chain of cholesterol projects into the extracellular fluid
12. Which one is the heaviest particulate component of the cell?
    (A) Nucleus
    (B) Mitochondria
    (C) Cytoplasm
    (D) Golgi apparatus
13. Which one is the largest particulate of the cytoplasm?
    (A) Lysosomes
    (B) Mitochondria
    (C) Golgi apparatus
    (D) Entoplasmic reticulum
14. The degradative Processes are categorized under the heading of
    (A) Anabolism
    (B) Catabolism
    (C) Metabolism
    (D) None of the above
15. 15. The exchange of material takes place
    (A) Only by diffusion
    (B) Only by active transport
    (C) Only by pinocytosis
    (D) All of these
16. The average pH of Urine is
    (A) 7.0
    (B) 6.0
    (C) 8.0
    (D) 1.0

17. The pH of blood is 7.4 when the ratio between H_2CO_3 and $NaHCO_3$ is
    (A) 1 : 10
    (B) 1 : 20
    (C) 1 : 25
    (D) 1 : 30
18. The phenomenon of osmosis is opposite to that of
    (A) Diffusion
    (B) Effusion
    (C) Affusion
    (D) Coagulation
19. The surface tension in intestinal lumen between fat droplets and aqueous medium is decreased by
    (A) Bile Salts
    (B) Bile acids
    (C) Conc. H_2SO_4
    (D) Acetic acid
20. Which of the following is located in the mitochondria?
    (A) Cytochrome oxidase
    (B) Succinate dehydrogenase
    (C) Dihydrolipoyl dehydrogenase
    (D) All of these
21. The most active site of protein synthesis is the
    (A) Nucleus
    (B) Ribosome
    (C) Mitochondrion
    (D) Cell sap
22. The fatty acids can be transported into and out of mitochondria through
    (A) Active transport
    (B) Facilitated transfer
    (C) Non-facilitated transfer
    (D) None of these
23. Mitochondrial DNA is
    (A) Circular double stranded
    (B) Circular single stranded
    (C) Linear double helix
    (D) None of these
24. The absorption of intact protein from the gut in the fetal and newborn animals takes place by
    (A) Pinocytosis
    (B) Passive diffusion
    (C) Simple diffusion
    (D) Active transport
25. The cellular organelles called “suicide bags” are
    (A) Lysosomes

(B) Ribosomes
(C) Nucleolus
(D) Golgi's bodies

26. From the biological viewpoint, solutions can be grouped into
    (A) Isotonic solution
    (B) Hypotonic solutions
    (C) Hypertonic solution
    (D) All of these
27. Bulk transport across cell membrane is accomplished by
    (A) Phagocytosis
    (B) Pinocytosis
    (C) Extrusion
    (D) All of these
28. The ability of the cell membrane to act as a selective barrier depends upon
    (A) The lipid composition of the membrane
    (B) The pores which allows small molecules
    (C) The special mediated transport systems
    (D) All of these
29. Carrier protein can
    (A) Transport only one substance
    (B) Transport more than one substance
    (C) Exchange one substance to another
    (D) Perform all of these functions
30. A lipid bilayer is permeable to
    (A) Urea
    (B) Fructose
    (C) Glucose
    (D) Potassium
31. The Golgi complex
    (A) Synthesizes proteins
    (B) Produces ATP
    (C) Provides a pathway for transporting chemicals
    (D) Forms glycoproteins
32. The following points about microfilaments are true except
    (A) They form cytoskeleton with microtubules
    (B) They provide support and shape
    (C) They form intracellular conducting channels
    (D) They are involved in muscle cell contraction
33. The following substances are cell inclusions except
    (A) Melanin
    (B) Glycogen
    (C) Lipids
    (D) Centrosome
34. Fatty acids can be transported into and out of cell membrane by
    (A) Active transport

(B) Facilitated transport
(C) Diffusion
(D) Osmosis

35. Enzymes catalyzing electron transport are present mainly in the
(A) Ribosomes
(B) Endoplasmic reticulum
(C) Lysosomes
(D) Inner mitochondrial membrane

36. Mature erythrocytes do not contain
(A) Glycolytic enzymes
(B) HMP shunt enzymes
(C) Pyridine nucleotide
(D) ATP

37. In mammalian cells rRNA is produced mainly in the
(A) Endoplasmic reticulum
(B) Ribosome
(C) Nucleolus
(D) Nucleus

38. Genetic information of nuclear DNA is transmitted to the site of protein synthesis by
(A) rRNA
(B) mRNA
(C) tRNA
(D) Polysomes

39. The power house of the cell is
(A) Nucleus
(B) Cell membrane
(C) Mitochondria
(D) Lysosomes

40. The digestive enzymes of cellular compounds are confined to
(A) Lysosomes
(B) Ribosomes
(C) Peroxisomes
(D) Polysomes

41. The general formula of monosaccharide is
(A) CnH2nOn
(B) C2nH2On
(C) CnH2O2n
(D) CnH2nO2n

42. The general formula of polysaccharides is
(A) (C6H10O5)n
(B) (C6H12O5)n
(C) (C6H10O6)n
(D) (C6H10O6)n

43. The aldose sugar is
(A) Glycerose

(B) Ribulose
(C) Erythrulose
(D) Dihydoxyacetone

44. A triose sugar is
(A) Glycerose
(B) Ribose
(C) Erythrose
(D) Fructose

45. A pentose sugar is
(A) Dihydroxyacetone
(B) Ribulose
(C) Erythrose
(D) Glucose

46. The pentose sugar present mainly in the heart muscle is
(A) Lyxose
(B) Ribose
(C) Arabinose
(D) Xylose

47. Polysaccharides are
(A) Polymers
(B) Acids
(C) Proteins
(D) Oils

48. The number of isomers of glucose is
(A) 2
(B) 4
(C) 8
(D) 16

49. Two sugars which differ from one another only in configuration around a single carbon atom are termed
(A) Epimers
(B) Anomers
(C) Optical isomers
(D) Stereoisomers

50. Isomers differing as a result of variations in configuration of the —OH and —H on carbon atoms 2, 3 and 4 of glucose are known as
(A) Epimers
(B) Anomers
(C) Optical isomers
(D) Steroisomers

51. The most important epimer of glucose is
(A) Galactose

(B) Fructose
(C) Arabinose
(D) Xylose

52. The α-D-glucose and β-D-glucose are
    (A) Stereoisomers
    (B) Epimers
    (C) Anomers
    (D) Keto-aldo pairs
53. The α-D-glucose + 1120 → + 52.50 ← + 190 β- D-glucose for glucose above represents
    (A) Optical isomerism
    (B) Mutarotation
    (C) Epimerisation
    (D) D and L isomerism
54. Compounds having the same structural formula but differing in spatial configuration are known as
    (A) Stereoisomers
    (B) Anomers
    (C) Optical isomers
    (D) Epimers
55. In glucose the orientation of the —H and —OH groups around the carbon atom 5 adjacent to the terminal primary alcohol carbon determines
    (A) D or L series
    (B) Dextro or levorotatory
    (C) alpha and beta anomers
    (D) Epimers
56. The carbohydrate of the blood group substances is
    (A) Sucrose
    (B) Fucose
    (C) Arabinose
    (D) Maltose
57. The Erythromycin contains
    (A) Dimethyl amino sugar
    (B) Trimethyl amino sugar
    (C) Sterol and sugar
    (D) Glycerol and sugar
58. A sugar alcohol is
    (A) Mannitol
    (B) Trehalose
    (C) Xylulose
    (D) Arabinose

59. The major sugar of insect hemolymph is
    (A) Glycogen
    (B) Pectin
    (C) Trehalose
    (D) Sucrose
60. The sugar found in DNA is
    (A) Xylose
    (B) Ribose
    (C) Deoxyribose
    (D) Ribulose
61. The sugar found in RNA is
    (A) Ribose
    (B) Deoxyribose
    (C) Ribulose
    (D) Erythrose
62. The sugar found in milk is
    (A) Galactose
    (B) Glucose
    (C) Fructose
    (D) Lactose
63. Invert sugar is
    (A) Lactose
    (B) Sucrose
    (C) Hydrolytic products of sucrose
    (D) Fructose
64. Sucrose consists of
    (A) Glucose + glucose
    (B) Glucose + fructose
    (C) Glucose + galactose
    (D) Glucose + mannose
65. The monosaccharide units are linked by $1 \rightarrow 4$ glycosidic linkage in
    (A) Maltose
    (B) Sucrose
    (C) Cellulose
    (D) Cellobiose
66. Which of the following is a non-reducing sugar?
    (A) Isomaltose
    (B) Maltose
    (C) Lactose

(D) Trehalose

67. Which of the following is a reducing sugar?
    (A) Sucrose
    (B) Trehalose
    (C) Isomaltose
    (D) Agar
68. A dissaccharide formed by 1,1-glycosidic linkage between their monosaccharide units is
    (A) Lactose
    (B) Maltose
    (C) Trehalose
    (D) Sucrose
69. A dissaccharide formed by 1,1-glycosidic linkage between their monosaccharide units is
    (A) Lactose
    (B) Maltose
    (C) Trehalose
    (D) Sucrose
70. Mutarotation refers to change in
    (A) pH
    (B) Optical rotation
    (C) Conductance
    (D) Chemical properties
71. A polysacchharide which is often called animal starch is
    (A) Glycogen
    (B) Starch
    (C) Inulin
    (D) Dextrin
72. The homopolysaccharide used for intravenous infusion as plasma substitute is
    (A) Agar
    (B) Inulin
    (C) Pectin
    (D) Starch
73. The polysaccharide used in assessing the glomerular filtration rate (GFR) is
    (A) Glycogen
    (B) Agar
    (C) Inulin
    (D) Hyaluronic acid
74. The constituent unit of inulin is
    (A) Glucose
    (B) Fructose

(C) Mannose
(D) Galactose

75. The polysaccharide found in the exoskeleton of invertebrates is
(A) Pectin
(B) Chitin
(C) Cellulose
(D) Chondroitin sulphate

76. Which of the following is a heteroglycan?
(A) Dextrins
(B) Agar
(C) Inulin
(D) Chitin

77. The glycosaminoglycan which does not contain uronic acid is
(A) Dermatan sulphate
(B) Chondroitin sulphate
(C) Keratan sulphate
(D) Heparan sulphate

78. The glycosaminoglycan which does not contain uronic acid is
(A) Hyaluronic acid
(B) Heparin
(C) Chondroitin sulphate
(D) Dermatan sulphate

79. Keratan sulphate is found in abundance in
(A) Heart muscle
(B) Liver
(C) Adrenal cortex
(D) Cornea

80. Repeating units of hyaluronic acid are
(A) N-acetyl glucosamine and D-glucuronic acid
(B) N-acetyl galactosamine and D-glucuronic acid
(C) N-acetyl glucosamine and galactose
(D) N-acetyl galactosamine and L- iduronic acid

81. The approximate number of branches in amylopectin is
(A) 10
(B) 20
(C) 40
(D) 80

82. In amylopectin the intervals of glucose units of each branch is
(A) 10–20

(B) 24–30
(C) 30–40
(D) 40–50

83. A polymer of glucose synthesized by the action of leuconostoc mesenteroids in a sucrose medium is
(A) Dextrans
(B) Dextrin
(C) Limit dextrin
(D) Inulin
84. Glucose on reduction with sodium amalgam forms
(A) Dulcitol
(B) Sorbitol
(C) Mannitol
(D) Mannitol and sorbitol
85. Glucose on oxidation does not give
(A) Glycoside
(B) Glucosaccharic acid
(C) Gluconic acid
(D) Glucuronic acid
86. Oxidation of galactose with conc HNO3 yields
(A) Mucic acid
(B) Glucuronic acid
(C) Saccharic acid
(D) Gluconic acid
87. A positive Benedict's test is not given by
(A) Sucrose
(B) Lactose
(C) Maltose
(D) Glucose
88. The Starch is a
(A) Polysaccharide
(B) Monosaccharide
(C) Disaccharide
(D) None of these
89. A positive Seliwanoff's test is obtained with
(A) Glucose
(B) Fructose
(C) Lactose
(D) Maltose
90. Osazones are not formed with the

(A) Glucose
(B) Fructose
(C) Sucrose
(D) Lactose

91. The most abundant carbohydrate found in nature is
(A) Starch
(B) Glycogen
(C) Cellulose
(D) Chitin

92. Impaired renal function is indicated when the amount of PSP excreted in the first 15 minutes is
(A) 20%
(B) 35%
(C) 40%
(D) 45%

93. An early feature of renal disease is
(A) Impairment of the capacity of the tubule to perform osmotic work
(B) Decrease in maximal tubular excretory capacity
(C) Decrease in filtration factor
(D) Decrease in renal plasma flow

94. ADH test is based on the measurement of
(A) Specific gravity of urine
(B) Concentration of urea in urine
(C) Concentration of urea in blood
(D) Volume of urine in ml/minute

95. The specific gravity of urine normally ranges from
(A) 0.900–0.999
(B) 1.003–1.030
(C) 1.000–1.001
(D) 1.101–1.120

96. Specific gravity of urine increases in
(A) Diabetes mellitus
(B) Chronic glomerulonephritis
(C) Compulsive polydypsia
(D) Hypercalcemia

97. Fixation of specific gravity of urine to 1.010 is found in
(A) Diabetes insipidus
(B) Compulsive polydypsia
(C) Cystinosis
(D) Chronic glomerulonephritis

98. Addis test is the measure of
    (A) Impairment of the capacity of the tubule to perform osmotic work
    (B) Secretory function of liver
    (C) Excretory function of liver
    (D) Activity of parenchymal cells of liver
99. Number of stereoisomers of glucose is
    (A) 4
    (B) 8
    (C) 16
    (D) None of these
100. Maltose can be formed by hydrolysis of
    (A) Starch
    (B) Dextrin
    (C) Glycogen
    (D) All of these
101. The α –D–Glucuronic acid is present in
    (A) Hyaluronic acid
    (B) Chondroitin sulphate
    (C) Heparin
    (D) All of these
102. Fructose is present in hydrolysate of
    (A) Sucrose
    (B) Inulin
    (C) Both of the above
    (D) None of these
103. A carbohydrate found in DNA is
    (A) Ribose
    (B) Deoxyribose
    (C) Ribulose
    (D) All of these
104. Ribulose is a these
    (A) Ketotetrose
    (B) Aldotetrose
    (C) Ketopentose
    (D) Aldopentose
105. A carbohydrate, commonly known as dextrose is
    (A) Dextrin
    (B) D-Fructose
    (C) D-Glucose

(D) Glycogen

106. A carbohydrate found only in milk is

(A) Glucose

(B) Galactose

(C) Lactose

(D) Maltose

107. A carbohydrate, known commonly as invert sugar, is

(A) Fructose

(B) Sucrose

(C) Glucose

(D) Lactose

108. A heteropolysacchraide among the following is

(A) Inulin

(B) Cellulose

(C) Heparin

(D) Dextrin

109. The predominant form of glucose in solution is

(A) Acyclic form

(B) Hydrated acyclic form

(C) Glucofuranose

(D) Glucopyranose

110. An L-isomer of monosaccharide formed in human body is

(A) L-fructose

(B) L-Erythrose

(C) L-Xylose

(D) L-Xylulose

111. Hyaluronic acid is found in

(A) Joints

(B) Brain

(C) Abdomen

(D) Mouth

112. The carbon atom which becomes asymmetric when the straight chain form of monosaccharide changes into ring form is known as

(A) Anomeric carbon atom

(B) Epimeric carbon atom

(C) Isomeric carbon atom

(D) None of these

113. The smallest monosaccharide having furanose ring structure is

(A) Erythrose

(B) Ribose
(C) Glucose
(D) Fructose

114. Which of the following is an epimeric pair?
(A) Glucose and fructose
(B) Glucose and galactose
(C) Galactose and mannose
(D) Lactose and maltose

115. α-Glycosidic bond is present in
(A) Lactose
(B) Maltose
(C) Sucrose
(D) All of these

116. Branching occurs in glycogen approximately after every
(A) Five glucose units
(B) Ten glucose units
(C) Fifteen glucose units
(D) Twenty glucose units

117. N–Acetylglucosamnine is present in
(A) Hyaluronic acid
(B) Chondroitin sulphate
(C) Heparin
(D) All of these

118. Iodine gives a red colour with
(A) Starch
(B) Dextrin
(C) Glycogen
(D) Inulin

119. Amylose is a constituent of
(A) Starch
(B) Cellulose
(C) Glycogen
(D) None of these

120. Synovial fluid contains
(A) Heparin
(B) Hyaluronic acid
(C) Chondroitin sulphate
(D) Keratin sulphate

121. Gluconeogenesis is decreased by

(A) Glucagon
(B) Epinephrine
(C) Glucocorticoids
(D) Insulin

122. Lactate formed in muscles can be utilized through
(A) Rapoport-Luebeling cycle
(B) Glucose-alanine cycle
(C) Cori's cycle
(D) Citric acid cycle

123. Glucose-6-phosphatase is not present in
(A) Liver and kidneys
(B) Kidneys and muscles
(C) Kidneys and adipose tissue
(D) Muscles and adipose tissue

124. Pyruvate carboxylase is regulated by
(A) Induction
(B) Repression
(C) Allosteric regulation
(D) All of these

125. Fructose-2, 6-biphosphate is formed by the action of
(A) Phosphofructokinase-1
(B) Phosphofructokinase-2
(C) Fructose biphosphate isomerase
(D) Fructose-1, 6-biphosphatase

126. The highest concentrations of fructose are found in
(A) Aqueous humor
(B) Vitreous humor
(C) Synovial fluid
(D) Seminal fluid

127. Glucose uptake by liver cells is
(A) Energy-consuming
(B) A saturable process
(C) Insulin-dependent
(D) Insulin-independent

128. Renal threshold for glucose is decreased in
(A) Diabetes mellitus
(B) Insulinoma
(C) Renal glycosuria
(D) Alimentary glycosuria

129. Active uptake of glucose is inhibited by
(A) Ouabain
(B) Phlorrizin
(C) Digoxin
(D) Alloxan
130. Glucose-6-phosphatase is absent or deficient in
(A) Von Gierke's disease
(B) Pompe's disease
(C) Cori's disease
(D) McArdle's disease
131. Debranching enzyme is absent in
(A) Cori's disease
(B) Andersen's disease
(C) Von Gierke's disease
(D) Her's disease
132. McArdle's disease is due to the deficiency of
(A) Glucose-6-phosphatase
(B) Phosphofructokinase
(C) Liver phosphorylase
(D) Muscle phosphorylase
133. Tautomerisation is
(A) Shift of hydrogen
(B) Shift of carbon
(C) Shift of both
(D) None of these
134. In essential pentosuria, urine contains
(A) D-Ribose
(B) D-Xylulose
(C) L-Xylulose
(D) D-Xylose
135. Action of salivary amylase on starch leads to the formation of
(A) Maltose
(B) Maltotriose
(C) Both of the above
(D) Neither of these
136. Congenital galactosaemia can lead to
(A) Mental retardation
(B) Premature cataract
(C) Death

(D) All of the above

137. Uridine diphosphate glucose (UDPG) is
(A) Required for metabolism of galactose
(B) Required for synthesis of glucuronic acid
(C) A substrate for glycogen synthetase
(D) All of the above

138. Catalytic activity of salivary amylase requires the presence of
(A) Chloride ions
(B) Bromide ions
(C) Iodide ions
(D) All of these

139. The following is actively absorbed in the intestine:
(A) Fructose
(B) Mannose
(C) Galactose
(D) None of these

140. An amphibolic pathway among the following is
(A) HMP shunt
(B) Glycolysis
(C) Citirc acid cycle
(D) Gluconeogenesis

141. Cori's cycle transfers
(A) Glucose from muscles to liver
(B) Lactate from muscles to liver
(C) Lactate from liver to muscles
(D) Pyruvate from liver to muscles

142. During starvation, ketone bodies are used as a fuel by
(A) Erythrocytes
(B) Brain
(C) Liver
(D) All of these

143. The following is an enzyme required for glycolysis:
(A) Pyruvate kinase
(B) Pyruvate carboxylase
(C) Glucose-6-phosphatase
(D) Glycerokinase

144. Our body can get pentoses from
(A) Glycolytic pathway
(B) Uromic acid pathway

(C) TCA cycle

(D) HMP shunt

145. Conversion of glucose to glucose-6- phosphate in human liver is by

(A) Hexokinase only

(B) Glucokinase only

(C) Hexokinase and glucokinase

(D) Glucose-6-phosphate dehydrogenase

146. The following is an enzyme required for glycolysis:

(A) Pyruvate kinase

(B) Pyruvate carboxylase

(C) Glucose-6-phosphatose

(D) Glycerokinase

147. Under anaerobic conditions the glycolysis of one mole of glucose yields _____moles of ATP.

(A) One

(B) Two

(C) Eight

(D) Thirty

148. Glycogen is converted to glucose-1- phosphate by

(A) UDPG transferase

(B) Branching enzyme

(C) Phosphorylase

(D) Phosphatase

149. Which of the following is not an enzyme involved in glycolysis?

(A) Euolase

(B) Aldolose

(C) Hexokinase

(D) Glucose oxidase

150. Tricarboxylic acid cycle to be continuous requires the regeneration of

(A) Pyruvic acid

(B) oxaloacetic acid

(C) α-oxoglutaric acid

(D) Malic acid

151. Two examples of substrate level phosphorylation I EM pathway of glucose metabolism are in the reactions of

(A) 1,3 bisphosphoglycerate and phosphoenol pyruvate

(B) Glucose-6 phosphate and Fructo-6-phosphate

(C) 3 phosphoglyceraldehyde and phosphoenolpyruvate

(D) 1,3 diphosphoglycerate and 2-phosphoglycerate

152. The number of molecules of ATP produced by the total oxidation of acetyl CoA in TCA cycle is

(A) 6
(B) 8
(C) 10
(D) 12

153. Substrate level phosphorylation in TCA cycle is in step:
(A) Isocitrate dehydrogenase
(B) Malate dehydrogenase
(C) Aconitase
(D) Succinate thiokinase

