CHAPTER 6

ENZYMES

1. The compound which has the lowest density is

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

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

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

3. From arachidonate, synthesis of prostaglandins is catalysed by

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

4. A Holoenzyme is

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

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

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

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

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

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

(A) Ceramide lactosidase
(B) Ceramidase
(C) β-Galactosidase
(D) GM1 β-Galactosidase

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

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

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

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

10. 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

11. Example of an extracellular enzyme is

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

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

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

13. An example of ligases is

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

14 An example of lyases is

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

15. 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

16. 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

17. 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

18. 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

19. 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

20. 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

21. 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

22. 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

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

(A) Allosteric enzyme
(B) Constitutive enzyme
(C) Co-operative enzyme
(D) Isoenzymic enzyme

24. A demonstrable inducer is absent in

(A) Allosteric enzyme (B) Constitutive enzyme
(C) Inhibited enzyme (D) Co-operative enzyme

25. 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

26. 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

27. 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

28. 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

29. 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}

30. 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

31. 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

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

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

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

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

34. An enzyme which uses hydrogen acceptor as substrate is

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

35. Enzyme involved in joining together two substrates is

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

36. 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

37. 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

38. An example of hydrogen transferring coenzyme is

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

39. An example of group transferring coenzyme is

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

40. Cocarboxylase is

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

41. A coenzyme containing non aromatic hetero ring is

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

42. A coenzyme containing aromatic hetero ring is

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

43. 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

44. 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

45. 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

46. 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

47. Factors affecting enzyme activity:

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

48. 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

49. 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

50. 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

51. 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

52. 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

53. Serum acid phosphatase level increases in

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

54. Serum alkaline phosphatase level increases in

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

55. Serum lipase level increases in

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

56. Serum ferroxidase level decreases in

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

57. The isoenzymes LDH_5 is elevated in

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

58. 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

59. LDH_1 and LDH_2 are elevated in

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

60. The CK isoenzymes present in cardiac muscle is

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

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

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

62. 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

63. An example of functional plasma enzyme is

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

64. A non-functional plasma enzyme is

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

65. The pH optima for salivary analyse is

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

66. The pH optima for pancreatic analyse is

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

67. The pH optima for sucrase is

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

68. 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

69. 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

70. The substrate for amylase is

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

71. The ion which activates salivary amylase activity is

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

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

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

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

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

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

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

75. 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

76. Glucose absorption is promoted by

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

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

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

78. Given that the standard free energy change (ΔG°) 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 ΔG° 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

79. 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

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

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

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

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

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

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

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

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

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

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

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

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

86. 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

87. Erythrocytes under normal conditions and microorganisms under anaerobic conditions may accumulate

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

88. 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

89. Lineweaver – Burk double reciprocal plot is related to

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

90. Phosphofructokinase key enzyme in glycolysis is inhibited by

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

91. One of the enzymes regulating glycolysis is

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

92. 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

93. 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

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

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

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

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

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

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

97. Pyruvate dehydrogenase activity is inhibited by

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

98. 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

99. All the enzymes of glycolysis pathway are found in

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

100. Most major metabolic pathways are considered 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) Glycolysis

101. The enzymes of the citric acid cycle are located in

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

102. The initial step of the citric acid cycle is

(A) Conversion of pyruvate to acetyl-CoA
(B) Condensation of acetyl-CoA with oxaloacetate
(C) Conversion of citrate to isocitrate
(D) Formation of α-ketoglutarate catalysed by isocitrate dehydrogenase

103. The substance which may be considered to play a catalytic role in citric acid cycle is

(A) Oxaloacetate (B) Isocitrate
(C) Malate (D) Fumarate

104. An enzyme of the citric acid cycle also found outside the mitochondria is

(A) Isocitrate dehydrogenase
(B) Citrate synthetase
(C) α-Ketoglutarate dehydrogenase
(D) Malate dehydrogenase

105. The reaction catalysed by α-ketoglutarate dehydrogenase in the citric acid cycle requires

(A) NAD (B) NADP
(C) ADP (D) ATP

106. If all the enzymes, intermediates and cofactors of the citric acid cycle as well as an excess of the starting substrate acetyl-CoA are present and functional in an organelle free solution at the appropriate pH, which of the following factors of the citric acid cycle would prove to be rate limiting?