154. Fatty acids cannot be converted into carbohydrates in the body as the following reaction is not possible.
(A) Conversion of glucose-6-phosphate into glucose
(B) Fructose 1, 6-bisphosphate to fructose-6-phosphate
(C) Transformation of acetyl CoA to pyruvate
(D) Formation of acetyl CoA from fatty acids

155. Starch and glycogen are polymers of
(A) Fructose
(B) Mannose
(C) α−D-Glucose
(D) Galactose

156. Reducing ability of carbohydrates is due to
(A) Carboxyl group
(B) Hydroxyl group
(C) Enediol formation
(D) Ring structure

157. Which of the following is not a polymer of glucose?
(A) Amylose
(B) Inulin
(C) Cellulose
(D) Dextrin

158. Invert sugar is
(A) Lactose
(B) Mannose
(C) Fructose
(D) Hydrolytic product of sucrose

159. The carbohydrate reserved in human body is
(A) Starch
(B) Glucose
(C) Glycogen

(D) Inulin

160. A disaccharide linked by α -1-4 Glycosidic linkage is

(A) Lactose

(B) Sucrose

(C) Cellulose

(D) Maltose

161. All proteins contain the

(A) Same 20 amino acids

(B) Different amino acids

(C) 300 Amino acids occurring in nature

(D) Only a few amino acids

162. Proteins contain

(A) Only L- α - amino acids

(B) Only D-amino acids

(C) DL-Amino acids

(D) Both (A) and (B)

163. The optically inactive amino acid is

(A) Glycine

(B) Serine

(C) Threonine

(D) Valine

164. 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

165. The true statement about solutions of amino acids at physiological pH is

(A) All amino acids contain both positive and negative charges

(B) All amino acids contain positively charged side chains

(C) Some amino acids contain only positive charge

(D) All amino acids contain negatively charged side chains

166. pH (isoelectric pH) of alanine is

(A) 6.02

(B) 6.6

(C) 6.8

(D) 7.2

167. Since the pK values for aspartic acid are 2.0, 3.9 and 10.0, it follows that the isoelectric (pH) is

(A) 3.0

(B) 3.9

(C) 5.9

(D) 6.0

168. Sulphur containing amino acid is

(A) Methionine

(B) Leucine

(C) Valine

(E) Asparagine

169. An example of sulphur containing amino acid is

(A) 2-Amino-3-mercaptopropanoic acid

(B) 2-Amino-3-methylbutanoic acid

(C) 2-Amino-3-hydroxypropanoic acid

(D) Amino acetic acid

170. All the following are sulphur containing amino acids found in proteins except

(A) Cysteine

(B) Cystine

(C) Methionine

(D) Threonine

171. An aromatic amino acid is

(A) Lysine

(B) Tyrosine

(C) Taurine

(D) Arginine

172. The functions of plasma albumin are

(A) Osmosis

(B) Transport

(C) Immunity

(D) both (A)and (B)

173. Amino acid with side chain containing basic groups is

(A) 2-Amino 5-guanidovaleric acid

(B) 2-Pyrrolidine carboxylic acid

(C) 2-Amino 3-mercaptopropanoic acid

(D) 2-Amino propanoic acid

174. An example of α-amino acid not present in proteins but essential in mammalian metabolism is

(A) 3-Amino 3-hydroxypropanoic acid

(B) 2-Amino 3-hydroxybutanoic acid

(C) 2-Amino 4-mercaptobutanoic acid

(D) 2-Amino 3-mercaptopropanoic acid

175. An essential amino acid in man is

(A) Aspartate

(B) Tyrosine
(C) Methionine
(D) Serine

176. Non essential amino acids
(A) Are not components of tissue proteins
(B) May be synthesized in the body from essential amino acids
(C) Have no role in the metabolism
(D) May be synthesized in the body in diseased states

177. Which one of the following is semi essential amino acid for humans?
(A) Valine
(B) Arginine
(C) Lysine
(D) Tyrosine

178. An example of polar amino acid is
(A) Alanine
(B) Leucine
(C) Arginine
(D) Valine

179. The amino acid with a nonpolar side chain is
(A) Serine
(B) Valine
(C) Asparagine
(D) Threonine

180. A ketogenic amino acid is
(A) Valine
(B) Cysteine
(C) Leucine
(D) Threonine

181. An amino acid that does not form an α-helix is
(A) Valine
(B) Proline
(C) Tyrosine
(D) Tryptophan

182. An amino acid not found in proteins is
(A) β-Alanine
(B) Proline
(C) Lysine
(D) Histidine

183. In mammalian tissues serine can be a biosynthetic precursor of

(A) Methionine
(B) Glycine
(C) Tryptophan
(D) Phenylalanine

184. A vasodilating compound is produced by the decarboxylation of the amino acid:
(A) Arginine
(B) Aspartic acid
(C) Glutamine
(D) Histidine

185. Biuret reaction is specific for
(A) –CONH-linkages
(B) –CSNH2 group
(C) –(NH)NH2 group
(D) All of these

186. Sakaguchi's reaction is specific for
(A) Tyrosine
(B) Proline
(C) Arginine
(D) Cysteine

187. Million-Nasse's reaction is specific for the amino acid:
(A) Tryptophan
(B) Tyrosine
(C) Phenylalanine
(D) Arginine

188. Ninhydrin with evolution of CO2 forms a blue complex with
(A) Peptide bond
(B) α -Amino acids
(C) Serotonin
(D) Histamine

189. The most of the ultraviolet absorption of proteins above 240 nm is due to their content of
(A) Tryptophan
(B) Aspartate
(C) Glutamate
(D) Alanine

190. Which of the following is a dipeptide?
(A) Anserine
(B) Glutathione
(C) Glucagon
(D) Lipoprotein

191. Which of the following is a tripeptide?
    (A) Anserine
    (B) Oxytocin
    (C) Glutathione
    (D) Kallidin
192. A peptide which acts as potent smooth muscle hypotensive agent is
    (A) Glutathione
    (B) Bradykinin
    (C) Tryocidine
    (D) Gramicidin-s
193. A tripeptide functioning as an important reducing agent in the tissues is
    (A) Bradykinin
    (B) Kallidin
    (C) Tyrocidin
    (D) Glutathione
194. An example of metalloprotein is
    (A) Casein
    (B) Ceruloplasmin
    (C) Gelatin
    (D) Salmine
195. Carbonic anhydrase is an example of
    (A) Lipoprotein
    (B) Phosphoprotein
    (C) Metalloprotein
    (D) Chromoprotein
196. An example of chromoprotein is
    (A) Hemoglobin
    (B) Sturine
    (C) Nuclein
    (D) Gliadin
197. An example of scleroprotein is
    (A) Zein
    (B) Keratin
    (C) Glutenin
    (D) Ovoglobulin
198. Casein, the milk protein is
    (A) Nucleoprotein
    (B) Chromoprotein
    (C) Phosphoprotein

(D) Glycoprotein

199. An example of phosphoprotein present in egg yolk is
   (A) Ovoalbumin
   (B) Ovoglobulin
   (C) Ovovitellin
   (D) Avidin

200. A simple protein found in the nucleoproteins of the sperm is
   (A) Prolamine
   (B) Protamine
   (C) Glutelin
   (D) Globulin

201. Histones are
   (A) Identical to protamine
   (B) Proteins rich in lysine and arginine
   (C) Proteins with high molecular weight
   (D) Insoluble in water and very dilute acids

202. The protein present in hair is
   (A) Keratin
   (B) Elastin
   (C) Myosin
   (D) Tropocollagen

203. The amino acid from which synthesis of the protein of hair keratin takes place is
   (A) Alanine
   (B) Methionine
   (C) Proline
   (D) Hydroxyproline

204. In one molecule of albumin the number of amino acids is
   (A) 510
   (B) 590
   (C) 610
   (D) 650

205. Plasma proteins which contain more than 4% hexosamine are
   (A) Microglobulins
   (B) Glycoproteins
   (C) Mucoproteins
   (D) Orosomucoids

206. After releasing O2 at the tissues, hemoglobin transports
   (A) CO2 and protons to the lungs
   (B) O2 to the lungs

(C) CO2 and protons to the tissue

(D) Nutrients

207. Ehlers-Danlos syndrome characterized by hypermobile joints and skin abnormalities is due to

(A) Abnormality in gene for procollagen

(B) Deficiency of lysyl oxidase

(C) Deficiency of prolyl hydroxylase

(D) Deficiency of lysyl hydroxylase

208. Proteins are soluble in

(A) Anhydrous acetone

(B) Aqueous alcohol

(C) Anhydrous alcohol

(D) Benzene

209. A cereal protein soluble in 70% alcohol but insoluble in water or salt solution is

(A) Glutelin

(B) Protamine

(C) Albumin

(D) Gliadin

210. Many globular proteins are stable in solution inspite they lack in

(A) Disulphide bonds

(B) Hydrogen bonds

(C) Salt bonds

(D) Non polar bonds

211. The hydrogen bonds between peptide linkages of a protein molecules are interfered by

(A) Guanidine

(B) Uric acid

(C) Oxalic acid

(D) Salicylic acid

212. Globular proteins have completely folded, coiled polypeptide chain and the axial ratio (ratio of length to breadth) is

(A) Less than 10 and generally not greater than 3–4

(B) Generally 10

(C) Greater than 10 and generally 20

(D) Greater than 10

213. Fibrous proteins have axial ratio

(A) Less than 10

(B) Less than 10 and generally not greater than 3–4

(C) Generally 10

(D) Greater than 10

214. Each turn of α -helix contains the amino acid residues (number):

(A) 3.6
(B) 3.0
(C) 4.2
(D) 4.5

215. Distance traveled per turn of alpha helix in nm is
(A) 0.53
(B) 0.54
(C) 0.44
(D) 0.48

216. Along the alpha-helix each amino acid residue advances in nm by
(A) 0.15
(B) 0.10
(C) 0.12
(D) 0.20

217. The number of helices present in a collagen molecule is
(A) 1
(B) 2
(C) 3
(D) 4

218. In proteins the alpha-helix and beta-pleated sheet are examples of
(A) Primary structure
(B) Secondary structure
(C) Tertiary structure
(D) Quaternary structure

219. The a-helix of proteins is
(A) A pleated structure
(B) Made periodic by disulphide bridges
(C) A non-periodic structure
(D) Stabilised by hydrogen bonds between NH and CO groups of the main chain

220. At the lowest energy level alpha-helix of polypeptide chain is stabilized
(A) By hydrogen bonds formed between the H of peptide N and the carbonyl O of the residue
(B) Disulphide bonds
(C) Non polar bonds
(D) Ester bonds

221. Both alpha-helix and beta-pleated sheet conformation of proteins were proposed by
(A) Watson and Crick
(B) Pauling and Corey
(C) Waugh and King

(D) Y.S.Rao

222. The primary structure of fibroin, the principal protein of silk worm fibers consists almost entirely of

(A) Glycine
(B) Aspartate
(C) Keratin
(D) Tryptophan

223. Tertiary structure of a protein describes

(A) The order of amino acids
(B) Location of disulphide bonds
(C) Loop regions of proteins
(D) The ways of protein folding

224. In a protein molecule the disulphide bond is not broken by

(A) Reduction
(B) Oxidation
(C) Denaturation
(D) X-ray diffraction

225. The technique for purification of proteins that can be made specific for a given protein is

(A) Gel filtration chromatography
(B) Ion exchange chromatography
(C) Electrophoresis
(D) Affinity chromatography

226. Denaturation of proteins results in

(A) Disruption of primary structure
(B) Breakdown of peptide bonds
(C) Destruction of hydrogen bonds
(D) Irreversible changes in the molecule

227. Ceruloplasmin is

(A) alpha 1-globulin
(B) alpha 2-globulin
(C) beta-globulin
(D) None of these

228. The lipoprotein with the fastest electrophoretic mobility and the lowest triglyceride content is

(A) Chylomicron
(B) VLDL
(C) IDL
(D) HDL

229. The lipoprotein associated with activation of LCAT is

(A) HDL

(B) LDL
(C) VLDL
(D) IDL

230. The apolipoprotein which acts as activator of LCAT is
(A) A-I
(B) A-IV
(C) C-II
(D) D

231. The Apo lipoprotein which acts as activator of extra hepatic lipoprotein is
(A) Apo-A
(B) Apo-B
(C) Apo-C
(D) Apo-D

232. The apo lipoprotein which forms the integral component of chylomicron is
(A) B-100
(B) B-48
(C) C
(D) D

233. The apo lipoprotein which from the integral component of VLDL is
(A) B-100
(B) B-48
(C) A
(D) D

234. The apo lipoprotein which acts as ligand for LDL receptor is
(A) B-48
(B) B-100
(C) A
(D) C

235. Serum LDL has been found to be increased in
(A) Obstructive jaundice
(B) Hepatic jaundice
(C) Hemolytic jaundice
(D) Malabsorption syndrome

236. A lipoprotein associated with high incidence of coronary atherosclerosis is
(A) LDL
(B) VLDL
(C) IDL
(D) HDL

237. A lipoprotein inversely related to the incidence of coronary arthrosclerosis is

(A) VLDL
(B) IDL
(C) LDL
(D) HDL

238. The primary biochemical lesion in homozygote with familial hypercholesterolemia (type IIa) is
(A) Loss of feedback inhibition of HMG reductase
(B) Loss of apo lipoprotein B
(C) Increased production of LDL from VLDL
(D) Functional deficiency of plasma membrane receptors for LDL

239. In abetalipoproteinemia, the biochemical defect is in
(A) Apo-B synthesis
(B) Lipprotein lipase activity
(C) Cholesterol ester hydrolase
(D) LCAT activity

240. Familial hyper triacylglycerolemia is associated with
(A) Over production of VLDL
(B) Increased LDL concentration
(C) Increased HDL concentration
(D) Slow clearance of chylomicrons

241. For synthesis of prostaglandins, the essential fatty acids give rise to a fatty acid containing
(A) 12 carbon atoms
(B) 16 carbon atoms
(C) 20 carbon atoms
(D) 24 carbon atoms

242. All active prostaglandins have at least one double bond between positions
(A) 7 and 8
(B) 10 and 11
(C) 13 and 14
(D) 16 and 17

243. Normal range of plasma total phospholipids is
(A) 0.2–0.6 mmol/L
(B) 0.9–2.0 mmol/L
(C) 1.8–5.8 mmol/L
(D) 2.8–5.3 mmol/L

244. HDL_2 have the density in the range of
(A) 1.006–1.019
(B) 1.019–1.032
(C) 1.032–1.063
(D) 1.063–1.125

245. β-lipoproteins have the density in the range of
(A) 0.95–1.006
(B) 1.006–1.019
(C) 1.019–1.063
(D) 1.063–1.125

246. IDL have the density in the range of
(A) 0.95–1.006
(B) 1.006–1.019
(C) 1.019–1.032
(D) 1.032–1.163

247. Aspirin inhibits the activity of the enzyme:
(A) Lipoxygenase
(B) Cyclooxygenase
(C) Phospholipae A1
(D) Phospholipase A2

248. A 'suicide enzyme' is
(A) Cycloxygenase
(B) Lipooxygenase
(C) Phospholipase A1
(D) Phospholipase A2

249. In adipose tissue prostaglandins decrease
(A) (A)Lipogenesis
(B) Lipolysis
(C) Gluconeogenesis
(D) Glycogenolysis

250. The optimal pH for the enzyme pepsin is
(A) 1.0–2.0
(B) 4.0–5.0
(C) 5.2– 6.0
(D) 5.8–6.2

251. Pepsinogen is converted to active pepsin by
(A) HCl
(B) Bile salts
(C) Ca ++
(D) Enterokinase

252. The optimal pH for the enzyme rennin is
(A) 2.0
(B) 4.0
(C) 8.0

(D) 6.0

253. The optimal pH for the enzyme trypsin is
    (A) 1.0–2.0
    (B) 2.0–4.0
    (C) 5.2–6.2
    (D) 5.8–6.2
254. The optimal pH for the enzyme chymotrypsin is
    (A) 2.0
    (B) 4.0
    (C) 6.0
    (D) 8.0
255. Trypsinogen is converted to active trypsin by
    (A) Enterokinase
    (B) Bile salts
    (C) HCl
    (D) Mg ++

256. Pepsin acts on denatured proteins to produce
    (A) Proteoses and peptones
    (B) Polypeptides
    (C) Peptides
    (D) Dipeptides
257. Renin converts casein to paracasein in presence of
    (A) Ca++
    (B) Mg++
    (C) Na+
    (D) K+
258. An expopeptidase is
    (A) Trypsin
    (B) Chymotrypsin
    (C) Elastase
    (D) Elastase
259. The enzyme trypsin is specific for peptide bonds of
    (A) Basic amino acids
    (B) Acidic amino acids
    (C) Aromatic amino acids
    (D) Next to small amino acid residues
260. Chymotrypsin is specific for peptide bonds containing
    (A) Uncharged amino acid residues

(B) Acidic amino acids
(C) Basic amino acid
(D) Small amino acid residues

261. The end product of protein digestion in G.I.T. is
(A) Dipeptide
(B) Tripeptide
(C) Polypeptide
(D) Amino acid

262. Natural L-isomers of amino acids are absorbed from intestine by
(A) Passive diffusion
(B) Simple diffusion
(C) Faciliated diffusion
(D) Active process

263. Abnormalities of blood clotting are
(A) Haemophilia
(B) Christmas disease
(C) Gout
(D) Both (A) and (B)

264. An important reaction for the synthesis of amino acid from carbohydrate intermediates is transamination which requires the cofactor:
(A) Thiamin
(B) Riboflavin
(C) Niacin
(D) Pyridoxal phosphate

265. Which among the following is an essential amino acid?
(A) Cysteine
(B) Leucine
(C) Tyrosine
(D) Aspartic acid

266. Which among the following is a basic amino acid?
(A) Aspargine
(B) Arginine
(C) Proline
(D) Alanine

267. This amino acid cannot have optical isomers:
(A) Alanine
(B) Histidine
(C) Threonine
(D) Glycine

268. The amino acid which contains a guanidine group is
    (A) Histidine
    (B) Arginine
    (C) Citrulline
    (D) Ornithine
269. GABA (gama amino butyric acid) is
    (A) Post-synaptic excitatory transmitter
    (B) Post-synaptic inhibitor transmitter
    (C) activator of glia-cell function
    (D) inhibitor of glia-cell function
270. Sulphur-containing amino acid is
    (A) Glutathione
    (B) Chondroitin sulphate
    (C) Homocysteine
    (D) Tryptophan
271. The useful reagent for detection of amino acids is
    (A) Molisch reagent
    (B) Dichlorophenol Indophenol
    (C) Ninhydrin
    (D) Biuret
272. The amino acid which contains an indole group is
    (A) Histidine
    (B) Arginine
    (C) Glycine
    (D) Tryptophan
273. The major end product of protein nitrogen metabolism in man is
    (A) Glycine
    (B) Uric acid
    (C) Urea
    (D) NH3
274. An amino acid not involved in urea cycle is
    (A) Arginine
    (B) Histidine
    (C) Ornithine
    (D) Citrulline
275. NH3 is detoxified in brain chiefly as
    (A) Urea
    (B) Uric acid
    (C) Creatinine

(D) Glutamine

276. In humans, NH3 is detoxified in liver as

(A) Creatinine

(B) Uric acid

(C) Urea

(D) Uronic acid

277. The body protein after eighteen years

(A) Remains unchanged

(B) Is decomposed only slightly at intervals of one month

(C) Is in a constant state of flux

(D) Is used only for energy requirement

278. The only known physiological methylating agents in the animal organism are

(A) Choline and betaine

(B) Choline and δ-adenosyl methionine

(C) Betaine and δ -adenyosyl methionine

(D) Dimehtyl glycine and betaine

279. Ammonia production by the kidney is depressed in

(A) Acidosis

(B) Alkalosis

(C) Both (A) and (B)

(D) None of these

280. Ammonia is excreted as ammonium salts during metabolic acidosis but the majority is excreted as

(A) Phosphates

(B) Creatine

(C) Uric acid

(D) Urea

281. Synthesis of glutamine is accompanied by the hydrolysis of

(A) ATP

(B) ADP

(C) TPP

(D) Creatin phosphate

282. In brain, the major metabolism for removal of ammonia is the formation of

(A) Glutamate

(B) Aspartate

(C) Asparagine

(D) Glutamine

283. Carbamoyl phosphate synthetase structure is marked by change in the presence of

(A) N-Acetyl glutamate

(B) N-Acetyl Aspartate

(C) Neuraminic acid

(D) Oxalate

284. The biosynthesis of Urea occurs mainly in the Liver:

(A) Cytosol

(B) Microsomes

(C) Nucleus

(D) Mitochondria

285. One mol. of Urea is synthesized at the expense of the _____ mols. of ATP.

(A) 2

(B) 3

(C) 4

(D) 5

286. Urea biosynthesis occurs mainly in the liver involving the number of amino acids:

(A) 3

(B) 4

(C) 5

(D) 6

287. The normal daily output of Urea through urine in grams:

(A) 10 to 20

(B) 15 to 25

(C) 20 to 30

(D) 25 to 35

288. In severe acidosis, the output of urea is

(A) Decreased

(B) Slightly increased

(C) Highly increased

(D) Moderately increased

289. Uremia occurs in

(A) Cirrhosis of the liver

(B) Nephritis

(C) Diabetes mellitus

(D) Coronary thrombosis

290. Clinical symptom in urea cycle disorder is

(A) Mental retardation

(B) Drowsiness

(C) Diarrhea

(D) Oedema

291. The sparing action of methionine is

(A) Tyrosine

(B) Cystine
(C) Arginine
(D) Tryptophan

292. NH+4 aminates glutamate to form glutamine requiring ATP and
(A) K+
(B) Na+
(C) Ca++
(D) Mg++

293. Glutathione is a
(A) Dipeptide
(B) Tripeptide
(C) Polypeptide
(D) None of these

294. All following are conjugated proteins except
(A) Nucleoproteins
(B) Proteoses
(C) Metalloproteins
(D) Flavoproteins

295. All α-amino acids have one asymmetric carbon atom except
(A) Arginine
(B) Glycine
(C) Aspartic acid
(D) Histidine

296. Number of amino acids present in plants, animals and microbial proteins:
(A) 20
(B) 80
(C) 150
(D) 200

297. Hydrated density of (HD) lipoproteins is
(A) 0.94 gm/ml
(B) 0.94-1.006 gm/ml
(C) 1.006-1.063 gm/ml
(D) 1.063-1.21 gm/l

298. The bond in proteins that is not broken under usual conditions of denaturation:
(A) Hydrophobic bond
(B) Hydrogen bond
(C) Disulphide bond
(D) Peptide bonds

299. 632. Plasma proteins act as

(A) Buffers
(B) Immunoglobulins
(C) Reserve proteins
(D) All of these

300. Group that reacts in the Biuret test:
(A) Peptide
(B) Amino group
(C) Carboxylic group
(D) Aldehyde group

301. In nitroprusside test, amino acid cysteine produces a:
(A) Red color
(B) Blue color
(C) Yellow color
(D) Purple color

302. Protein present in hemoglobin has the structure known as
(A) Primary
(B) Secondary
(C) Tertiary
(D) Quarternary

303. Isoelectric pH of an amino acid is that pH at which it has a
(A) Positive charge
(B) Negative charge
(C) Nil net charge
(D) None of these

304. Albuminoids are similar to
(A) Albumin
(B) Globulin
(C) Both (A) and (B)
(D) None of these

305. Optical isomers of all amino acids exist except
(A) Glycine
(B) Arginine
(C) Alanine
(D) Hydroxy proline

306. Proteins that constitute keratin, collagen and elastin in body are
(A) Protamines
(B) Phosphol proteins
(C) Scleroproteins
(D) Metaproteins

307. Systematic name of lysine is

(A) Amino acetic acid

(B) 2,6 diaminohexanoic acid

(C) Aminosuccinic acid

(D) 2-Aminopropanoic acid

308. Side chains of all following amino acids contain aromatic rings except

(A) Phenyl alanine

(B) Alanine

(C) Tyrosine

(D) Tryptophan

309. Abnormal chain of amino acids in sickle cell anaemia is

(A) Alpha chain

(B) Beta chain

(C) Delta chain

(D) Gama chain

310. Number of chains in globin part of normal Hb:

(A) 1

(B) 2

(C) 3

(D) 4

311. The PH of albumin is

(A) 3.6

(B) 4.7

(C) 5.0

(D) 6.1

312. Ninhydrin reaction gives a purple color and evolves CO2 with

(A) Peptide bonds

(B) Histamine

(C) Ergothioneine

(D) Aspargine

313. Denaturation of proteins involves breakdown of

(A) Secondary structure

(B) Tertiary structure

(C) Quarternary structure

(D) All of these

314. In denaturation of proteins, the bond which is not broken:

(A) Disulphide bond

(B) Peptide bond

(C) Hydrogen bond

(D) Ionic bond

315. The purity of an isolated protein can be tested by employing various methods.
    (A) Solubility curve
    (B) Molecular weight
    (C) Ultra Centrifugation
    (D) Immuno Ractivity
    (E) All of these

316. More than one break in the line or in saturation curve indicates the following quality of protein.
    (A) Non homogenity
    (B) Purity
    (C) Homogeneity
    (D) None of these

317. A sharp moving boundary is obtained between the pure solvent and solute containing layer in
    (A) Chromatography
    (B) Immuno Reactivity
    (C) Ultra Centrifugation
    (D) Solubility curve

318. An example of a hydroxy fatty acid is
    (A) Ricinoleic acid
    (B) Crotonic acid
    (C) Butyric acid
    (D) Oleic acid

319. An example of a saturated fatty acid is
    (A) Palmitic acid
    (B) Oleic acid
    (C) Linoleic acid
    (D) Erucic acid

320. If the fatty acid is esterified with an alcohol of high molecular weight instead of glycerol, the resulting compound is
    (A) Lipositol
    (B) Plasmalogen
    (C) Wax
    (D) Cephalin

321. A fatty acid which is not synthesized in the body and has to be supplied in the diet is
    (A) Palmitic acid
    (B) Lauric acid
    (C) Linolenic acid
    (D) Palmitoleic acid

322. Essential fatty acid:

(A) Linoleic acid
(B) Linolenic acid
(C) Arachidonic acid
(D) All these

323. The fatty acid present in cerebrosides is
(A) Lignoceric acid
(B) Valeric acid
(C) Caprylic acid
(D) Behenic acid

324. The number of double bonds in arachidonic acid is
(A) 1
(B) 2
(C) 4
(D) 6

325. In humans, a dietary essential fatty acid is
(A) Palmitic acid
(B) Stearic acid
(C) Oleic acid
(D) Linoleic acid

326. A lipid containing alcoholic amine residue is
(A) Phosphatidic acid
(B) Ganglioside
(C) Glucocerebroside
(D) Sphingomyelin

327. Cephalin consists of
(A) Glycerol, fatty acids, phosphoric acid and choline
(B) Glycerol, fatty acids, phosphoric acid and ethanolamine
(C) Glycerol, fatty acids, phosphoric acid and inositol
(D) Glycerol, fatty acids, phosphoric acid and serine

328. In mammals, the major fat in adipose tissues is
(A) Phospholipid
(B) Cholesterol
(C) Sphingolipids
(D) Triacylglycerol

329. Glycosphingolipids are a combination of
(A) Ceramide with one or more sugar residues
(B) Glycerol with galactose
(C) Sphingosine with galactose
(D) Sphingosine with phosphoric acid

330. The importance of phospholipids as constituent of cell membrane is because they possess
    (A) Fatty acids
    (B) Both polar and nonpolar groups
    (C) Glycerol
    (D) Phosphoric acid
331. In neutral fats, the un saponificable matter includes
    (A) Hydrocarbons
    (B) Triacylglycerol
    (C) Phospholipids
    (D) Cholsesterol
332. Higher alcohol present in waxes is
    (A) Benzyl
    (B) Methyl
    (C) Ethyl
    (D) Cetyl
333. Kerasin consists of
    (A) Nervonic acid
    (B) Lignoceric acid
    (C) Cervonic acid
    (D) Clupanodonic acid
334. Gangliosides are complex glycosphingolipids found in
    (A) Liver
    (B) Brain
    (C) Kidney
    (D) Muscle
335. Unsaturated fatty acid found in the cod liver oil and containing 5 double bonds is
    (A) Clupanodonic acid
    (B) Cervonic acid
    (C) Elaidic acid
    (D) Timnodonic acid
336. Phospholipid acting as surfactant is
    (A) Cephalin
    (B) Phosphatidyl inositol
    (C) Lecithin
    (D) Phosphatidyl serine
337. An oil which contains cyclic fatty acids and once used in the treatment of leprosy is
    (A) Elaidic oil
    (B) Rapeseed oil
    (C) Lanoline

(D) Chaulmoogric oil

338. Unpleasant odours and taste in a fat (rancidity) can be delayed or prevented by the addition of
(A) Lead
(B) Copper
(C) Tocopherol
(D) Ergosterol

339. Gangliosides derived from glucosylceramide contain in addition one or more molecules of
(A) Sialic acid
(B) Glycerol
(C) Diacylglycerol
(D) Hyaluronic acid

340. 'Drying oil', oxidized spontaneously by atmospheric oxygen at ordinary temperature and forms a hard water proof material is
(A) Coconut oil
(B) Peanut oil
(C) Rape seed oil
(D) Linseed oil

341. Deterioration of food (rancidity) is due to presence of
(A) Cholesterol
(B) Vitamin E
(C) Peroxidation of lipids
(D) Phenolic compounds

342. The number of ml of N/10 KOH required to neutralize the fatty acids in the distillate from 5 gm of fat is called
(A) Reichert-Meissel number
(B) Polenske number
(C) Acetyl number
(D) Non volatile fatty acid number

343. Molecular formula of cholesterol is
(A) $C_{27}H_{45}OH$
(B) $C_{29}H_{47}OH$
(C) $C_{29}H_{47}OH$
(D) $C_{23}H_{41}OH$

344. The cholesterol molecule is
(A) Benzene derivative
(B) Quinoline derivative
(C) Steroid
(D) Straight chain acid

345. Salkowski test is performed to detect

(A) Glycerol
(B) Cholesterol
(C) Fatty acids
(D) Vitamin D

346. Palmitic, oleic or stearic acid ester of cholesterol used in manufacture of cosmetic creams is
(A) Elaidic oil
(B) Lanoline
(C) Spermaceti
(D) Chaulmoogric oil

347. Dietary fats after absorption appear in the circulation as
(A) HDL
(B) VLDL
(C) LDL
(D) Chylomicron

348. Free fatty acids are transported in the blood
(A) Combined with albumin
(B) Combined with fatty acid binding protein
(C) Combined with beta lipoprotein
(D) In unbound free salts

349. Long chain fatty acids are first activated to acetyl-CoA in
(A) Cytosol
(B) Microsomes
(C) Nucleus
(D) Mitochondria

350. The enzyme acyl-CoA synthase catalyses the conversion of a fatty acid of an active fatty acid in the presence of
(A) AMP
(B) ADP
(C) ATP
(D) GTP

351. Carnitine is synthesized from
(A) Lysine and methionine
(B) Glycine and arginine
(C) Aspartate and glutamate
(D) Proline and hydroxyproline

352. The enzymes of beta-oxidation are found in
(A) Mitochondria
(B) Cytosol
(C) Golgi apparatus

(D) Nucleus

353. Long chain fatty acids penetrate the inner mitochondrial membrane
(A) Freely
(B) As acyl-CoA derivative
(C) As carnitine derivative
(D) Requiring Na dependent carrier

354. An important feature of Zellweger's syndrome is
(A) Hypoglycemia
(B) Accumulation of phytanic acid in tissues
(C) Skin eruptions
(D) Accumulation of C26-C38 polyenoic acid in brain tissues

355. An important finding of Fabry's disease is
(A) Skin rash
(B) Exophthalmos
(C) Hemolytic anemia
(D) Mental retardation

356. Gaucher's disease is due to deficiency of the enzyme:
(A) Sphingomyelinase
(B) Glucocerebrosidase
(C) Galactocerbrosidase
(D) beta-Galactosidase

357. Characteristic finding in Gaucher's disease is
(A) Night blindness
(B) Renal failure
(C) Hepatosplenomegaly
(D) Deafness

358. An important finding in Neimann-Pick disease is
(A) Leukopenia
(B) Cardiac enlargement
(C) Corneal opacity
(D) Hepatosplenomegaly

359. Fucosidosis is characterized by
(A) Muscle spasticity
(B) Liver enlargement
(C) Skin rash
(D) Kidney failure

360. Metachromatic leukodystrophy is due to deficiency of enzyme:
(A) alpha-Fucosidase
(B) Arylsulphatase A

(C) Ceramidase
(D) Hexosaminidase A

361. A significant feature of Tangier disease is
(A) Impairment of chylomicron formation
(B) Hypotriacylglycerolmia
(C) Absence of Apo-C-II
(D) Absence of Apo-C-I

362. A significant feature of Broad Beta disease is
(A) Hypocholesterolemia
(B) Hypotriacylglycerolemia
(C) Absence of Apo-D
(D) Abnormality of Apo-E

363. Neonatal tyrosinemia improves on administration of
(A) Thiamin
(B) Riboflavin
(C) Pyridoxine
(D) Ascorbic acid

364. Absence of phenylalanine hydroxylase causes
(A) Neonatal tyrosinemia
(B) Phenylketonuria
(C) Primary hyperoxaluria
(D) Albinism

365. Richner-Hanhart syndrome is due to defect in
(A) Tyrosinase
(B) Phenylalanine hydroxylase
(C) Hepatic tyrosine transaminase
(D) Fumarylacetoacetate hydrolase

366. Plasma tyrosine level in Richner-Hanhart syndrome is
(A) 1–2 mg/dL
(B) 2–3 mg/dL
(C) 4–5 mg/dL
(D) 8–10 mg/dL

367. Amount of phenylacetic acid excreted in the urine in phenylketonuria is
(A) 100–200 mg/dL
(B) 200–280 mg/dL
(C) 290–550 mg/dL
(D) 600–750 mg/dL

368. Tyrosinosis is due to defect in the enzyme:
(A) Fumarylacetoacetate hydrolase

(B) p-Hydroxyphenylpyruvate hydroxylase
(C) Tyrosine transaminase
(D) Tyrosine hydroxylase

369. An important finding in Histidinemia is
(A) Impairment of conversion of alpha-Glutamate to alpha-ketoglutarate
(B) Speech defect
(C) Decreased urinary histidine level
(D) Patients can not be treated by diet

370. An important finding in glycinuria is
(A) Excess excretion of oxalate in the urine
(B) Deficiency of enzyme glycinase
(C) Significantly increased serum glycine level
(D) Defect in renal tubular reabsorption of glycine

371. Increased urinary indole acetic acid is diagnostic of
(A) Maple syrup urine disease
(B) Hartnup disease
(C) Homocystinuia
(D) Phenylketonuria

372. In glycinuria daily urinary excretion of glycine ranges from
(A) 100–200 mg
(B) 300–500 mg
(C) 600–1000 mg
(D) 1100–1400 mg

373. An inborn error, maple syrup urine disease is due to deficiency of the enzyme:
(A) Isovaleryl-CoAhydrogenase
(B) Phenylalnine hydroxylase
(C) Adenosyl transferase
(D) alpha-Ketoacid decarboxylase

374. Maple syrup urine disease becomes evident in extra uterine life by the end of
(A) First week
(B) Second week
(C) Third week
(D) Fourth week

375. Alkaptonuria occurs due to deficiency of the enzyme:
(A) Maleylacetoacetate isomerase
(B) Homogentisate oxidase
(C) p-Hydroxyphenylpyruvate hydroxylase
(D) Fumarylacetoacetate hydrolase

376. An important feature of maple syrup urine disease is

(A) Patient cannot be treated by dietary regulation
(B) Without treatment death, of patient may occur by the end of second year of life
(C) Blood levels of leucine, isoleucine and serine are increased
(D) Excessive brain damage

377. Ochronosis is an important finding of
(A) Tyrosinemia
(B) Tyrosinosis
(C) Alkaptonuria
(D) Richner Hanhart syndrome

378. Phrynoderma is a deficiency of
(A) Essential fatty acids
(B) Proteins
(C) Amino acids
(D) None of these

379. The percentage of linoleic acid in safflower oil is
(A) 73
(B) 57
(C) 40
(D) 15

380. The percentage of polyunsaturated fatty acids in soyabean oil is
(A) 62
(B) 10
(C) 3
(D) 2

381. The percentage of polyunsaturated fatty acids in butter is
(A) 60
(B) 37
(C) 25
(D) 3

382. Dietary fiber denotes
(A) Undigested proteins
(B) Plant cell components that cannot be digested by own enzymes
(C) All plant cell wall components
(D) All non-digestible water insoluble polysaccharide

383. A high fiber diet is associated with reduced incidence of
(A) Cardiovascular disease
(B) C.N.S. disease
(C) Liver disease
(D) Skin disease

384. Dietary fibers are rich in
(A) Cellulose
(B) Glycogen
(C) Starch
(D) Proteoglycans

385. Minimum dietary fiber is found in
(A) Dried apricot
(B) Peas
(C) Bran
(D) Cornflakes

386. A bland diet is recommended in
(A) Peptic ulcer
(B) Atherosclerosis
(C) Diabetes
(D) Liver disease

387. A dietary deficiency in both the quantity and the quality of protein results in
(A) Kwashiorkar
(B) Marasmus
(C) Xerophtalmia
(D) Liver diseases

388. The deficiency of both energy and protein causes
(A) Marasmus
(B) Kwashiorkar
(C) Diabetes
(D) Beri-beri

389. Kwashiorkar is characterized by
(A) Night blindness
(B) Edema
(C) Easy fracturability
(D) Xerophthalmia

390. A characteristic feature of Kwashiorkar is
(A) Fatty liver
(B) Emaciation
(C) Low insulin lever
(D) Occurrence in less than 1 year infant

391. A characteristic feature of marasmus is
(A) Severe hypoalbuminemia
(B) Normal epinephrine level
(C) Mild muscle wasting

(D) Low insulin and high cortisol level

392. Obesity generally reflects excess intake of energy and is often associated with the development of
(A) Nervousness
(B) Non-insulin dependent diabetes mellitus
(C) Hepatitis
(D) Colon cancer

393. Atherosclerosis and coronary heart diseases are associated with the diet:
(A) High in total fat and saturated fat
(B) Low in protein
(C) High in protein
(D) High in carbohydrate

394. Cerebrovasular disease and hypertension is associated with
(A) High calcium intake
(B) High salt intake
(C) Low calcium intake
(D) Low salt intake

395. The normal range of total serum bilirubin is
(A) 0.2–1.2 mg/100 ml
(B) 1.5–1.8 mg/100 ml
(C) 2.0–4.0 mg/100 ml
(D) Above 7.0 mg/100 ml

396. The normal range of direct reacting (conjugated) serum bilirubin is
(A) 0–0.1 mg/100 ml
(B) 0.1–0.4 mg/100 ml
(C) 0.4–06 mg/100 ml
(D) 0.5–1 mg/100 ml

397. The normal range of indirect (unconjugated) bilirubin in serum is
(A) 0–0.1 mg/100 ml
(B) 0.1–0.2 mg/100 ml
(C) 0.2–0.7 mg/100 ml
(D) 0.8–1.0 mg/100 ml

398. Jaundice is visible when serum bilirubin exceeds
(A) 0.5 mg/100 ml
(B) 0.8 mg/100 ml
(C) 1 mg/100 ml
(D) 2.4 mg/100 ml

399. An increase in serum unconjugated bilirubin occurs in
(A) Hemolytic jaundice
(B) Obstructive jaundice

(C) Nephritis
(D) Glomerulonephritis

400. One of the causes of hemolytic jaundice is
(A) G-6 phosphatase deficiency
(B) Increased conjugated bilirubin
(C) Glucokinase deficiency
(D) Phosphoglucomutase deficiency

401. Increased urobilinogen in urine and absence of bilirubin in the urine suggests
(A) Obstructive jaundice
(B) Hemolytic jaundice
(C) Viral hepatitis
(D) Toxic jaundice

402. A jaundice in which serum alanine transaminase and alkaline phosphatase are normal is
(A) Hepatic jaundice
(B) Hemolytic jaundice
(C) Parenchymatous jaundice
(D) Obstructive Jaundice

403. Fecal stercobilinogen is increased in
(A) Hemolytic jaundice
(B) Hepatic jaundice
(C) Viral hepatitis
(D) Obstructive jaundice

404. Fecal urobilinogen is increased in
(A) Hemolytic jaundice
(B) Obstruction of biliary duct
(C) Extrahepatic gall stones
(D) Enlarged lymphnodes

405. A mixture of conjugated and unconjugated bilirubin is found in the circulation in
(A) Hemolytic jaundice
(B) Hepatic jaundice
(C) Obstructive jaundice
(D) Post hepatic jaundice

406. Hepatocellular jaundice as compared to pure obstructive type of jaundice is characterized by
(A) Increased serum alkaline phosphate, LDH and ALT
(B) Decreased serum alkaline phosphatase, LDH and ALT
(C) Increased serum alkaline phosphatase and decreased levels of LDH and ALT
(D) Decreased serum alkaline phosphatase and increased serum LDH and ALT

407. Icteric index of an normal adult varies between
(A) 1–2

(B) 2–4
(C) 4–6
(D) 10–15

408. Clinical jaundice is present with an icteric index above
(A) 4
(B) 8
(C) 10
(D) 15

409. Normal quantity of urobilinogen excreted in the feces per day is about
(A) 10–25 mg
(B) 50–250 mg
(C) 300–500 mg
(D) 700–800 mg

410. Fecal urobilinogen is decreased in
(A) Obstruction of biliary duct
(B) Hemolytic jaundice
(C) Excess fat intake
(D) Low fat intake

411. A complete absence of fecal urobilinogen is strongly suggestive of
(A) Obstruction of bile duct
(B) Hemolytic jaundice
(C) Intrahepatic cholestasis
(D) Malignant obstructive disease

412. Immediate direct Vanden Bergh reaction indicates
(A) Hemolytic jaundice
(B) Hepatic jaundice
(C) Obstructive jaundice
(D) Megalobastic anemia

413. The presence of bilirubin in the urine without urobilinogen suggests
(A) Obstructive jaundice
(B) Hemolytic jaundice
(C) Pernicious anemia
(D) Damage to the hepatic parenchyma

414. Impaired galactose tolerance test suggests
(A) Defect in glucose utilisation
(B) Liver cell injury
(C) Renal defect
(D) Muscle injury

415. Increased serum ornithine carabamoyl transferase activity is diagnostic of

(A) Myocardial infarction
(B) Hemolytic jaundice
(C) Bone disease
(D) Acute viral hepatitis

416. The best known and most frequently used test of the detoxicating functions of liver is
(A) Hippuric acid test
(B) Galactose tolerance test
(C) Epinephrine tolerance test
(D) Rose Bengal dye test

417. The ability of liver to remove a dye like BSP from the blood suggests a normal
(A) Excretory function
(B) Detoxification function
(C) Metabolic function
(D) Circulatory function

418. Removal of BSP dye by the liver involves conjugation with
(A) Thiosulphate
(B) Glutamine
(C) Cystein component of glutathione
(D) UDP glucuronate

419. Normal value of plasma total proteins varies between
(A) 3–4 gm/100ml
(B) 6–8 gm/100ml
(C) 10–12 gm/100ml
(D) 14–16 gm/100ml

420. A decrease in albumin with increased production of other unidentified proteins which migrate in beta, gema region suggests
(A) Cirrhosis of liver
(B) Nephrotic syndrome
(C) Infection
(D) Chronic lymphatic leukemia

421. In increase in α2-Globulin with loss of albumin in urine suggests
(A) Primary immune deficiency
(B) Nephrotic syndrome
(C) Cirrhosis of liver
(D) Multiple myeloma

422. Vitamins are
(A) Accessory food factors
(B) Generally synthesized in the body
(C) Produced in endocrine glands

(D) Proteins in nature

423. Vitamin A or retinal is a

(A) Steroid

(B) Polyisoprenoid compound containing a cyclohexenyl ring

(C) Benzoquinone derivative

(D) 6-Hydroxychromane

424. beta-Carotene, precursor of vitamin A, is oxidatively cleaved by

(A) beta-Carotene dioxygenase

(B) Oxygenase

(C) Hydroxylase

(D) Transferase

425. Retinal is reduced to retinol in intestinal mucosa by a specific retinaldehyde reductase utilizing

(A) NADPH + H +

(B) FAD

(C) NAD

(D) NADH + H+

426. Preformed Vitamin A is supplied by

(A) Milk, fat and liver

(B) All yellow vegetables

(C) All yellow fruits

(D) Leafy green vegetables

427. Retinol and retinal are interconverted requiring dehydrogenase or reductase in the presence of

(A) NAD or NADP

(B) NADH + H+

(C) NADPH

(D) FAD

428. Fat soluble vitamins are

(A) Soluble in alcohol

(B) one or more Propene units

(C) Stored in liver

(D) All these

429. The international unit of vitamin A is equivalent to the activity caused by

(A) 0.3 µg of Vitamin A alcohol

(B) 0.344 µg of Vitamin A alcohol

(C) 0.6 µg of Vitamin A alcohol

(D) 1.0 µg of Vitamin A alcohol

430. Lumirhodopsin is stable only at temperature below

(A) –10°C

(B) –20°C

(C) –40°C

(D) –50°C

431. Retinol is transported in blood bound to

(A) Aporetinol binding protein

(B) α2-Globulin

(C) beta-Globulin

(D) Albumin

432. The normal serum concentration of vitamin A in mg/100 ml is

(A) 5–10

(B) 15–60

(C) 100–150

(D) 0–5

433. One manifestation of vitamin A deficiency is

(A) Painful joints

(B) Night blindness

(C) Loss of hair

(D) Thickening of long bones

434. Deficiency of Vitamin A causes

(A) Xeropthalmia

(B) Hypoprothrombinemia

(C) Megaloblastic anemia

(D) Pernicious anemia

435. An important function of vitamin A is

(A) To act as coenzyme for a few enzymes

(B) To play an integral role in protein synthesis

(C) To prevent hemorrhages

(D) To maintain the integrity of epithelial tissue

436. Retinal is a component of

(A) Iodopsin

(B) Rhodopsin

(C) Cardiolipin

(D) Glycoproteins

437. Retinoic acid participates in the synthesis of

(A) Iodopsin

(B) Rhodopsin

(C) Glycoprotein

(D) Cardiolipin

438. On exposure to light rhodopsin forms

(A) All trans-retinal

(B) Cis-retinal
(C) Retinol
(D) Retinoic acid

439. Carr-Price reaction is used to detect
(A) Vitamin A
(B) Vitamin D
(C) Ascorbic acid
(D) Vitamin E

440. The structure shown below is of
(A) Cholecalciferol
(B) 25-Hydroxycholecalciferol
(C) Ergocalciferol
(D) 7-Dehydrocholesterol

441. Vitamin D absorption is increased in
(A) Acid pH of intestine
(B) Alkaline pH of intestine
(C) Impaired fat absorption
(D) Contents of diet

442. The most potent Vitamin D metabolite is
(A) 25-Hydroxycholecalciferol
(B) 1,25-Dihydroxycholecalciferol
(C) 24, 25-Dihydroxycholecalciferol
(D) 7-Dehydrocholesterol

443. The normal serum concentration of 25-hydroxycholecalciferol in ng/ml is
(A) 0–8
(B) 60–100
(C) 100–150
(D) 8–55

444. The normal serum concentration of 1,25-dihydroxycholecalciferol in pg/ml is
(A) 26–65
(B) 1–5
(C) 5–20
(D) 80–100

445. The normal serum concentration of 24,25- dihydroxycholecalciferol in ng/ml is
(A) 8–20
(B) 25–50
(C) 1–5
(D) 60–100

446. A poor source of Vitamin D is

(A) Egg
(B) Butter
(C) Milk
(D) Liver

447. Richest source of Vitamin D is
(A) Fish liver oils
(B) Margarine
(C) Egg yolk
(D) Butter

448. Deficiency of vitamin D causes
(A) Ricket and osteomalacia
(B) Tuberculosis of bone
(C) Hypthyroidism
(D) Skin cancer

449. One international unit (I.U) of vitamin D is defined as the biological activity of
(A) 0.025 µg of cholecalciferol
(B) 0.025 µg of 7-dehydrocholecalciferol
(C) 0.025 µg of ergosterol
(D) 0.025 µg of ergocalciferol

450. The beta-ring of 7-dehydrocholesterol is cleaved to form cholecalciferol by
(A) Infrared light
(B) Dim light
(C) Ultraviolet irridation with sunlight
(D) Light of the tube lights

451. Calcitriol synthesis involves
(A) Both liver and kidney
(B) Intestine
(C) Adipose tissue
(D) Muscle

452. Insignificant amount of Vitamin E is present in
(A) Wheat germ oil
(B) Sunflower seed oil
(C) Safflower seed oil
(D) Fish liver oil

453. The activity of tocopherols is destroyed by
(A) Commercial cooking
(B) Reduction
(C) Conjugation
(D) All of these

454. The requirement of vitamin E is increased with greater intake of
(A) Carbohydrates
(B) Proteins
(C) Polyunsaturated fat
(D) Saturated fat
455. Vitamin E reduces the requirement of
(A) Iron
(B) Zinc
(C) Selenium
(D) Magnesium
456. The most important natural antioxidant is
(A) Vitamin D
(B) Vitamin E
(C) Vitamin B12
(D) Vitamin K
457. Tocopherols prevent the oxidation of
(A) Vitamin A
(B) Vitamin D
(C) Vitamin K
(D) Vitamin C
458. Creatinuria is caused due to the deficiency of vitamin
(A) A
(B) K
(C) E
(D) D
459. All the following conditions produce a real or functional deficiency of vitamin K except
(A) Prolonged oral, broad spectrum antibiotic therapy
(B) Total lack of red meat in the diet
(C) The total lack of green leafy vegetables in the diet
(D) Being a new born infant
460. Vitamin K is found in
(A) Green leafy plants
(B) Meat
(C) Fish
(D) Milk
461. Function of Vitamin A:
(A) Healing epithelial tissues
(B) Protein synthesis regulation
(C) Cell growth

(D) All of these

462. Vitamin K2 was originally isolated from

(A) Soyabean

(B) Wheat gram

(C) Alfa Alfa

(D) Putrid fish meal

463. Vitamin synthesized by bacterial in the intestine is

(A) A

(B) C

(C) D

(D) K

464. Vitamin K is involved in posttranslational modification of the blood clotting factors by acting as cofactor for the enzyme:

(A) Carboxylase

(B) Decarboxylase

(C) Hydroxylase

(D) Oxidase

465. Vitamin K is a cofactor for

(A) Gamma carboxylation of glutamic acid residue

(B) beta-Oxidation of fatty acid

(C) Formation of γ-amino butyrate

(D) Synthesis of tryptophan

466. Hypervitaminosis K in neonates may cause

(A) Porphyria

(B) Jaundice

(C) Pellagra

(D) Prolonged bleeding

467. Dicoumarol is antagonist to

(A) Riboflavin

(B) Retinol

(C) Menadione

(D) Tocopherol

468. In the individuals who are given liberal quantities of vitamin C, the serum ascorbic acid level is

(A) 1–1.4 μg/100 ml

(B) 2–4 μg/100 ml

(C) 1–10 μg/100 ml

(D) 10–20 μg/100 ml

469. The vitamin which would most likely become deficient in an individual who develop a completely carnivorous life style is

(A) Thiamin
(B) Niacin
(C) Vitamin C
(D) Cobalamin

470. In human body highest concentration of ascorbic acid is found in
(A) Liver
(B) Adrenal cortex
(C) Adrenal medulla
(D) Spleen

471. The vitamin required for the formation of hydroxyproline (in collagen) is
(A) Vitamin C
(B) Vitamin A
(C) Vitamin D
(D) Vitamin E

472. Vitamin required for the conversion of p-hydroxyphenylpyruvate to homogentisate is
(A) Folacin
(B) Cobalamin
(C) Ascorbic acid
(D) Niacin

473. Vitamin required in conversion of folic acid to folinic acid is
(A) Biotin
(B) Cobalamin
(C) Ascorbic acid
(D) Niacin

474. Ascorbic acid can reduce
(A) 2, 6-Dibromobenzene
(B) 2, 6-Diiodoxypyridine
(C) 2, 6-Dichlorophenol indophenol
(D) 2, 4-Dinitrobenzene

475. Sterilised milk lacks in
(A) Vitamin A
(B) Vitamin D
(C) Vitamin C
(D) Thiamin

476. Scurvy is caused due to the deficiency of
(A) Vitamin A
(B) Vitamin D
(C) Vitamin K
(D) Vitamin C

477. Both Wernicke's disease and beriberi can be reversed by administrating
(A) Retinol
(B) Thiamin
(C) Pyridoxine
(D) Vitamin B12

478. The Vitamin B1 deficiency causes
(A) Ricket
(B) Nyctalopia
(C) Beriberi
(D) Pellagra

479. Concentration of pyruvic acid and lactic acid in blood is increased due to deficiency of the vitamin
(A) Thiamin
(B) Riboflavin
(C) Niacin
(D) Pantothenic acid

480. Vitamin B1 coenzyme (TPP) is involved in
(A) Oxidative decarboxylation
(B) Hydroxylation
(C) Transamination
(D) Carboxylation

481. Increased glucose consumption increases the dietary requirement for
(A) Pyridoxine
(B) Niacin
(C) Biotin
(D) Thiamin

482. Thiamin is oxidized to thiochrome in alkaline solution by
(A) Potassium permanganate
(B) Potassium ferricyanide
(C) Potassium chlorate
(D) Potassium dichromate

483. Riboflavin is a coenzyme in the reaction catalysed by the enzyme
(A) Acyl CoA synthetase
(B) Acyl CoA dehydrogenase
(C) beta-Hydroxy acyl CoA
(D) Enoyl CoA dehydrogenase

484. The daily requirement of riboflavin for adult in mg is
(A) 0–1.0
(B) 1.2–1.7

(C) 2.0–3.5
(D) 4.0–8.0

485. In new born infants phototherapy may cause hyperbilirubinemia with deficiency of
(A) Thiamin
(B) Riboflavin
(C) Ascorbic acid
(D) Pantothenic acid

486. Riboflavin deficiency causes
(A) Cheilosis
(B) Loss of weight
(C) Mental deterioration
(D) Dermatitis

487. Magenta tongue is found in the deficiency of the vitamin
(A) Riboflavin
(B) Thiamin
(C) Nicotinic acid
(D) Pyridoxine

488. Corneal vascularisation is found in deficiency of the vitamin:
(A) B1
(B) B2
(C) B3
(D) B6

489. The pellagra preventive factor is
(A) Riboflavin
(B) Pantothenic acid
(C) Niacin
(D) Pyridoxine

490. Pellagra is caused due to the deficiency of
(A) Ascorbic acid
(B) Pantothenic acid
(C) Pyridoxine
(D) Niacin

491. Niacin or nicotinic acid is a monocarboxylic acid derivative of
(A) Pyridine
(B) Pyrimidine
(C) Flavin
(D) Adenine

492. Niacin is synthesized in the body from
(A) Tryptophan

(B) Tyrosine
(C) Glutamate
(D) Aspartate

493. The proteins present in maize are deficient in
(A) Lysine
(B) Threonine
(C) Tryptophan
(D) Tyrosine

494. Niacin is present in maize in the form of
(A) Niatin
(B) Nicotin
(C) Niacytin
(D) Nicyn

495. In the body 1 mg of niacin can be produced from
(A) 60 mg of pyridoxine
(B) 60 mg of tryptophan
(C) 30 mg of tryptophan
(D) 30 mg of pantothenic acid

496. Pellagra occurs in population dependent on
(A) Wheat
(B) Rice
(C) Maize
(D) Milk

497. The enzymes with which nicotinamide act as coenzyme are
(A) Dehydrogenases
(B) Transaminases
(C) Decarboxylases
(D) Carboxylases

498. Dietary requirement of Vitamin D:
(A) 400 I.U.
(B) 1000 I.U.
(C) 6000 I.U.
(D) 700 I.U.

499. The Vitamin which does not contain a ring in the structure is
(A) Pantothenic acid
(B) Vitamin D
(C) Riboflavin
(D) Thiamin

500. Pantothenic acid is a constituent of the coenzyme involved in

(A) Decarboxylation
(B) Dehydrogenation
(C) Acetylation
(D) Oxidation

501. The compound which has the lowest density is

(A) Chylomicron
(B) β-Lipoprotein
(C) α-Lipoprotein
(D) pre β-Lipoprotein

502 Non steroidal anti inflammatory drugs, such as aspirin act by inhibiting activity of the enzyme:

(A) Lipoxygenase
(B) Cyclooxygenase
(C) Phospholipase A_2
(D) Lipoprotein lipase

503. From arachidonate, synthesis of prostaglandins is catalysed by

(A) Cyclooxygenase
(B) Lipoxygenase
(C) Thromboxane synthase
(D) Isomerase

504. A Holoenzyme is

(A) Functional unit
(B) Apo enzyme
(C) Coenzyme
(D) All of these

505. Gaucher's disease is due to the deficiency of the enzyme:

(A) α-Fucosidase
(B) β-Galactosidase
(C) β-Glucosidase
(D) Sphingomyelinase

506. Neimann-Pick disease is due to the deficiency of the enzyme:

(A) Hexosaminidase A and B
(B) Ceramidase
(C) Ceramide lactosidase
(D) Sphingomyelinase

507. Krabbe's disease is due to the deficiency of the enzyme:

(A) Ceramide lactosidase
(B) Ceramidase
(C) β-Galactosidase

(D) GM1 β-Galactosidase

508. Fabry's disease is due to the deficiency of the enzyme:

(A) Ceramide trihexosidase
(B) Galactocerebrosidase
(C) Phytanic acid oxidase
(D) Sphingomyelinase

509. Farber's disease is due to the deficiency of the enzyme:

(A) α-Galactosidase
(B) Ceramidase
(C) β-Glucocerebrosidase
(D) Arylsulphatase A.

510. A synthetic nucleotide analogue, used in organ transplantation as a suppressor of immunologic rejection of grafts is

(A) Theophylline
(B) Cytarabine
(C) 4-Hydroxypyrazolopyrimidine
(D) 6-Mercaptopurine

511. Example of an extracellular enzyme is

(A) Lactate dehydrogenase
(B) Cytochrome oxidase
(C) Pancreatic lipase
(D) Hexokinase

512. Enzymes, which are produced in inactive form in the living cells, are called

(A) Papain
(B) Lysozymes
(C) Apoenzymes
(D) Proenzymes

513. An example of ligases is

(A) Succinate thiokinase
(B) Alanine racemase
(C) Fumarase
(D) Aldolase

514 An example of lyases is

(A) Glutamine synthetase
(B) Fumarase
(C) Cholinesterase
(D) Amylase

515. Activation or inactivation of certain key regulatory enzymes is accomplished by covalent modification of the amino acid:

(A) Tyrosine
(B) Phenylalanine
(C) Lysine
(D) Serine

516. The enzyme which can add water to a carbon-carbon double bond or remove water to create a double bond without breaking the bond is

(A) Hydratase
(B) Hydroxylase
(C) Hydrolase
(D) Esterase

517. Fischer's 'lock and key' model of the enzyme action implies that

(A) The active site is complementary in shape to that of substance only after interaction.
(B) The active site is complementary in shape to that of substance
(C) Substrates change conformation prior to active site interaction
(D) The active site is flexible and adjusts to substrate

518. From the Lineweaver-Burk plot of Michaelis-Menten equation, Km and Vmax can be determined when V is the reaction velocity at substrate concentration S, the X-axis experimental data are expressed as

(A) 1/V
(B) V
(C) 1/S
(D) S

519. A sigmoidal plot of substrate concentration ([S]) verses reaction velocity (V) may indicate

(A) Michaelis-Menten kinetics
(B) Co-operative binding
(C) Competitive inhibition
(D) Non-competitive inhibition

520. The K_m of the enzyme giving the kinetic data as below is

(A) –0.50
(B) –0.25
(C) +0.25
(D) +0.33

521. The kinetic effect of purely competitive inhibitor of an enzyme

(A) Increases K_m without affecting V_{max}
(B) Decreases K_m without affecting V_{max}

(C) Increases V_{max} without affecting K_m

(D) Decreases V_{max} without affecting K_m

522. If curve X in the graph (below) represents no inhibition for the reaction of the enzyme with its substrates, the curve representing the competitive inhibition, of the same reaction is

(A) A

(B) B

(C) C

(D) D

523. An inducer is absent in the type of enzyme:

(A) Allosteric enzyme

(B) Constitutive enzyme

(C) Co-operative enzyme

(D) Isoenzymic enzyme

524. A demonstrable inducer is absent in

(A) Allosteric enzyme

(B) Constitutive enzyme

(C) Inhibited enzyme

(D) Co-operative enzyme

525. In reversible non-competitive enzyme activity inhibition

(A) V_{max} is increased

(B) K_m is increased

(C) K_m is decreased

(D) Concentration of active enzyme is reduced

526. In reversible non-competitive enzyme activity inhibition

(A) Inhibitor bears structural resemblance to substrate

(B) Inhibitor lowers the maximum velocity attainable with a given amount of enzyme

(C) K_m is increased

(D) K_m is decreased

527. In competitive enzyme activity inhibition

(A) The structure of inhibitor generally resembles that of the substrate

(B) Inhibitor decreases apparent K_m

(C) K_m remains unaffective

(E) Inhibitor decreases V_{max} without affecting K_m

528. In enzyme kinetics V_{max} reflects

(A) The amount of an active enzyme

(B) Substrate concentration

(C) Half the substrate concentration

(D) Enzyme substrate complex

529. In enzyme kinetics Km implies

(A) The substrate concentration that gives one half V_{max}
(B) The dissocation constant for the enzyme substrate comples
(C) Concentration of enzyme
(D) Half of the substrate concentration required to achieve V_{max}

530. In competitive enzyme activity inhibition

(A) Apparent K_m is decreased
(B) Apparent K_m is increased
(C) V_{max} is increased
(D) V_{max} is decreased

531. In non competitive enzyme activity inhibition, inhibitor

(A) Increases K_m
(B) Decreases K_m
(C) Does not effect K_m
(D) Increases K_m

532. An enzyme catalyzing oxidoreduction, using oxygen as hydrogen acceptor is

(A) Cytochrome oxidase
(B) Lactate dehydrogenase
(C) Malate dehydrogenase
(D) Succinate dehydrogenase

533. The enzyme using some other substance, not oxygen as hydrogen acceptor is

(A) Tyrosinase
(B) Succinate dehydrogenase
(C) Uricase
(D) Cytochrome oxidase

534. An enzyme which uses hydrogen acceptor as substrate is

(A) Xanthine oxidase
(B) Aldehyde oxidase
(C) Catalase
(D) Tryptophan oxygenase

535. Enzyme involved in joining together two substrates is

(A) Glutamine synthetase
(B) Aldolase
(C) Gunaine deaminase
(D) Arginase

536. The pH optima of most of the enzymes is

(A) Between 2 and 4
(B) Between 5 and 9
(C) Between 8 and 12
(D) Above 12

537. Coenzymes are

(A) Heat stable, dialyzable, non protein organic molecules
(B) Soluble, colloidal, protein molecules
(C) Structural analogue of enzymes
(D) Different forms of enzymes

538. An example of hydrogen transferring coenzyme is

(A) CoA
(B) NAD^+
(C) Biotin
(D) TPP

539. An example of group transferring coenzyme is

(A) NAD^+
(B) $NADP^+$
(C) FAD
(D) CoA

540. Cocarboxylase is

(A) Thiamine pyrophosphate
(B) Pyridoxal phosphate
(C) Biotin
(D) CoA

541. A coenzyme containing non aromatic hetero ring is

(A) ATP
(B) NAD
(C) FMN
(D) Biotin

542. A coenzyme containing aromatic hetero ring is

(A) TPP
(B) Lipoic acid
(C) Coenzyme Q
(D) Biotin

543. Isoenzymes are

(A) Chemically, immunologically and electrophoretically different forms of an enzyme
(B) Different forms of an enzyme similar in all properties
(C) Catalysing different reactions
(D) Having the same quaternary structures like the enzymes

544. Isoenzymes can be characterized by

(A) Proteins lacking enzymatic activity that are necessary for the activation of enzymes
(B) Proteolytic enzymes activated by hydrolysis
(C) Enzymes with identical primary structure

(D) Similar enzymes that catalyse different reaction

545. The isoenzymes of LDH

(A) Differ only in a single amino acid
(B) Differ in catalytic activity
(C) Exist in 5 forms depending on M and H monomer contents
(D) Occur as monomers

546. The normal value of CPK in serum varies between

(A) 4–60 IU/L
(B) 60–250 IU/L
(C) 4–17 IU/L
(D) > 350 IU/L

547. Factors affecting enzyme activity:

(A) Concentration
(B) pH
(C) Temperature
(D) All of these

548. The normal serum GOT activity ranges from

(A) 3.0–15.0 IU/L
(B) 4.0–17.0 IU/L
(C) 4.0–60.0 IU/L
(D) 0.9–4.0 IU/L

549. The normal GPT activity ranges from

(A) 60.0–250.0 IU/L
(B) 4.0–17.0 IU/L
(C) 3.0–15.0 IU/L
(D) 0.1–14.0 IU/L

550. The normal serum acid phosphatase activity ranges from

(A) 5.0–13.0 KA units/100 ml
(B) 1.0–5.0 KA units/100 ml
(C) 13.0–18.0 KA units/100 ml
(D) 0.2–0.8 KA units/100 ml

551. The normal serum alkaline phosphatase activity ranges from

(A) 1.0–5.0 KA units/100 ml
(B) 5.0–13.0 KA units/100 ml
(C) 0.8–2.3 KA units/100 ml
(D) 13.0–21.0 KA units/100 ml

552. In early stages of myocardial ischemia the most sensitive indicator is the measurement of the activity of

(A) CPK
(B) SGPT

(C) SGOT
(D) LDH

553. Serum acid phosphatase level increases in

(A) Metastatic carcinoma of prostate
(B) Myocardial infarction
(C) Wilson's disease
(D) Liver diseases

554. Serum alkaline phosphatase level increases in

(A) Hypothyroidism
(B) Carcinoma of prostate
(C) Hyperparathyroidism
(D) Myocardial ischemia

555. Serum lipase level increases in

(A) Paget's disease
(B) Gaucher's disease
(C) Acute pancreatitis
(D) Diabetes mellitus

556. Serum ferroxidase level decreases in

(A) Gaucher's disease
(B) Cirrhosis of liver
(C) Acute pancreatitis
(D) Wilson's disease

557. The isoenzymes LDH_5 is elevated in

(A) Myocardial infarction
(B) Peptic ulcer
(C) Liver disease
(D) Infectious diseases

558. On the third day of onset of acute myocardial infarction the enzyme elevated is

(A) Serum AST
(B) Serum CK
(C) Serum LDH
(D) Serum ALT

559. LDH_1 and LDH_2 are elevated in

(A) Myocardial infarction
(B) Liver disease
(C) Kidney disease
(D) Brain disease

560. The CK isoenzymes present in cardiac muscle is

(A) BB and MB

(B) MM and MB
(C) BB only
(D) MB only

561. In acute pancreatitis, the enzyme raised in first five days is

(A) Serum amylase
(B) Serum lactic dehydrogenase
(C) Urinary lipase
(D) Urinary amylase

562. Acute pancreatitis is characterised by

(A) Lack of synthesis of zymogen enzymes
(B) Continuous release of zymogen enzymes into the gut
(C) Premature activation of zymogen enzymes
(D) Inactivation of zymogen enzymes

563. An example of functional plasma enzyme is

(A) Lipoprotein lipase
(B) Amylase
(C) Aminotransferase
(D) Lactate dehydrogenase

564. A non-functional plasma enzyme is

(A) Psudocholinesterase
(B) Lipoprotein lipase
(C) Proenzyme of blood coagulation
(D) Lipase

565. The pH optima for salivary analyse is

(A) 6.6–6.8
(B) 2.0–7.5
(C) 7.9
(D) 8.6

566. The pH optima for pancreatic analyse is

(A) 4.0
(B) 7.1
(C) 7.9
(D) 8.6

567. The pH optima for sucrase is

(A) 5.0–7.0
(B) 5.8–6.2
(C) 5.4–6.0
(D) 8.6

568. The pH optima for maltase is

(A) 1.0–2.0

(B) 5.2–6.0
(C) 5.8–6.2
(D) 5.4–6.0

569. The pH optima for lactase is

(A) 1.0-2.0
(B) 5.4–6.0
(C) 5.0–7.0
(D) 5.8–6.2

570. The substrate for amylase is

(A) Cane sugar
(B) Starch
(C) Lactose
(D) Ribose

571. The ion which activates salivary amylaseactivity is

(A) Chloride
(B) Bicarbonate
(C) Sodium
(D) Potassium

572. The pancreatic amylase activity is increased in the presence of

(A) Hydrochloric acid
(B) Bile salts
(C) Thiocyanate ions
(D) Calcium ions

573. A carbohydrate which can not be digested in human gut is

(A) Cellulose
(B) Starch
(C) Glycogen
(D) Maltose

574. The sugar absorbed by facilitated diffusion and requiring Na independent transporter is

(A) Glucose
(B) Fructose
(C) Galactose
(D) Ribose

575. In the intestine the rate of absorption is highest for

(A) Glucose and galactose
(B) Fructose and mannose
(C) Fructose and pentose
(D) Mannose and pentose

576. Glucose absorption is promoted by

(A) Vitamin A

(B) Thiamin
(C) Vitamin C
(D) Vitamin K

577. The harmone acting directly on intestinal mucosa and stimulating glucose absorption is

(A) Insulin
(B) Glucagon
(C) Thyroxine
(D) Vasopressin

578. Given that the standard free energy change ($\Delta G°$) for the hydrolysis of ATP is –7.3 K cal/mol and that for the hydrolysis of Glucose 6-phosphate is –3.3 Kcal/mol, the $\Delta G°$ for the phosphorylation of glucose is Glucose + ATP ⟶ Glucose 6–Phosphate + ADP.

(A) –10.6 Kcal/mol
(B) –7.3 Kcal/mol
(C) –4.0 Kcal/mol
(D) +4.0 Kcal/mol

579. At low blood glucose concentration, brain but not liver will take up glucose. It is due to the

(A) Low K_m of hexokinase
(B) Low K_m of glucokinase
(C) Specificity of glucokinase
(D) Blood brain barrier

580. In the reaction below, Nu TP stands for NuTP + glucose ⟶ Glucose 6–Phosphate + NuDP.

(A) ATP
(B) CTP
(C) GTP
(D) UTP

581. In the figures shown below, fructose 1,6-biphosphate is located at point:

(A) A
(B) B
(C) C
(D) D

582. The enzyme of the glycolic pathway, sensitive to inhibiton by fluoride ions is

(A) Hexokinase
(B) Aldolase
(C) Enolase
(D) Pyruvate kinase

583. In glycolytic pathway, iodacetate inhibits the activity of the enzyme:

(A) Phosphotriose isomerase
(B) Glyceraldehyde-3-phosphate dehydrogenase
(C) Pyruvate kinase

(D) Phosphofructokinase

584. In the glycolytic pathway, enolpyruvate is converted to ketopyruvate by

(A) Pyruvate kinase
(B) Phosphoenolpyruvate
(C) Pyruvate dehydrogenase
(D) Spontaneously

585. In erythrocytes, 2, 3-biphosphoglycerate is derived from the intermediate:

(A) Glyeraldehyde-3-phosphate
(B) 1, 3-Biphosphoglycerate
(C) 3-Phosphoglycerate
(D) 2-Phosphoglycerate

586. 2, 3-Biphosphoglycerate in high concentrations, combines with hemoglobin, causes

(A) Displacement of the oxyhemoglobin dissociation curve to the left
(B) Displacement of the oxyhemoglobin dissociation curve to the right
(C) No change in oxy hemoglobin dissociation curve
(D) Increased affinity for oxygen

587. Erythrocytes under normal conditions and microorganisms under anaerobic condi tions may accumulate

(A) NADPH
(B) Pyruvate
(C) Phosphoenolpyruvate
(D) Lactate

588. Enzymes leading to the high energy phosphorylation of substrates during glycolysis include which of the following?

(A) Phosphoglycerate kinase
(B) Enolase
(C) Pyruvate Kinase
(D) Glyceraldehyde-3-phosphate dehydrogenase

589. Lineweaver – Burk double reciprocal plot is related to

(A) Substrate concentration
(B) Enzyme activity
(C) Temperature
(D) Both (A) and (B)

590. Phosphofructokinase key enzyme in glycolysis is inhibited by

(A) Citrate and ATP
(B) AMP
(C) ADP

(D) TMP

591. One of the enzymes regulating glycolysis is

(A) Phosphofructokinase
(B) Glyceraldehyde-3-phosphate dehydrogenase
(C) Phosphotriose isomerase
(D) Phosphohexose isomerase

592. Hexokinase is inhibited in an allosteric manner by

(A) Glucose-6-Phosphate
(B) Glucose-1-Phosphate
(C) Fructose-6-phosphate
(D) Fructose-1, 6-biphosphate

593. A reaction which may be considered an isomerisation is

(A) Glucose 6-Phosphate fructose 6 phosphate
(B) 3-Phosphoglycerate 2-phosphoglycerate
(C) 2-phosphoglycerate phosphoenol-pyruvate
(D) Pyruvate Lactate

594. The net number of ATP formed per mole of glucose in anaerobic glycolysis is

(A) 1
(B) 2
(C) 6
(D) 8

595. Pyruvate dehydrogenase a multienzyme complex is required for the production of

(A) Acetyl-CoA
(B) Lactate
(C) Phosphoenolpyruvate
(D) Enolpyruvate

596. Dietary deficiency of thiamin inhibits the activity of the enzyme:

(A) Pyruvate kinase
(B) Pyruvate dehydrogenase
(C) Phosphofructokinase
(D) Enolase

597. Pyruvate dehydrogenase activity is inhibited by

(A) Mercury
(B) Zinc
(C) Calcium
(D) Sodium

598. In the normal resting state of humans, most of the blood glucose burned as fuel is consumed by

(A) Liver
(B) Adipose tissue
(C) Muscle
(D) Brain

599. All the enzymes of glycolysis pathway are found in

(A) Extramitochondrial soluble fraction of the cell
(B) Mitochondria
(C) Nucleus
(D) Endoplasmic reticulum

600. Most major metabolic pathways are con sidered mainly either anabolic or catabolic. Which of the following pathway is most correctly considered to be amphibolic?

(A) Citric acid cycle
(B) Gluconeogenesis
(C) Lipolysis
(D) Glycolysi

601. When ATP forms AMP

(A) Inorganic pyrophosphate is produced
(B) Inorganic phosphorous is produced
(C) Phsophagen is produced
(D) No energy is produced

602. Standard free energy ($\Delta G°$) of hydrolysis of ATP to ADP + Pi is

(A) –49.3 KJ/mol
(B) –4.93 KJ/mol
(C) –30.5 KJ/mol
(D) –20.9 KJ/mol

603. Standard free energy ($\Delta G°$) of hydrolysis of ADP to AMP + Pi is

(A) –43.3 KJ/mol
(B) –30.5 KJ/mol
(C) –27.6 KJ/mol
(D) –15.9 KJ/mol

604. Standard free energy ($\Delta G°$) of hydrolysis of phosphoenolpyruvate is

(A) –61.9 KJ/mol
(B) –43.1 KJ/mol
(C) –14.2 KJ/mol
(D) –9.2 KJ/mol

605. Standard free energy ($\Delta G°$) of hydrolysis of creatine phosphate is

(A) –51.4 KJ/mol
(B) –43.1 KJ/mol
(C) –30.5 KJ/mol

(D) –15.9 KJ/mol

606. The oxidation-reduction system having the highest redox potential is

(A) Ubiquinone ox/red

(B) Fe^{3+} cytochrome a/Fe^{2+}

(C) Fe^{3+} cytochrome b/Fe^{2+}

(D) NAD^{+}/NADH

607. If $\Delta G° = -2.3RT \log Keq$, the free energy for the reaction will be

A B C

10moles 10moles 10moles

(A) –4.6 RT

(B) –2.3 RT

(C) +2.3 RT

(D) +4.6 RT

608. Redox potential (E_O volts) of NAD^{+}/NADH is

(A) –0.67

(B) –0.32

(C) –0.12

(D) +0.03

609. Redox potential (E_O volts) of ubiquinone, ox/red system is

(A) +0.03

(B) +0.08

(C) +0.10

(D) +0.29

610. Redox potential (E_O volts) of cytochrome C, Fe^{3+}/Fe^{2+} is

(A) –0.29

(B) –0.27

(C) –0.08

(D) +0.22

611. The prosthetic group of aerobic dehydrogenases is

(A) NAD

(B) NADP

(C) FAD

(D) Pantothenic acid

612. Alcohol dehydrogenase from liver contains

(A) Sodium

(B) Copper

(C) Zinc

(D) Magnesium

613. A molybdenum containing oxidase is

(A) Cytochrome oxidase
(B) Xanthine oxidase
(C) Glucose oxidase
(D) L-Amino acid oxidase

614. A copper containing oxidase is

(A) Cytochrome oxidase
(B) Flavin mononucleotide
(C) Flavin adenine dinucleotide
(D) Xanthine oxidase

615. The mitochondrial superoxide dismutase Contains

(A) Mg^{++}
(B) Mn^{++}
(C) Co^{++}
(D) Zn^{++}

616. Cytosolic superoxide dismutase contains

(A) Cu^{2+} and Zn^{2+}
(B) Mn^{2+}
(C) Mn^{2+} and Zn^{2+}
(D) Cu^{2+} and Fe^{2+}

617. Cytochrome oxidase contains

(A) Cu^{2+} and Zn^{2+}
(B) Cu^{2+} and Fe^{2+}
(C) Cu^{2+} and Mn^{2+}
(D) Cu^{2+}

618. Characteristic absorption bands exhibited by ferrocytochrome:

(A) αband
(B) β band
(C) α and β bands
(D) α, β and γ bands

619. Monooxygenases are found in

(A) Cytosol
(B) Nucleus
(C) Mitochondira
(D) Microsomes

620. A component of the respiratory chain in mitochondria is

(A) Coenzyme Q
(B) Coenzyme A
(C) Acetyl coenzyme

(D) Coenzyme containing thiamin

621. The redox carriers are grouped into respiratory chain complex

(A) In the inner mitochondrial membrane

(B) In mitochondiral matrix

(C) On the outer mitochondrial membrane

(D) On the inner surface of outer mitochondrial membrane

622. The sequence of the redox carrier in respiratory chain is

(A) NAD—FMN—Q—cyt b—cyt c_1—cyt c—cyt aa_3 $\longrightarrow$ O_2

(B) FMN—Q—NAD—cyt b—cyt aa_3—cyt c_1— cyt c $\longrightarrow$ O_2

(C) NAD—FMN—Q—cyt c_1—cyt c—cyt b—cyt aa_3 $\longrightarrow$ O_2

(D) NAD—FMN—Q—cyt b—cyt aa_3—cyt c—cyt c_1 $\longrightarrow$ O_2

623. The correct sequence of cytochrome carriers in respiratory chain is

(A) Cyt b—cyt c—cyt c_1—cyt aa_3

(B) Cyt aa_3— cyt b—cyt c—cyt c_1

(C) Cyt b—cyt c_1—cyt c—cyt aa_3

(D) Cyt b—cyt aa_3—cyt c_1— cyt c

624. Reducing equivalents from pyruvate enter the mitochondrial respiratory chain at

(A) FMN

(B) NAD

(C) Coenzyme Q

(D) Cyt b

625. Reducing equivalents from succinate enter the mitochondrial respiratory chain at

(A) NAD

(B) Coenzyme Q

(C) FAD

(D) Cyt c

626. The respiratory chain complexes acting as proton pump are

(A) I, II and III

(B) I, II and IV

(C) I, III and IV

(D) I and II

627. If the reducing equivalents enter from FAD in the respiratory chain, the phosphate. oxygen ration (P:O) is

(A) 2

(B) 1

(C) 3

(D) 4

628. If the reducing equivalents enter from NAD in the respiratory chain, the phsphate/oxygen (P:O) is

(A) 1
(B) 2
(C) 3
(D) 4

629. One of the site of phsosphorylation in mitochondrial respiratory chain is

(A) Between FMN and coenzyme Q
(B) Between coenzyme Q and cyt b
(C) Between cytochrome b and cytochrome c_1
(D) Between cytochrome c_1 and cytochrome c

630. Rotenone inhibits the respiratory chain at

(A) FMN $\longrightarrow$ coenzyme Q
(B) NAD $\longrightarrow$ FMN
(C) Coenzyme Q $\longrightarrow$ cyt b
(D) Cyt b $\longrightarrow$ Cyt c_1

631. Activity of cytochrome oxidase is inhibited by

(A) Sulphite
(B) Sulphate
(C) Arsenite
(D) Cyanide

632. Transfer of reducing equivalents from succinate dehydrogenase to coenzyme Q is specifically nhibited by

(A) Carboxin
(B) Oligomycin
(C) Piericidin A
(D) Rotenone

633. Chemiosmotic theory for oxidative phosphorylation has been proposed by

(A) Chance and Williams
(B) Pauling and Corey
(C) S. Waugh
(D) P. Mitchell

634. The number of ATP produced in the oxidation of 1 molecule of NADPH in oxidative phosphorylation is

(A) Zero
(B) 2
(C) 3

(D) 4

635. The coupling of oxidation and phosphorylation in intact mitochondria:

(A) Puromycin

(B) Oligomycin

(C) Streptomycin

(D) Gentamycin

636. An uncoupler of oxidative phosphorylation is

(A) Carboxin

(B) Atractyloside

(C) Amobarbital

(D) Dinitrocresol

637. The chemical inhibiting oxidative phosphorylation, Adependent on the transport of adenine nucleotides across the inner mitochondrial membrane is

(A) Oligomycin

(B) Atractyloside

(C) Dinitrophenol

(D) Pentachlorophenol

638. Porphyrins are synthesized in

(A) Cytosol

(B) Mitochondria

(C) Cytosol and mitochondria

(D) Rough endoplasmic reticulum

639. Heme is synthesized from

(A) Succinyl-CoA and glycine

(B) Active acetate and glycine

(C) Active succinate and alanine

(D) Active acetate and alanine

640. In the biosynthesis of the iron protoporphyrin, the product of the condensation between succinyl-CoA and glycine is

(A) α-Amino β-ketoadipic acid

(B) δ-Aminolevulinate

(C) Hydroxymethylbilane

(D) Uroporphyrinogen I

641. Porphyrin synthesis is inhibited in

(A) Mercury poisoning

(B) Lead poisoning

(C) Manganese poisoning

(D) Barium poisoning

642. During synthesis of porphyrins, synthesis of δ-amino levulinic acid occurs in

(A) Mitochondria
(B) Cytosol
(C) Both in mitochondria and cytosol
(D) Ribosomes

643. In the biosynthesis of heme, condensation between succinyl CoA and glycine requires

(A) NAD^+
(B) FAD
(C) $NADH + H^+$
(D) B_6-phosphate

644. In mammalian liver the rate controlling enzyme in porphyrin biosynthesis is

(A) ALA synthase
(B) ALA hydratase
(C) Uroporphyrinogen I synthase
(D) Uroporphyrinogen III cosynthase

645. The condensation of 2 molecules of δ-aminolevulinate dehydratase contains

(A) ALA synthase
(B) ALA hydratase
(C) Uroporphyrinogen synthase I
(D) Uroporphyrinogen synthase III

646. The enzyme □-aminolevulinate dehydratase contains

(A) Zinc (B) Manganese
(C) Magnesium (D) Calcium

647. A cofactor required for the activity of the enzyme ALA dehydratase is

(A) Cu (B) Mn
(C) Mg (D) Fe

648. The number of molecules of porphobilinogen required for formation of a tetrapyrrole i. e., a porphyrin is

(A) 1 (B) 2
(C) 3 (D) 4

649. Conversion of the linear tetrapyrrole hydroxymethylbilane to uroporphyrinogen III

(A) Occurs spontaneously
(B) Catalysed by uroporphyrinogen I synthase
(C) Catalysed by uroporphyrinogen III cosynthase
(D) Catalysed by combined action of uroporphyrinogen I synthase and uroporphyrinogen III cosynthase

650. Conversion of uroporphyrinogen III to coprophyrinogen III is catalysed by enzyme.:

(A) Uroporphyrinogen decarboxylase
(B) Coproporphyrinogen oxidase
(C) Protoporphyrinogen oxidase
(D) Ferrochelatase

651. The synthesis of heme from protophyrin III is catalysed by the enzyme:

(A) ALA synthase
(B) Ferroreductase
(C) Ferrooxidase
(D) Ferrochelatase

652. Many xenobiotics

(A) Increase hepatic ALA synthase
(B) Decrease hepatic ALA sythase
(C) Increase hepatic ALA dehydrase
(D) Decrease hepatic ALA dehydrase

653. Acute intermittent porphyria (paraoxymal porphyria) is caused due to deficiency of

(A) Uroporphyrinogen I synthase
(B) ALA synthase
(C) Coproporphyrinogen oxidase
(D) Uroporphyrinogen decarboxylase

654. The major symptom of acute intermittent porphyria includes

(A) Abdominal pain
(B) Photosensitivity
(C) No neuropsychiatric signs
(D) Dermatitis

655. The characteristic urinary finding in acute intermittent porphyria is

(A) Increased quantity of uroporphyrin
(B) Increased quantity of coproporphyrin I
(C) Increased quantity of coproporphyrin III
(D) Massive quantities of porphobilinogen

656. The enzyme involved in congenial erythropoietic porphyria is

(A) Uroporphyrinogen I synthase
(B) Uroporphyrinogen III cosynthase
(C) Protoporphyrinogen oxidase
(D) Ferrochelatase

657. Main symptoms of congenital erythropoietic porphyria is

(A) Yellowish teeth
(B) Photosensitivity
(C) Abdominal pain
(D) Brownish urine

658. The probable cause of porphyria cutanea tarda is deficiency of

(A) Uroporphyrinogen oxidase

(B) Coproporphyrinogen oxidase
(C) Protoporphyrinogen oxidase
(D) Uroporphyrinogen I synthase

659. The characteristic urinary finding in porphyria cutanea tarda is

(A) Increased quantity of porphobilinogen
(B) Increased quantity of red cell protoporphyrin
(C) Increased quantity of uroporphyrin
(D) Increased quantity of δ-ALA

660. Hereditary coproporphyria is caused due to deficiency of

(A) Protoporphyrinogen oxidase
(B) ALA synthase
(C) ALA dehydratase
(D) Coproporphyrinogen oxidase

661. The enzyme involved in variegate porphyria is

(A) Protoporphyrinogen oxidase
(B) Coproporphyrinogen oxidase
(C) Uroporphyrinogen decarboxylase
(D) ALA decarboxylase

662. Protoporphyria (erythrohepatic) is characterized by the deficiency of

(A) ALA synthase
(B) ALA hydratase
(C) Protophyrinogen oxidae
(D) Ferrochelatase

663. The amount of coproporphyrins excreted per day in feces is about

(A) 10–50 µgs
(B) 100–150 µgs
(C) 200–250 µgs
(D) 300–1000 µgs

664. The immunoglobulins are differentiated and also named on the basis of

(A) Electrophoretic mobility
(B) Heat stability
(C) Molecular weight
(D) Sedimentaiton coefficient like 7 S, 19 S etc.

665. The immunoglobulins are classified on the basis of

(A) Light chains
(B) Heavy chains
(C) Carbohydrate content
(D) Electrophoretic mobility

666. All immunoglobulins contain

(A) 4 L chains
(B) 4 H chains
(C) 3 L chains
(D) 2 L chains and 2 H chains

667. An immunoglobulin molecule always contains

(A) 1 κ and 3 ƛtype of chains
(B) 2 κ and 2 ƛ type of chains
(C) 3 κ and 1ƛ type of chains
(D) 2 κ and 2 ƛ chains

668 . The number of types of H chains identified in human is

(A) 2
(B) 3
(C) 4
(D) 5

669. The number of hypervariable region in L chain is

(A) 1
(B) 2
(C) 3
(D) 4

670. The number of hypervariable region in H chain is

(A) 1
(B) 2
(C) 3
(D) 4

671. Type γ H chain is present in

(A) Ig G
(B) Ig A
(C) Ig M
(D) Ig D

672. Type α H chain is present in

(A) Ig E
(B) Ig A
(C) Ig M
(D) Ig D

673. Type μ H chain is present in

(A) Ig G
(B) Ig A
(C) Ig M
(D) Ig D

674. Type δ H chain is present in

(A) Ig G

(B) Ig A
(C) Ig M
(D) Ig D

675. Type ε H chain is present in

(A) Ig A
(B) Ig M
(C) Ig D
(D) Ig E

676. A 'J' chain is present in

(A) Ig D
(B) Ig M
(C) Ig G
(D) Ig E

677. A secretory protein T chain (T protein) is present in

(A) Ig A
(B) Ig M
(C) Ig D
(D) Ig E

678. A pentamer immunoglobulin is

(A) Ig G
(B) Ig A
(C) Ig M
(D) Ig E

679. Portion of the immunoglobulin molecule that binds the specific antigen is formed by

(A) Variable regions of H and L chains
(B) Constant region of H chain
(C) Constant region of L chain
(D) Hinge region

680. The class specific function of the different immunoglobulin molecules is constituted by

(A) Variable region of L chain
(B) Constant region of H chain
(C) Variable region of H chain
(D) Constant region particularly C_H2 and C_H3 of H chain

681. Hinge region, the region of Ig molecule which is flexible and more exposed to enzymes is

(A) Region between first and second constant regions of H chain (domains C_H1 and C_H2)
(B) Region between second and third constant regions of H chain (C_H2 and C_H3)
(C) Variable regions of H chain
(D) Variable regions of L chain

682. The smallest immunoglobulin is

(A) Ig G
(B) Ig E
(C) Ig D
(D) Ig A

683. The number of sub classes of Ig G is

(A) 2
(B) 3
(C) 4
(D) 8

684. Most abundant Ig G subclass in the serum is

(A) Ig G_1
(B) Ig G_2
(C) Ig G_3
(D) Ig G_4

685. The immunoglobulin which can cross the placenta is

(A) Ig A
(B) Ig M
(C) Ig G
(D) Ig D

686. The immunoglobulin possessing lowest concentration of carbohydrate is

(A) Ig A
(B) Ig E
(C) Ig M
(D) Ig G

687. The normal serum level of Ig G is

(A) 1200 mg%
(B) 500 mg%
(C) 300 mg%
(D) 200 mg%

688. The half life of Ig G is

(A) 2–8 days
(B) 1–4 days
(C) 19–24 days
(D) 6 days

689. Most heat labile immunoglobulin is

(A) Ig G
(B) Ig A
(C) Ig M

(D) Ig D

690. The immunoglobulin possessing highest concentration of carbohydrate is

(A) Ig G

(B) Ig M

(C) Ig A

(D) Ig D

691. The normal serum level of Ig D is

(A) 1 mg%

(B) 2 mg%

(C) 3 mg%

(D) 5 mg%

692. The half life of Ig D is

(A) 1 day

(B) 2–8 days

(C) 10–15 days

(D) 20–24 days

693. The carbohydrate content of Ig M is about

(A) 2.8%

(B) 6.4%

(C) 8.0%

(D) 10.2%

694. The immunoglobulin having highest sedimentation coefficient is

(A) Ig G

(B) Ig A

(C) Ig M

(D) Ig D

695. The immunoglobulin having highest molecular weight is

(A) Ig G

(B) Ig M

(C) Ig E

(D) Ig

696. The half life of Ig M is

(A) 2 days

(B) 4 days

(C) 5 days

(D) 8 days

697. The normal serum level of Ig M is

(A) 50 mg%

(B) 120 mg%

(C) 200 mg%
(D) 300 mg%

698. The immunoglobulin associated with reginic antibody is

(A) Ig E
(B) Ig D
(C) Ig M
(D) Ig A

699. The immunoglobulin having least concentration in serum is

(A) Ig A
(B) Ig M
(C) Ig D
(D) Ig E

700. The half life of Ig E protein is

(A) 1–6 days
(B) 2–8 days
(C) 10 days
(D) 20 days

701. Hormones

(A) Act as coenzyme
(B) Act as enzyme
(C) Influence synthesis of enzymes
(D) Belong to B-complex group

702. Hormone that binds to intracellular receptor is

(A) Adrenocorticotropic hormone
(B) Thyroxine
(C) Follicle stimulating hormone
(D) Glucagon

703. Hormone that bind to cell surface receptor and require the second messenger camp is

(A) Antidiuretic hormone
(B) Cholecystokinin
(C) Calcitriol
(D) Gastrin

704. A hormone secreted from anterior pituitary is

(A) Growth hormone
(B) Vasopressin
(C) Oxytocin
(D) Epinephrine

705. A hormone secreted from posterior pituitary is

(A) Vasopressin
(B) Thyrotropic hormone
(C) Prolactin

(D) Adrenocorticotropic hormone

706. The number of amino acids in human growth hormone is

(A) 91

(B) 151

(C) 191

(D) 291

707. Growth hormone causes hyperglycemia.It is a result of

(A) Decreased peripheral utilization of glucose

(B) Decreased hepatic production via gluconeogenesis

(C) Increased glycolysis in muscle

(D) Decrersed lipolysis

708. Acromegaly results due to excessive release of

(A) Thyroxine

(B) Growth hormone

(C) Insulin

(D) Glucagon

709. Growth hormone is released by

(A) Somatostatin

(B) Growth hormone releasing hormone

(C) Prolactin release inhibiting hormone

(D) Luteinizing releasing hormone

710. The number of amino acids in prolactin is

(A) 134 (B) 146

(C) 172 (D) 199

711. Adrenocorticotropic hormone (ACTH) is a single polypeptide containing

(A) 25 amino acid

(B) 39 amino acid

(C) 49 amino acid

(D) 52 amino acid

712. Biological activity of ACTH requires

(A) 10-N-terminal amino acid

(B) 24-N-terminal amino acid

(C) 24-C-terminal amino acid

(D) 15-C-terminal amino acid

713. ACTH stimulates the secretion of

(A) Glucocorticoids

(B) Epinephrine

(C) Thyroxine

(D) Luteinizing hormone

714. Excessive secretion of ACTH causes

(A) Cushing's syndrome
(B) Addison's disease
(C) Myxoedema
(D) Thyrotoxicosis

715. In Cushing's syndrome-a tumour associated disease of adrenal cortex, there is

(A) Decreased epinephrine production
(B) Excessive cortisol production
(C) Excessive epinephrine production
(D) Decreased cortsoil production

716. ACTH induces rise in

(A) Cyclic AMP
(B) Cyclic GMP
(C) Calcium
(D) Magnesium

717. The circulating concentration of ACTH in plasma is

(A) 0.05 m□/100 ml
(B) 0.1–2.0 m□/100 ml
(C) 2.5–3.5 m□/100 ml
(D) 3.0–5.0 m□/100 ml

718. Hyperglycemic effect of glucocorticoids is due to

(A) Inactivation of protein phosphatase
(B) Inactivation of fructose 1,6-biphosphatase
(C) Stimulation of synthesis of pyruvate carboxylase
(D) Stimulation of synthesis of eltroxykinase

719. The predominant glucocorticoid is

(A) Cortisol
(B) Aldosterone
(C) Dehydroephiandrosterone
(D) Androstenedione

720. A specific cortisol binding protein, transcortin is a

(A) Albumin
(B) α_1-Globulin
(C) α_2-Globulin
(D) β-Globulin

721. Cortisol is synthesized in

(A) Zona fasiculata
(B) Zona glomerulosa
(C) Zona reticularis
(D) Chromaffin cells

722. All mammalian steroid hormones are formed from

(A) Purine
(B) Pyrimidine
(C) Cholesterol
(D) Pyrrole

723. A very efficient inhibitor of steroid biosynthesis is

(A) Aminoglutethimide
(B) Aminoimidazole
(C) Aminoimidazolesuccinyl carboxamine
(D) Aminopterin

724. In adrenal gland the cholesterol is stored

(A) Mostly in the free form
(B) Mostly in esterified form
(C) Large amount of free form and less amount of esterified form
(D) Equal amounts of free and esterified form

725. Aldosterone synthesis occurs in

(A) Zona reticularis
(B) Zona fasciculata
(C) Zona glomerulosa
(D) Chromaffian cells

726. In the biosynthesis of cortiol, the sequence of enzymes involved is

(A) Hydroxylase–dehydrogenase + isomerase –hydroxylase
(B) Dehydrogenase–hydroxylase–isomerase
(C) Hydroxylase–lyase–dehydrogenase isomerase
(D) Isomerase–lyase–hydroxylase–dehydrogenase

727. The defect in adrenal cortex responsible for lack of glucocorticoids and mineralcorticoids is

(A) Androstenedione deficiency
(B) 17 α -OH progesterone deficiency
(C) C-21 hydroxylase deficiency
(D) Testosterone deficienc

728. 3-β-Hydroxysteroid dehydrogenase and $\Delta^{5,4}$ isomerase catalyse the conversion of the weak androgen DHEA to

(A) Androstenedione
(B) Testosterone
(C) Progesterone
(D) Estrone

729. In the resting state plasma concentration of cortisol is

(A) 0.4–2.0 μg/100 ml
(B) 2.0–4.0 μg/100 ml
(C) 5.0–15.0 μg/100 ml

(D) 18.0–25.0 µg/100 ml

730. The most important effect of aldosterone is to

(A) Increase the rate of tubular reabsorption of sodium
(B) Decrease the rate of tubular reabsorption of potassium
(C) Decrease the reabsorption of chloride
(D) Decrease the renal reabsorption of sodium

731. One of the potent stimulators of aldosterone secretion is

(A) Increased sodium concentration
(B) Decreased potassium concentration
(C) Increased potassium concentration
(D) Increased ECF volume

732. In the rennin-angiotensin system the primary hormone is

(A) Angiotensinogen
(B) Angiotensin I
(C) Angiotensin II
(D) Angiotensin III

733. Aldosterone release is stimulated by

(A) α_2-Globulin
(B) Renin
(C) Angiotensin II
(D) Growth hormone

734. In the synthesis of Angiotensin I, rennin acts on Angiotensinogen and cleaves the

(A) Leucine – leucine at 10 and 11 position
(B) Valine – tyrosine at 3 and 4 position
(C) Isoleucine – histidine at 5 and 6 position
(D) Proline – histidine at 7 and 8 position

735. Catecholamine hormones are synthesized in the

(A) Chromaffin cells of adrenal medulla
(B) Zona glomerulosa of adrenal cortex
(C) Zona fasciculate of adrenal cortex
(D) Zona reticularis of adrenal cortex

736. Catecholamine hormones are

(A) 3, 4-Dihydroxy derivatives of phenylethylamine
(B) p-Hydroxy derivatives of phenylacetate
(C) p-Hydroxy derivatives of phenylpyruvate
(D) p-Hydroxy derivatives of phenyllactate

737. The sequential steps in the conversion of tyrosine to epinephrine are

(A) Ring hydroxylation-decarboxylation-side chain hydroxylation-N-methylation
(B) Side chain hydroxylation-decarboxylation-ring hydroxylation N-methylation
(C) Decarboxylation-ring hydroxylation-side chain hydroxylation-N-methylation
(D) N-methylation-decarboxylation-ring and side chain hydroxylation

738. The hormone required for uterine muscle contraction for child birth is

(A) Progesterone
(B) Estrogen
(C) Oxytocin
(D) Vasopressin

739. The number of amino acids in the hormone oxytocin is

(A) 7
(B) 9
(C) 14
(D) 18

740. Vasopressin and oxytocin circulate unbound to proteins and have very short plasma half lives, on the order of

(A) 1–2 minutes
(B) 2–4 minutes
(C) 5–8 minutes
(D) 10–12 minutes

741. Melanogenesis is stimulated by

(A) MSH
(B) FSH
(C) LH
(D) HCG

742. The number of amino acids in antidiuretic hormone is

(A) 9
(B) 18
(C) 27
(D) 36

743. ADH

(A) Reabsorbs water from renal tubules
(B) Excretes water from renal tubules
(C) Excretes hypotonic urine
(D) Causes low specific gravity of urine

744. Increased reabsorption of water from the kidney is the major consequence of the secretion of the hormone?

(A) Cortisol
(B) Insulin
(C) Vasopressin
(D) Aldosterone

745. An increase in the osmolality of extracellular compartment will

(A) Inhibit ADH secretion
(B) Stimulate ADH secretion
(C) Cause no change in ADH secretion
(D) Stimulate the volume and osmoreceptor and inhibit ADH secretion

746. For Catecholamine biosynthesis the rate limiting enzyme is

(A) DOPA decarboxylase
(B) DOPAMINE β-hydroxylase
(C) Tyrosine hydroxylase
(D) Phenylalanine hydroxylase

747. A hormone which cannot cross the blood brain barrier is

(A) Epinephrine
(B) Aldosterone
(C) ACTH
(D) TSH

748. The plasma level of epinephrine is less than

(A) 0.1 ng/ml
(B) 0.2 ng/ml
(C) 0.4 ng/ml
(D) 0.8 ng/ml

749. Epinephrine is rapidly metabolized by

(A) Monoamine oxidase
(B) Deaminase
(C) Transminase
(D) Decarboxylase

750. Pheochromocytomas are tumours of

(A) Adrenal cortex
(B) Adrenal medulla
(C) Pancreas
(D) Bone

751. A characteristic of pheochromocytoma is elevated urinary excretion of

(A) Dopamine
(B) Tyrosine
(C) Vinylmandelic acid
(D) Phenylalanine

752. In the synthetic pathway of epinephrine, disulfiram (antabuse) inhibits the enzyme:

(A) Tyrosine hydroxylase
(B) Dopamine β-hydroxylase
(C) DOPA decarboxylase

(D) N-methyl transferase

753. The biosynthesis of both Catecholamine and serotonin require

(A) Tyrosine hydroxylase
(B) N-methyl transferase
(C) Aromatic amino acid decarboxylase
(D) Tryptophan pyrrolase

754. Epinephrine stimulates glycogenolysis in

(A) Liver
(B) Muscle
(C) Liver and muscle
(D) Kidney

755. A cup of strong coffee would be expected to

(A) Interfere with the synthesis of prostaglandins
(B) Decrease the effect of glucagon
(C) Enhance the effect of epinephrine
(D) Provide the vitamin nicotinic acid

756. Epinephrine is derived from norepinephrine by

(A) Decarboxylation
(B) Hydroxylation
(C) Oxidation
(D) N-methylation

757. 5 HIAA test is negative if patient is taking

(A) Aspirin
(B) Colchicine
(C) Phenothiazone
(D) Methotrexate

758. Presence of significant amount of 5-HIAA in urine indicates

(A) Carcinoid in liver
(B) Carcinoid in appendix
(C) Metastasis of carcinoma of liver
(D) Hepatoma

759. The normal serum level of triiodothyronine (T_3) is

(A) 0.2–0.5 ng/ml
(B) 0.7–2.0 ng/ml
(C) 2.0–4.0 ng/ml
(D) 5.0–8.0 ng/ml

760. The normal serum level of thyroxine (T_4) is

(A) 2.0–4.0 μg/100 ml

(B) 5.5–13.5 µg/100 ml
(C) 14.0–20.3 µg/100 ml
(D) 20.0–25.0 µg/100 ml

761. Excess secretion of thyroid hormones causes

(A) Hyperthyroidism
(B) Myxoedema
(C) Cretinism
(D) Cushing syndrome

762. Insufficient free T_3 and T_4 results in

(A) Grave's disease
(B) Mysoedema
(C) Cushing syndrome
(D) Gigantism

763. In primary hypothyroidism the useful estimation is of

(A) T_3
(B) T_4
(C) TBG
(D) Autoantibodies

764. When iodine supplies are sufficient the T_3 and T_4 ratio in thyroglobulin is

(A) 1 : 2
(B) 1 : 4
(C) 1 : 7
(D) 1 : 10

765. A substance which competes with iodide uptake mechanism by thyroid gland is

(A) Thiocynate
(B) Iodoacetate
(C) Fluoride
(D) Fluoroacetate

766. Thyroperoxidase enzyme contains

(A) Heme
(B) Copper
(C) Zinc
(D) Magnesium

767. Thyroproxidase requires hydrogen peroxide as oxidizing agent. The H_2O_2 is produced by

(A) $FADH_2$ dependent enzyme
(B) NADH dependent enzyme
(C) NADP dependent enzyme
(D) NADPH dependent enzyme

768. Thyroid stimulating hormone is a dimer. The alpha-**subunits of TSH, LH, FSH are identical. Thus the biological specificity must therefore be** beta **subunit in which the number of amino acids is**

(A) 78 (B) 112
(C) 130 (D) 199

769. TSH stimulates the synthesis delete

(A) Thyroxine (B) Adrenocorticoids
(C) Epinephrine (D) Insulin

770. Thyroid hormones are synthesized by the iodination of the amino acid:

(A) Glycine (B) Phenylalanine
(C) Alanine (D) Tyrosine

771. The tyrosine residues per molecule of thyroglobulin is

(A) 85
(B) 95
(C) 115
(D) 135

772. The percentage of inactive precursors (monoidotyrosine and diiodotyrosine) in thyroglobulin is

(A) 30
(B) 40
(C) 50
(D) 70

773. The number of amino acids in parathormone is

(A) 65
(B) 84
(C) 115
(D) 122

774. The sequence of amino acid in which the biological value of parathormone is

(A) 1–15
(B) 1–34
(C) 30–50
(D) 50–84

775. PTH

(A) Reduces the renal clearance or excretion of calcium
(B) Increases renal phosphate clearance
(C) Increases the renal clearance of calcium
(D) Decreases the renal phosphate clearance

776. The number of amino acids in the peptide hormone calcitonin is

(A) 16
(B) 24
(C) 32
(D) 40

777. Calcitonin causes

(A) Calcinuria and phosphaturia
(B) Decrease in urinary calcium
(C) Decrease in urinary phosphorous
(D) Increase in blood calcium level

778. The characteristic of hyperparathyroidism is

(A) Low serum calcium
(B) High serum phosphorous
(C) Low serum calcium and high serum phosphorous
(D) High serum calcium and low serum phosphate

779. Parathyroid hormone

(A) Is released when serum Ca^{++} is too high
(B) Inactivates vitamin D
(C) Is secreted when Ca^{++} is too low
(D) Depends on vitamin K for adequate activity

780. Cells of islet of langerhans of pancreas produce

(A) Pancreatic polypeptide
(B) Pancreatic lipase
(C) Somatostatin
(D) Steapsin

781. Beta-cells of islet of langerhans of the pancreas secrete

(A) Insulin
(B) Glucagon
(C) Somatostatin
(D) Pancreatic polypeptide

782. Target tissue of insulin is

(A) Red blood cells
(B) Renal tubular cells
(C) GI tract epithelial cells
(D) Liver

783. Insulin is a dimmer. The number of amino acids in the A and B chain respectively is

(A) 19 and 28
(B) 21 and 30
(C) 25 and 35
(D) 29 and 38

784. In A chain of the insulin molecule the N-terminal amino acid is

(A) Glycine
(B) Valine
(C) Serine
(D) Phenylalanine

785. In the A chain of insulin molecule the C-terminal amino acid is

(A) Asparagine
(B) Threonine
(C) Valine
(D) Tyrosine

786. In the B chain of insulin molecule, the N-terminal amino acid is

(A) Proline
(B) Threonine
(C) Phenylalanine
(D) Lysine

787. In the B chain of insulin molecule, the C-terminal amino acid:

(A) Threonine
(B) Tyrosine
(C) Glutamate
(D) Valine

788. In the insulin molecule, the number of interchain disulphide brides is

(A) 1
(B) 2
(C) 3
(D) 4

789. In the insulin molecule, the number of intrachain disulphide bridges is

(A) 1
(B) 2
(C) 3
(D) 4

790. Insulin exists in polymeric forms, for polymerization it requires

(A) Calcium
(B) Magnesium
(C) Manganese
(D) Zinc

791. The number of amino acids in pre-pro insulin is

(A) 51
(B) 86
(C) 109

(D) 132

792. Proinsulin has

(A) 74 amino acids

(B) 86 amino acids

(C) 105 amino acids

(D) 109 amino acids

793. Daily secretion of insulin in a normal adult man is about

(A) 10 units

(B) 20 units

(C) 30 units

(D) 50 units

794. The insulin content of pancreas is about

(A) 50–70 units

(B) 100–150 units

(C) 150–180 units

(D) 200–250 units

795. The half life of insulin is

(A) < 3–5 minutes

(B) < 8–10 minutes

(C) < 15 minutes

(D) < 15 minutes

796. Insulin stimulates

(A) Hepatic glycogenolysis

(B) Hepatic glycogenesis

(C) Lipolysis

(D) Gluconeogenesis

797. Action of insulin on lipid metabolism is

(A) It increases lipolysis and increases triglyceride synthesis

(B) It decreases lipolysis and increases triglyceride synthesis

(C) It decreases lipolysis and decreases triglyceride synthesis

(D) It increases synthesis of triglyceride and increased ketogenesis

798. Insulin increases the activity of

(A) Pyruvate kinase

(B) Phosphorylase

(C) Triacylglycerol kinase

(D) Fructose 2, 6-bisphosphatase

799. Insulin decreases the activity of

(A) cAMP dependent protein kinase

(B) HMG CoA-reductas
(C) Phosphodiesterase
(D) Acetyl CoA-carboxylase

800. The human insulin gene located on the short arm of chromosome:

(A) 11
(B) 17
(C) 18
(D) 20

801. A nucleoside consists of

(A) Nitrogenous base
(B) Purine or pyrimidine base + sugar
(C) Purine or pyrimidine base + phosphorous
(D) Purine + pyrimidine base + sugar + phosphorous

802. A nucleotide consists of

(A) A nitrogenous base like choline
(B) Purine + pyrimidine base + sugar + phosphorous
(C) Purine or pyrimidine base + sugar
(D) Purine or pyrimidine base + phosphorous

803. A purine nucleotide is

(A) AMP
(B) UMP
(C) CMP
(D) TMP

804. A pyrimidine nucleotide is

(A) GMP
(B) AMP
(C) CMP
(D) IMP

805. Adenine is

(A) 6-Amino purine
(B) 2-Amino-6-oxypurine
(C) 2-Oxy-4-aminopyrimidine
(D) 2, 4-Dioxypyrimidine

806. 2, 4-Dioxypyrimidine is

(A) Thymine
(B) Cystosine
(C) Uracil
(D) Guanine

807. The chemical name of guanine is

(A) 2,4-Dioxy-5-methylpyrimidine
(B) 2-Amino-6-oxypurine

(C) 2-Oxy-4-aminopyrimidine

(D) 2, 4-Dioxypyrimidine

808. Nucleotides and nucleic acids concentration are often also expressed in terms of

(A) ng

(B) mg

(C) meq

(D) OD at 260 nm

809. The pyrimidine nucleotide acting as the high energy intermediate is

(A) ATP

(B) UTP

(C) UDPG

(D) CMP

810. The carbon of the pentose in ester linkage with the phosphate in a nucleotide structure is

(A) C_1

(B) C_3

(C) C_4

(D) C_5

811. Uracil and ribose form

(A) Uridine

(B) Cytidine

(C) Guanosine

(D) Adenosine

812. The most abundant free nucleotide in mammalian cells is

(A) ATP

(B) NAD

(C) GTP

(D) FAD

813. The mean intracellular concentration of ATP in mammalian cell is about

(A) 1 mM

(B) 2 mM

(C) 0.1 mM

(D) 0.2 mM

814. The nucleic acid base found in mRNA but not in DNA is

(A) Adenine

(B) Cytosine

(C) Guanine

(D) Uracil

815. In RNA moleule 'Caps'

(A) Allow tRNA to be processed
(B) Are unique to eukaryotic mRNA
(C) Occur at the 3' end of tRNA
(D) Allow correct translation of prokaryotic mRNA

816. In contrast to eukaryotic mRNA, prokaryotic mRNA

(A) Can be polycistronic
(B) Is synthesized with introns
(C) Can only be monocistronic
(D) Has a poly A tail

817. The size of small stable RNA ranges from

(A) 0–40 nucleotides
(B) 40–80 nucleotides
(C) 90–300 nucleotides
(D) More than 320 nucleotides

818. The number of small stable RNAs per cell ranges from

(A) 10–50,000
(B) 50,000–1,00,000
(C) 1,00,000–10,00,000
(D) More than 10 lakhs

819. Molecular weight of heterogenous nuclear RNA (hnRNA) is

(A) More than 10^7
(B) 10^5 to 10^6
(C) 10^4 to 10^5
(D) Less than 10^4

820. In RNA molecule guanine content does not necessarily equal its cytosine content nor does its adenine content necessarily equal its uracil content since it is a

(A) Single strand molecule
(B) Double stranded molecule
(C) Double stranded helical molecule
(D) Polymer of purine and pyrimidine ribonucleotides

821. The nitrogenous base present in the RNA molecule is

(A) Thymine
(B) Uracil
(C) Xanthine
(D) Hypoxanthine

822. RNA does not contain

(A) Uracil
(B) Adenine
(C) Thymine
(D) Ribose

823. The sugar moiety present in RNA is

(A) Ribulose
(B) Arabinose
(C) Ribose
(D) Deoxyribose

824. In RNA molecule

(A) Guanine content equals cytosine
(B) Adenine content equals uracil
(C) Adenine content equals guanine
(D) Guanine content does not necessarily equal its cytosine content.

825. Methylated purines and pyrimidines are characteristically present in

(A) mRNA (B) hnRNA
(C) tRNA (D) rRNA

826. Thymine is present in

(A) tRNA
(B) Ribosomal RNA
(C) Mammalian mRNA
(D) Prokaryotic mRNA

827. The approximate number of nucleotides in tRNA molecule is

(A) 25
(B) 50
(C) 75
(D) 100

828. In every cell, the number of tRNA molecules is at least

(A) 10
(B) 20
(C) 30
(D) 40

829. The structure of tRNA appears like a

(A) Helix
(B) Hair pin
(C) Clover leaf
(D) Coil

830. Although each specific tRNA differs from the others in its sequence of nucleotides, all tRNA molecules contain a base paired stem that terminates in the sequence CCA at

(A) 3′ Termini
(B) 5′ Termini
(C) Anticodon arm
(D) 3′5′ -Termini

831. Transfer RNAs are classified on the basis of the number of base pairs in

(A) Acceptor arm
(B) Anticodon arm
(C) D arm
(D) Extra arm

832. In tRNA molecule D arm is named for the presence of the base:

(A) Uridine
(B) Pseudouridine
(C) Dihydrouridine
(D) Thymidine

833. The acceptor arm in the tRNA molecule has

(A) 5 Base pairs
(B) 7 Base pairs
(C) 10 Base pairs
(D) 20 Base pairs

834. In tRNA molecule, the anticodon arm possesses

(A) 5 Base pairs
(B) 7 Base pairs
(C) 8 Base pairs
(D) 10 Base pairs

835. The TΨC arm in the tRNA molecule possesses the sequence

(A) T, pseudouridine and C
(B) T, uridine and C
(C) T, dihydrouridine and C
(D) T, adenine and C

836. Double helical structure model of the DNA was proposed by

(A) Pauling and Corey
(B) Peter Mitchell
(C) Watson and Crick
(D) King and Wooten

837. DNA does not contain

(A) Thymine
(B) Adenine
(C) Uracil
(D) Deoxyribose

838. The sugar moiety present in DNA is

(A) Deoxyribose
(B) Ribose
(C) Lyxose
(D) Ribulose

839. DNA rich in A-T pairs have

(A) 1 Hydrogen bond
(B) 2 Hydrogen bonds
(C) 3 Hydrogen bonds
(D) 4 Hydrogen bonds

840. In DNA molecule

(A) Guanine content does not equal cytosine content
(B) Adenine content does not equal thymine content
(C) Adenine content equals uracil content
(D) Guanine content equals cytosine content

841. DNA rich in G-C pairs have

(A) 1 Hydrogen bond
(B) 2 Hydrogen bonds
(C) 3 Hydrogen bonds
(D) 4 Hydrogen bonds

842. The fact that DNA bears the genetic information of an organism implies that

(A) Base composition should be identical from species to species
(B) DNA base composition should charge with age
(C) DNA from different tissues in same organism should usually have the same base composition
(D) DNA base composition is altered with nutritional state of an organism

843. The width (helical diameter) of the double helix in B-form DNA in nm is

(A) 1
(B) 2
(C) 3
(D) 4

844. The number of base pair in a single turn of B-form DNA about the axis of the molecule is

(A) 4
(B) 8
(C) 10
(D) 12

845. The distance spanned by one turn of B-form DNA is

(A) 1.0 nm
(B) 2.0 nm
(C) 3.0 nm
(D) 3.4 nm

846. In a DNA molecule the thymine concentration is 30%, the guanosine concentration will be

(A) 10%
(B) 20%

(C) 30%
(D) 40%

847. IN a DNA molecule, the guanosine content is 40%, the adenine content will be

(A) 10%
(B) 20%
(C) 30%
(D) 40%

848. An increased melting temperature of duplex DNA results from a high content of

(A) Adenine + Guanine
(B) Thymine + Cytosine
(C) Cytosine + Guanine
(D) Cytosine + Adenine

849. A synthetic nucleotide analogue, 4-hydroxypyrazolopyrimidine is used in the treatment of

(A) Acute nephritis
(B) Gout
(C) Cystic fibrosis of lung
(D) Multiple myeloma

850. A synthetic nucleotide analogue, used in the chemotherapy of cancer and viral infections is

(A) Arabinosyl cytosine
(B) 4-Hydroxypyrazolopyrimidine
(C) 6-Mercaptopurine
(D) 6-Thioguanine

851. Histamine is formed from histidine by enzyme histidine decarboxylase in the presence of

(A) NAD
(B) FMN
(C) HS-CoA
(D) B_6-PO_4

852. Infantile convulsions due to lesserformation of gamma amino butyric acid from glutamic acid is seen in the deficiency of

(A) Glutamate-dehydrogenase
(B) Pyridoxine
(C) Folic acid
(D) Thiamin

853. Which of the following amino acids produce a vasoconstrictor on decarboxylation?

(A) Histidine
(B) Tyrosine
(C) Threonine
(D) Arginine

854. The degradation of RNA by pancreatic ribonuclease produces

(A) Nucleoside 2-Phosphates
(B) Nucleoside 5′-phosphates
(C) Oligonucleosides
(D) Nucleoside 3′-phosphate and oligonucleotide

855. Intestinal nucleosidases act on nucleosides and produce

(A) Purine base only
(B) Phosphate only
(C) Sugar only
(D) Purine or pyrimidine bases and sugars

856. In purine biosynthesis carbon atoms at 4 and 5 position and N at 7 position are contributed by

(A) Glycine
(B) Glutamine
(C) Alanine
(D) Threonine

857. N^{10}-formyl and N^5N^{10}-methenyl tetrahydrofolate contributes purine carbon atoms at position

(A) 4 and 6
(B) 4 and 5
(C) 5 and 6
(D) 2 and 8

858. In purine nucleus nitrogen atom at 1 position is derived from

(A) Aspartate
(B) Glutamate
(C) Glycine
(D) Alanine

859. The key substance in synthesis of purine, phosphoribosyl pyrophosphate is formed by

(A) alpha-D-ribose 5-phosphate
(B) 5-phospho beta-D-ribosylamine
(C) D-ribose
(D) Deoxyribose

860. In purine biosynthesis ring closure in the molecule formyl glycinamide ribosyl-5-phosphate requires the cofactors:

(A) ADP
(B) NAD
(C) FAD
(D) ATP and Mg^{++}

861. Ring closure of formimidoimidazole carboxamide ribosyl-5-phosphate yields the first purine nucleotide:

(A) AMP
(B) IMP
(C) XMP
(D) GMP

862. The cofactors required for synthesis of adenylosuccinate are

(A) ATP, Mg^{++}
(B) ADP
(C) GTP, Mg^{++}
(D) GDP

863. Conversion of inosine monophosphate to xanthine monophosphate is catalysed by

(A) IMP dehydrogenase
(B) Formyl transferase
(C) Xanthine-guanine phosphoribosyl transferase
(D) Adenine phosphoribosyl transferase

864. Phosphorylation of adenosine to AMP is catalysed by

(A) Adenosine kinase
(B) Deoxycytidine kinase
(C) Adenylosuccinase
(D) Adenylosuccinate synthetase

865. The major determinant of the overall rate of denovo purine nucleotide biosynthesis is the concentration of

(A) 5-phosphoribosyl 1-pyrophosphate
(B) 5-phospho beta-D-ribosylamine
(C) Glycinamide ribosyl-5-phosphate
(D) Formylglycinamide ribosyl-5-phosphate

866. An enzyme which acts as allosteric regulator and sensitive to both phosphate concentration and to the purine nucleotides is

(A) PRPP synthetase
(B) PRPP glutamyl midotransferase
(C) HGPR Tase
(D) Formyl transferase

867. PRPP glutamyl amidotransferase, the first enzyme uniquely committed to purine synthesis is feed back inhibited by

(A) AMP
(B) IMP
(C) XMP
(D) CMP

868. Conversion of formylglycinamide ribosyl-5-phosphate to formyl-glycinamide ribosyl-5-phosphate is inhibited by

(A) Azaserine
(B) Diazonorleucine
(C) 6-Mercaptopurine
(D) Mycophenolic acid

869. In the biosynthesis of purine nucleotides the AMP feed back regulates

(A) Adenylosuccinase
(B) Adenylosuccinate synthetase
(C) IMP dehydrogenase
(D) HGPR Tase

870. 6-Mercapto purine inhibits the conversion of

(A) IMP⟶ XMP
(B) Ribose 5 phosphate ⟶ PRPP
(C) PRPP ⟶ 5-phospho ⟶ beta -D-ribosylamine
(D) Glycinamide ribosyl 5-phosphate ⟶ formylglycinamide ribosyl-5-phosphate

871. Purine biosynthesis is inhibited by

(A) Aminopterin
(B) Tetracyclin
(C) Methotrexate
(D) Chloramphenicol

872. Pyrimidine and purine nucleoside bio synthesis share a common precursor:

(A) PRPP
(B) Glycine
(C) Fumarate
(D) Alanine

873. Pyrimidine biosynthesis begins with the formation from glutamine, ATP and CO_2, of

(A) Carbamoyl aspartate
(B) Orotate
(C) Carbamoyl phosphate
(D) Dihydroorotate

874. The two nitrogen of the pyrimidine ring are contributed by

(A) Ammonia and glycine
(B) Asparate and carbamoyl phosphate
(C) Glutamine and ammonia
(D) Aspartate and ammonia

875. A cofactor in the conversion of dihydroorotate to orotic acid, catalysed by the enzyme dihydroorotate dehydrogenase is

(A) FAD

(B) FMN
(C) NAD
(D) NADP

876. The first true pyrimidine ribonucleotide synthesized is

(A) UMP
(B) UDP
(C) TMP
(D) CTP

877. UDP and UTP are formed by phosphorylation from

(A) AMP (B) ADP
(C) ATP (D) GTP

878. Reduction of ribonucleotide diphosphates (NDPs) to their corresponding deoxy ribonucleotide diphosphates (dNDPs) involves

(A) FMN (B) FAD
(C) NAD (D) NADPH

879. Conversion of deoxyuridine monophosphate to thymidine monophosphate is catalysed by the enzyme:

(A) Ribonucleotide reductase
(B) Thymidylate synthetase
(C) CTP synthetase
(D) Orotidylic acid decarboxylase

880. d-UMP is converted to TMP by

(A) Methylation
(B) Decarboxylation
(C) Reduction
(D) Deamination

881. UTP is converted to CTP by

(A) Methylation
(B) Isomerisation
(C) Amination
(D) Reduction

882. Methotrexate blocks the synthesis of thymidine monophosphate by inhibiting the activity of the enzyme:

(A) Dihydrofolate reductase
(B) Orotate phosphoribosyl transferase
(C) Ribonucleotide reductase
(D) Dihydroorotase

883. A substrate for enzymes of pyrimidine nucleotide biosynthesis is

(A) Allopurinol
(B) Tetracylin
(C) Chloramphenicol
(D) Puromycin

884. An enzyme of pyrimidine nucleotide biosynthesis sensitive to allosteric regulation is

(A) Aspartate transcarbamoylase
(B) Dihydroorotase
(C) Dihydroorotate dehydrogenase
(D) Orotidylic acid decarboxylase

885 An enzyme of pyrimidine nucleotides biosynthesis regulated at the genetic level by apparently coordinate repression and derepression is

(A) Carbamoyl phosphate synthetase
(B) Dihydroorotate dehydrogenase
(C) Thymidine kinase
(D) Deoxycytidine kinase

886. The enzyme aspartate transcarbamoylase of pyrimidine biosynthesis is inhibited by

(A) ATP
(B) ADP
(C) AMP
(D) CTP

887. In humans end product of purine catabolism is

(A) Uric acid
(B) Urea
(C) Allantoin
(D) Xanthine

888. In humans purine are catabolised to uric acid due to lack of the enzyme:

(A) Urease
(B) Uricase
(C) Xanthine oxidase
(D) Guanase

889. In mammals other than higher primates uric acid is converted by

(A) Oxidation to allantoin
(B) Reduction to ammonia
(C) Hydrolysis to ammonia
(D) Hydrolysis to allantoin

890. The correct sequence of the reactions of catabolism of adenosine to uric acid is

(A) Adenosine⟶hypoxanthine⟶xanthine⟶uric acid
(B) Adenosine⟶xanthine⟶inosine⟶uric acid
(C) Adenosine⟶inosine⟶hypoxanthine⟶ xanthine uric acid
(D) Adenosine⟶xanthine⟶inosine⟶hypoxanthine uric acid

891. Gout is a metabolic disorder of catabolism of

(A) Pyrimidine
(B) Purine
(C) Alanine
(D) Phenylalanine

892. Gout is characterized by increased plasma levels of

(A) Urea
(B) Uric acid
(C) Creatine
(D) Creatinine

893. Lesch-Nyhan syndrome, the sex linked recessive disorder is due to the lack of the enzyme:

(A) Hypoxanthine-guanine phosphoribosyl transferse
(B) Xanthine oxidase
(C) Adenine phosphoribosyl transferase
(D) Adenosine deaminase

894. Lesch-Nyhan syndrome, the sex linked, recessive absence of HGPRTase, may lead to

(A) Compulsive self destructive behaviour with elevated levels of urate in serum
(B) Hypouricemia due to liver damage
(C) Failure to thrive and megaloblastic anemia
(D) Protein intolerance and hepatic encephalopathy

895. The major catabolic product of pyrimidines in human is

(A) beta-Alanine
(B) Urea
(C) Uric acid
(D) Guanine

896. Orotic aciduria type I reflects the deficiency of enzymes:

(A) Orotate phosphoribosyl transferase and orotidylate decarboxylase
(B) Dihydroorotate dehydrogenase
(C) Dihydroorotase
(D) Carbamoyl phosphate synthetase

897. Orotic aciduria type II reflects the deficiency of the enzyme:

(A) Orotate phosphoribosyl transferase
(B) Orotidylate decarboxylase
(C) Dihydroorotase
(D) Dihydroorotate dehydrogenase

898. An autosomal recessive disorder, xanthinuria is due to deficiency of the enzymes:

(A) Adenosine deaminase
(B) Xanthine oxidase
(C) HGPRTase
(D) Transaminase

899. Enzymic deficiency in beta-aminoisobutyric aciduria is

(A) Adenosine deaminase
(B) Xanthine oxidase
(C) Orotidylate decarboxylase
(D) Transaminase

900. Polysomes lack in

(A) DNA
(B) mRNA
(C) rRNA
(D) Trna

901. The total body water in various subjects is relatively constant when expressed as percentage of the lean body mass and is about

(A). 30%
(B) 40%
(C) 50%
(D) 70%

902. The percentage of water contained in the body of an individual is less because of

(A) High fat content
(B) Low fat content
(C) High protein content
(D) Low protein content

903. In intracellular compartment the fluid present in ml/kg body weight is about

(A) 100
(B) 200
(C) 200
(D) 330

904. In extra cellular compartment, the fluid present in ml/kg of body weight is about

(A) 120
(B) 220
(C) 270
(D) 330

905. Fluid present in dense connective tissue and cartilage in ml/kg body weight is about

(A) 10
(B) 20
(C) 45
(D) 55

906. The total body water in ml/kg body weight in average normal young adult male is about

(A) 200

(B) 400
(C) 600
(D) 1000

907. The fluid present in bones which can not be exchanged readily because of relative avascularity is about

(A) 20 ml/kg
(B) 25 ml/kg
(C) 45 ml/kg
(D) 60 ml/kg

908. Water derived in gm from complete oxidation of each gm of carbohydrate is about

(A) 0.15
(B) 0.25
(C) 0.35
(D) 0.55

909. The oxidation of 100 gm of fat yields

(A) 50 gm water
(B) 107 gm water
(C) 150 gm water
(D) 200 gm water

910. Each gm of protein on complete oxidation yields

(A) 0.21 gm water
(B) 0.31 gm water
(C) 0.41 gm water
(D) 0.51 gm water

911. The daily total body water derived from oxidation of food stuffs is about

(A) 100 ml
(B) 300 ml
(C) 600 ml
(D) 1000 ml

912. The daily water allowance for normal infant is about

(A) 100–200 ml
(B) 250–300 ml
(C) 330–1000 ml
(D) 1000–2000 ml

913. The daily water allowance for normal adult (60 kg) is about

(A) 200–600 ml
(B) 500–800 ml
(C) 800–1500 ml

(D) 1800–2500 ml

914. Insensible loss of body water of normal adult is about

(A) 50–100 ml
(B) 100–200 ml
(C) 300–500 ml
(D) 600–1000 ml

915. The predominant cation of plasma is

(A) Na^+
(B) K^+
(C) Ca^+
(D) Mg^{++}

916. The predominant action of plasma is

(A) HCO_3^-
(B) Cl^-
(C) HPO_4^{--}
(D) SO_4^{--}

917. Vasopressin (ADH)

(A) Enhance facultative reabsorption of water
(B) Decreases reabsorption of water
(C) Increases excretion of calcium
(D) Decreases excretion of calcium

918. Enhanced facultative reabsorption of water by Vasopressin is mediated by

(A) Cyclic AMP
(B) Ca^{++}
(C) Cyclic GMP
(D) Mg^{++}

919. Action of kinins is to

(A) Increase salt excretion
(B) Decrease salt retention
(C) Decrease water retention
(D) Increase both salt and water excretion

920. The activity of kinins is modulated by

(A) Prostaglandins
(B) Ca^{++}
(C) Increased cAMP level
(D) Increased cGMP level

921. An important cause of water intoxication is

(A) Nephrogenic diabetes insipidus

(B) Renal failure
(C) Gastroenteritis
(D) Fanconi syndrome

922. Minimum excretory urinary volume for waste products elimination during 24 hrs is

(A) 200–300 ml
(B) 200–400 ml
(C) 500–600 ml
(D) 800 ml

923. In primary dehydration

(A) Intracellular fluid volume is reduced
(B) Intracellular fluid volume remains normal
(C) Extracellular fluid volume is much reduced
(D) Extracellular fluid volume is much increased

924. An important cause of secondary dehydration is

(A) Dysphagia
(B) Oesophageal varices
(C) Oesophageal varices
(D) Gastroenteritis

925. Important finding of secondary dehydration is

(A) Intracellular oedema
(B) Cellular dehydration
(C) Thirst
(D) Muscle cramps

926. Urine examination in secondary dehydration shows

(A) Ketonuria
(B) Low specific gravity
(C) High specific gravity
(D) Albuminuria

927. The total calcium of the human body is about

(A) 100–150 g
(B) 200–300 g
(C) 1–1.5 kg
(D) 2–3 kg

928. Daily requirement of calcium for normal adult human is

(A) 100 mg
(B) 800 mg
(C) 2 g
(D) 4 g

929. Normal total serum calcium level varies between

(A) 4–5 mg

(B) 9–11 mg

(C) 15–20 mg

(D) 50–100 mg

930. The element needed in quantities greater than 100 mg for human beings is

(A) Calcium

(B) Zinc

(C) Selenium

(D) Cobalt

931. The mineral present in the human body in larger amounts than any other cation is

(A) Sodium

(B) Calcium

(C) Potassium

(D) Iron

932. The percentage of the total body calcium present in bones is

(A) 1

(B) 11

(C) 55

(D) 99

933. The percentage of calcium present in extracellular fluid is

(A) 1

(B) 5

(C) 10

(D) 50

934. The physiologically active form of calcium is

(A) Protein bond

(B) Ionised

(C) Complexed with citrate

(D) Complexed with carbonate

35. The normal concentration of calcium in C.S.F is

(A) 1.5–2.5 mg/100 ml

(B) 2.5–4 mg/100 ml

(C) 4.5–5 mg/100 ml

(D) 9–10 mg/100 ml

936. Absorption of calcium is increased on a

(A) High protein diet

(B) Low protein diet

(C) High fat diet

(D) Low fat diet

937. Calcium absorption is interfered by

(A) Protein in diet
(B) Phytic acid in cereals
(C) Alkaline intestinal pH
(D) Vitamin D

938. Calcium absorption is increased by

(A) Vitamin D
(B) Vitamin C
(C) Vitamin K
(D) Vitamin E

939. In serum product of Ca x p (in mg/100ml) in children is normally

(A) 20
(B) 30
(C) 50
(D) 60

940. In ricket, the product of Ca x p (in mg/100 ml) in serum is below

(A) 30
(B) 50
(C) 70
(D) 100

941. In man, amount of calcium in gms filtered in 24 hrs period by the renal glomeruli is

(A) 5
(B) 10
(C) 15
(D) 20

942. The percentage of the calcium eliminated in feces is

(A) 10–20
(B) 30–40
(C) 50–60
(D) 70–90

943. The maximal renal tubular reabsorptive capacity for calcium (Tmca) in mg/min is about

(A) 1.5 ± 0.1
(B) 4.99 ± 0.21
(C) 5.5 ± 1.2
(D) 10.2 ± 2.2

944. Renal ricket is caused by renal tubular defect which interferes with reabsorption of

(A) Calcium

(B) Phosphorous
(C) Sodium
(D) Chloride

945. After operative removal of the parathyroid glands resulting into hypoparathyroidism the concentration of the serum calcium may drop below

(A) 11 mg
(B) 10 mg
(C) 9 mg
(D) 7 mg

946. One of the principal cations of soft tissue and body fluids is

(A) Mg
(B) S
(C) Mn
(D) Co

947. The normal concentration of magnesium in whole blood is

(A) 0–1 mg/100 ml
(B) 1–2 mg/100 ml
(C) 2–4 mg/100 ml
(D) 4–8 mg/100 ml

948. The normal concentration of magnesium in C.S.F is about

(A) 1 mg/100 ml
(B) 3 mg/100 ml
(C) 5 mg/100 ml
(D) 8 mg/100 ml

949. The magnesium content of muscle is about

(A) 5 mg/100 ml
(B) 10 mg/100 ml
(C) 21 mg/100 ml
(D) 50 mg/100 ml

950. Intestinal absorption of magnesium is increased in

(A) Calcium deficient diet
(B) High calcium diet
(C) High oxalate diet
(D) High phytate diet

951. Deficiency of magnesium may occur with

(A) Alcoholism
(B) Diabetes mellitus
(C) Hypothyroidism
(D) Advanced renal failure

952. Hypermagnesemia may be observed in

(A) Hyperparathyroidism
(B) Diabetes mellitus
(C) Kwashiorkar
(D) Primary aldosteronism

953. Na^+/K^+-ATPase along with ATP requires

(A) Ca
(B) Mn
(C) Mg
(D) Cl

954. The principal cation in extracellular fluid is

(A) Sodium
(B) Potassium
(C) Calcium
(D) Magnesium

955. The normal concentration of sodium (in mg/100 ml) of human plasma is

(A) 100
(B) 200
(C) 250
(D) 330

956. A decrease in serum sodium may occur in

(A) Adrenocortical insufficiency
(B) Hypoparathyroidism
(C) Hyperparathyroidism
(D) Thyrotoxicosis

957. Hypernatremia may occur in

(A) Diabetes insipidus
(B) Diuretic medication
(C) Heavy sweating
(D) Kidney disease

958. The metabolism of sodium is regulated by the hormone:

(A) Insulin
(B) Aldosterone
(C) PTH
(D) Somatostatin

959. The principal cation in intracellular fluid is

(A) Sodium
(B) Potassium

(C) Calcium
(D) Magnesium

960. The normal concentration of potassium in whole blood is

(A) 50 mg/100 ml
(B) 100 mg/100 ml
(C) 150 mg/100 ml
(D) 200 mg/100 ml

961. The normal concentration of potassium in human plasma in meq/I is about

(A) 1
(B) 2
(C) 3
(D) 5

962. The normal concentration of potassium in cells in ng/100 ml is about

(A) 100
(B) 200
(C) 350
(D) 440

963. Potassium content of nerve tissue in mg/100 ml is about

(A) 200
(B) 330
(C) 400
(D) 530

964. Potassium content of muscle tissue in mg/100 ml is about

(A) 50–100
(B) 100–150
(C) 250–400
(D) 150–200

965. One of the symptoms of low serum potassium concentration includes

(A) Muscle weakness
(B) Confusion
(C) Numbness
(D) Tingling of extremities

966. Potassium metabolism is regulated by the hormone:

(A) Aldosterone
(B) PTH
(C) Somatostatin
(D) Estrogen

967. A high serum potassium, accompanied by a high intracellular potassium occurs in

(A) Adrenal insufficiency
(B) Any illness
(C) Gastrointestinal losses
(D) Cushing's syndrome

968. Hypokalemia occurs in

(A) Cushing's syndrome
(B) Addison's disease
(C) Renal failure
(D) Advanced dehydration

969. Cardiac arrest may occur due to over doses of

(A) Sodium
(B) Potassium
(C) Zinc
(D) Magnesium

970. The normal concentration of chloride in mg/100 ml of whole blood is about

(A) 200
(B) 250
(C) 400
(D) 450

971. The normal concentration of chloride in mg/100 ml of plasma is about

(A) 100
(B) 200
(C) 365
(D) 450

972. The normal concentration of chlorine in mg/100 ml of C.S.F is about

(A) 200
(B) 250
(C) 300
(D) 440

973. Hypokalemia with an accompanying hypochloremic alkalosis may be observed in

(A) Cushing's syndrome
(B) Addison's disease
(C) Hyptothyroidism
(D) Malnutrition

974. Hypercholremia is associated with

(A) Hyponatremia
(B) Hypernatremia
(C) Metabolic alkalosis

(D) Respiratory acidosis

975. The exclusive function of iron in the body is confined to the process of

(A) Muscular contraction
(B) Nerve excitation
(C) Cellular respiration
(D) Blood coagulation

976. The normal pH of the blood is

(A) 7.0
(B) 7.1
(C) 7.2
(D) 7.4

977. The normal concentration of bicarbonate in blood is

(A) 21 meq/L
(B) 24 meq/L
(C) 26 meq/L
(D) 30 meq/L

978. At the pH of blood 7.4, ratio between the carbonic acid and bicarbonate fractions is

(A) 1 : 10
(B) 1 : 20
(C) 1 : 30
(D) 1 : 40

979. A 0.22 M solution of lactic acid (pK_a 3.9) was found to contain 0.20 M in the dissociated from and 0.02M undissociated form, the pH of the solution is

(A) 2.9
(B) 3.3
(C) 4.9
(D) 5.4

980. Important buffer system of extracellular fluid is

(A) Bicarbonate/carbonic acid
(B) Disodium hydrogen phosphate/sodium dihydrogen phosphate
(C) Plasma proteins
(D) Organic Phosphate

981. The pH of body fluids is stabilized by buffer systems. The compound which will be the most effective buffer at physiologic pH is

(A) Na_2HPO_4 $pK_a = 12.32$
(B) Na_2HPO_4 $pK_a = 7.21$
(C) NH_4OH $pK_a = 7.24$

(D) Citric acid $pK_a = 3.09$

982. The percentage of CO_2 carrying capacity of whole blood by hemoglobin and oxyhemoglobin is

(A) 20
(B) 40
(C) 60
(D) 80

983. The normal serum CO_2 content is

(A) 18–20 meq/L
(B) 24–29 meq/L
(C) 30–34 meq/L
(D) 35–38 meq/L

984. The carbondioxide carrying power of the blood residing within the red cells is

(A) 50%
(B) 60%
(C) 85%
(D) 100%

985. Within the red blood cells the buffering capacity contributed by the phosphates is

(A) 5%
(B) 10%
(C) 20%
(D) 25%

986. The normal ratio between the alkalinephosphate and acid phosphate in plasma is

(A) 2 : 1
(B) 1 : 4
(C) 20 : 1
(D) 4 : 1

987. The oxygen dissociation curve for hemoglobin is shifted to the right by

(A) Decreased O_2 tension
(B) Decreased CO_2 tension
(C) Increased CO_2 tension
(D) Increased pH

988. Bohr effect is

(A) Shifting of oxyhemoglobin dissociation curve to the right
(B) Shifting of oxyhemoglobin dissociation curve to the left
(C) Ability of hemoglobin to combine with O_2
(D) Exchange of chloride with carbonate

989. Chloride shift is

(A) H ions leaving the RBC in exchange of Cl^-

(B) Cl^- leaving the RBC in exchange of bicarbonate
(C) Bicarbonate ion returns to plasma and exchanged with chloride which shifts into the cell
(D) Carbonic acid to the plasma

990. Of the total body water, intracellular compartment contains about

(A) 50%
(B) 60%
(C) 70%
(D) 80%

991. Osmotically active substances in plasma are

(A) Sodium
(B) Chloride
(C) Proteins
(D) All of these

992. Osmotic pressure of plasma is

(A) 80–100 milliosmole/litre
(B) 180–200 milliosmole/litre
(C) 280–300 milliosmole/litre
(D) 380–400 milliosmole/litre

993. Contribution of albumin to colloid osmotic pressure of plasma is about

(A) 10%
(B) 50%
(C) 80%
(D) 90%

994. The highest concentration of proteins is present in

(A) Plasma
(B) Interstitial fluid
(C) Interstitial fluid
(D) Transcellular fluid

995. Oncotic pressure of plasma is due to

(A) Proteins
(B) Chloride
(C) Sodium
(D) All of these

996. Oncotic pressure of plasma is about

(A) 10 mm of Hg
(B) 15 mm of Hg
(C) 25 mm of Hg
(D) 50 mm of Hg

997. Oedema can occur when

(A) Plasma Na and Cl are decreased
(B) Plasma Na and Cl are increased
(C) Plasma proteins are decreased
(D) Plasma proteins are increased

998. Colloid osmotic pressure of intracellular fluid is

(A) Equal to that of plasma
(B) More than that of plasma
(C) More than that of plasma
(D) Nearly zero

999. The water produced during metabolic reactions in an adult is about

(A) 100 ml/day
(B) 300 ml/day
(C) 500 ml/day
(D) 700 ml/day

1000. The daily water loss through gastrointestinal tract in an adult is about

(A) Less than 100 ml/day
(B) 200 ml/day
(C) 300 ml/day
(D) 400 ml/day

Answer Key

1	B	51	A	101	C	151	A	201	B	251	A	301	A	351	A	401	A	451	A
2	D	52	C	102	C	152	D	202	A	252	B	302	D	352	A	402	B	452	D
3	D	53	B	103	B	153	D	203	B	253	C	303	C	353	C	403	B	453	A
4	A	54	A	104	C	154	C	204	C	254	D	304	A	354	D	404	A	454	C
5	C	55	A	105	C	155	C	205	C	255	A	305	A	355	A	405	B	455	C

6	A	56	B	106	C	156	A	206	A	256	A	306	C	356	B	406	D	456	B
7	B	57	A	107	B	157	B	207	A	257	A	307	B	357	C	407	C	457	A
8	B	58	A	108	C	158	D	208	B	258	D	308	B	358	D	408	D	458	C
9	A	59	C	109	D	159	C	209	D	259	A	309	B	359	A	409	B	459	B
10	C	60	C	110	D	160	D	210	A	260	A	310	D	360	B	410	A	460	A
11	C	61	A	111	A	161	A	211	A	261	D	311	B	361	C	411	D	461	D
12	A	62	D	112	A	162	A	212	A	262	D	312	D	362	D	412	B	462	D
13	B	63	C	113	B	163	A	213	D	263	D	313	D	363	A	413	A	463	D
14	B	64	B	114	B	164	A	214	A	264	D	314	B	364	D	414	B	464	A
15	D	65	A	115	B	165	A	215	B	265	B	315	C	365	B	415	D	465	A
16	B	66	D	116	B	166	A	216	A	266	B	316	A	366	C	416	A	466	B
17	B	67	C	117	A	167	A	217	C	267	D	317	C	367	C	417	A	467	C
18	A	68	C	118	C	168	A	218	B	268	B	318	A	368	A	418	C	468	A
19	A	69	B	119	A	169	A	219	C	269	B	319	A	369	B	419	B	469	C
20	D	70	B	120	B	170	D	220	A	270	C	320	C	370	D	420	A	470	B
21	B	71	D	121	D	171	B	221	B	271	C	321	C	371	B	421	B	471	A
22	B	72	A	122	C	172	A	222	A	272	D	322	D	372	C	422	A	472	D
23	A	73	C	123	D	173	A	223	D	273	C	323	A	373	D	423	B	473	C
24	A	74	B	124	D	174	C	224	C	274	B	324	C	374	A	424	A	474	C
25	A	75	B	125	B	175	C	225	D	275	D	325	D	375	B	425	A	475	C
26	D	76	B	126	D	176	B	226	C	276	C	326	D	376	D	426	A	476	D
27	D	77	C	127	D	177	B	227	A	277	C	327	B	377	C	427	A	477	B
28	D	78	B	128	C	178	C	228	D	278	C	328	D	378	A	428	D	478	C
29	D	79	D	129	B	179	B	229	A	279	B	329	A	379	A	429	A	479	A
30	A	80	A	130	A	180	C	230	A	280	D	330	B	380	A	430	D	480	A
31	D	81	D	131	A	181	B	231	C	281	A	331	A	381	D	431	A	481	D
32	C	82	B	132	D	182	A	232	B	282	D	332	D	382	B	432	B	482	B
33	D	83	A	133	A	183	B	233	A	283	A	333	B	383	A	433	B	483	B
34	B	84	B	134	C	184	D	234	B	284	D	334	B	384	A	434	A	484	B
35	D	85	A	135	C	185	A	235	A	285	B	335	D	385	B	435	D	485	B
36	C	86	A	136	D	186	C	236	A	286	D	336	C	386	A	436	B	486	A
37	C	87	A	137	D	187	B	237	D	287	C	337	D	387	A	437	C	487	A
38	D	88	A	138	A	188	B	238	D	288	A	338	C	388	A	438	A	488	B
39	C	89	B	139	C	189	A	239	A	289	B	339	A	389	B	439	A	489	C
40	A	90	C	140	C	190	A	240	A	290	A	340	D	390	A	440	A	490	D
41	A	91	C	141	B	191	C	241	C	291	B	341	C	391	D	441	A	491	A
42	A	92	A	142	B	192	B	242	A	292	D	342	A	392	B	442	B	492	A
43	A	93	A	143	A	193	D	243	C	293	B	343	A	393	A	443	D	493	C
44	A	94	A	144	D	194	B	244	D	294	B	344	C	394	B	444	A	494	C

45	B	95	B	145	C	195	C	245	C	295	B	345	B	395	A	445	C	495	B
46	A	96	A	146	A	196	A	246	B	296	D	346	B	396	B	446	C	496	C
47	A	97	D	147	B	197	B	247	B	297	B	347	D	397	C	447	A	497	A
48	D	98	A	148	C	198	C	248	A	298	D	348	A	398	C	448	A	498	A
49	A	99	C	149	D	199	C	249	A	299	D	349	A	399	A	449	A	499	A
50	A	100	D	150	B	200	B	250	A	300	A	350	C	400	A	450	C	500	C

501	A	551	B	601	A	651	D	701	C	751	C	801	B	851	D	901	D	951	A
502	B	552	A	602	C	652	A	702	B	752	B	802	B	852	B	902	A	952	B
503	A	553	A	603	C	653	A	703	A	753	B	803	A	853	B	903	D	953	C
504	D	554	C	604	A	654	A	704	A	754	C	804	C	854	D	904	C	954	A
505	C	555	C	605	B	655	D	705	A	755	C	805	A	855	D	905	C	955	D
506	D	556	D	606	B	656	B	706	C	756	D	806	C	856	A	906	C	956	A
507	C	557	C	607	C	657	B	707	A	757	C	807	B	857	D	907	C	957	A
508	A	558	C	608	B	658	A	708	B	758	C	808	D	858	A	908	D	958	B
509	B	559	A	609	C	659	C	709	B	759	B	809	C	859	A	909	B	959	B
510	D	560	B	610	D	660	D	710	D	760	B	810	D	860	D	910	C	960	D
511	C	561	A	611	C	661	A	711	B	761	A	811	A	861	B	911	B	961	D
512	D	562	C	612	C	662	D	712	B	762	B	812	A	862	C	912	C	962	D
513	A	563	A	613	B	663	D	713	A	763	D	813	A	863	A	913	D	963	D
514	B	564	D	614	A	664	D	714	A	764	C	814	D	864	A	914	D	964	C
515	D	565	A	615	B	665	B	715	B	765	A	815	B	865	A	915	A	965	A
516	A	566	D	616	A	666	D	716	A	766	A	816	A	866	A	916	B	966	A
517	B	567	A	617	B	667	D	717	B	767	D	817	C	867	A	917	A	967	A
518	C	568	C	618	D	668	D	718	C	768	B	818	C	868	A	918	A	968	A
519	B	569	B	619	D	669	C	719	A	769	A	819	A	869	B	919	D	969	B
520	D	570	B	620	A	670	D	720	C	770	D	820	A	870	A	920	A	970	B
521	A	571	A	621	A	671	A	721	A	771	C	821	B	871	A	921	B	971	C
522	A	572	B	622	A	672	B	722	C	772	D	822	C	872	A	922	C	972	D
523	B	573	A	623	C	673	C	723	A	773	B	823	C	873	C	923	A	973	A
524	B	574	B	624	B	674	D	724	B	774	B	824	D	874	B	924	D	974	B
525	D	575	A	625	C	675	D	725	C	775	A	825	C	875	C	925	A	975	C
526	B	576	B	626	C	676	B	726	A	776	C	826	A	876	A	926	B	976	D
527	A	577	C	627	A	677	A	727	C	777	A	827	C	877	C	927	C	977	C
528	A	578	C	628	C	678	C	728	A	778	D	828	B	878	D	928	B	978	B
529	A	579	A	629	C	679	A	729	C	779	C	829	C	879	B	929	B	979	C
530	B	580	A	630	A	680	D	730	A	780	C	830	A	880	A	930	A	980	A
531	C	581	C	631	D	681	A	731	C	781	A	831	D	881	C	931	B	981	B
532	A	582	C	632	A	682	A	732	C	782	D	832	A	882	A	932	D	982	C
533	B	583	B	633	D	683	C	733	C	783	B	833	B	883	A	933	A	983	B

534	C	584	D	634	A	684	A	734	A	784	A	834	A	884	A	934	B	984	C
535	A	585	B	635	B	685	C	735	A	785	A	835	A	885	A	935	C	985	D
536	B	586	B	636	D	686	D	736	A	786	C	836	C	886	D	936	A	986	D
537	A	587	D	637	B	687	A	737	A	787	A	837	C	887	A	937	B	987	C
538	B	588	D	638	C	688	C	738	C	788	B	838	A	888	B	938	A	988	A
539	D	589	D	639	A	689	D	739	B	789	A	839	B	889	A	939	C	989	C
540	C	590	A	640	A	690	D	740	B	790	D	840	D	890	C	940	A	990	C
541	D	591	A	641	B	691	C	741	A	791	C	841	C	891	B	941	B	991	D
542	A	592	A	642	A	692	B	742	A	792	B	842	C	892	B	942	D	992	C
543	A	593	A	643	D	693	D	743	A	793	D	843	B	893	A	943	B	993	C
544	B	594	B	644	A	694	C	744	C	794	D	844	C	894	A	944	B	994	C
545	C	595	A	645	B	695	B	745	B	795	A	845	D	895	A	945	D	995	A
546	A	596	B	646	A	696	C	746	C	796	B	846	B	896	A	946	A	996	C
547	D	597	A	647	A	697	B	747	A	797	B	847	A	897	B	947	C	997	C
548	B	598	A	648	D	698	A	748	A	798	A	848	C	898	B	948	B	998	B
549	C	599	A	649	D	699	D	749	A	799	A	849	B	899	D	949	C	999	B
550	B	600	A	650	A	700	A	750	B	800	A	850	A	900	A	950	A	1000	A