(A) Molecular oxygen
(B) Half life of enzyme
(C) Turnover of intermediates
(D) Reduction of cofactors

107. In TCA cycle, oxalosuccinate is converted to α-ketoglutarate by the enzyme:

(A) Fumarase
(B) Isocitrate dehydrogenase
(C) Aconitase
(D) Succinase

108. The enzyme -ketoglutarate dehydrogenase in the citric acid cycle requires

(A) Lipoate (B) Folate
(C) Pyridoxine (D) Inositol

109. The example of generation of a high energy phosphate at the substrate level in the citric acid cycle is the reaction:

(A) Isocitrate ‡ α-Ketoglutarate
(B) Succinate ‡ α-fumarate
(C) Malate ‡ α-oxaloacetate
(D) Succinyl CoA ‡ α-Succinate

110. Fluoroacetate inhibits the reaction of citric acid cycle:

(A) Isocitrate ‡ α-Ketoglutarate
(B) Fumarate ‡ α-Malate
(C) Citrate ‡ α-cis-aconitate
(D) Succinate ‡ α-fumarate

111. Formation of succinyl-CoA from α-Ketoglutarate is inhibited by

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

112. The number of ATP molecules generated for each turn of the citric acid cycle is

(A) 8 (B) 12
(C) 24 (D) 38

113. Oxidation of one molecule of glucose yields

(A) 12 ATP (B) 24 ATP
(C) 38 ATP (D) 38 ATP

114. Which of the following intermediates of metabolism can be both a precursor and a product of glucose?

(A) Lactate (B) Pyruvate
(C) Alanine (D) Acetyl-CoA

115. Mitochondrial membrane is freely preamble to

(A) Pyruvate (B) Malate
(C) Oxaloacetate (D) Fumarate

116. The reaction of Kreb's cycle which does not require cofactor of vitamin B group is

(A) Citrate ‡ isocitrate
(B) α-Ketoglutarate ‡ succinate
(C) Malate ‡ oxaloacetate
(D) Succinate ‡ fumarate

117. The coenzyme not involved in the formation of acetyl-CoA from pyruvate is

(A) TPP (B) Biotin
(C) NAD (D) FAD

118. A carrier molecule in the citric acid cycle is

(A) Acetyl-CoA (B) Citrate
(C) Oxaloacetate (D) Malate

119. A specific inhibitor for succinate dehydrogenase is

(A) Arsenine (B) Arsenite
(C) Citrate (D) Fluoride

120. The rate of citric acid cycle is controlled by the allosteric enzyme:

(A) Aconitase
(B) Fumarase
(C) Fumarase
(D) Malate dehydrogenase

121. In the erythrocytes, the net production of ATP molecules by the Rapport-Leubering pathway is

(A) 0 (B) 2
(C) 4 (D) 8

122. The ratio that most closely approximates the number of net molecules of ATP formed per mole of glucose utilized under aerobic conditions to the net number formed under anaerobic conditions is

(A) 4:1 (B) 13:1
(C) 18:1 (D) 24:1

123. The pathway of glycogen biosynthesis involves a special nucleotide of glucose. In the reaction below, NuDP stands for

$NuDP\ Glucose + glycogen_n \rightarrow NuDP + glycogen_{n+1}$

(A) ADP (B) GDP
(C) UDP (D) CDP

124. Glucose 6-phosphate is converted to glucose 1-phosphate in a reaction catalysed by the enzyme phosphoglucomutase, which is

(A) Phosphorylated
(B) Dephosphorylated
(C) Phosphorylated-dephosphorylated
(D) Phosphorylated-dephosphorylatedrephosphorylated

125. The glycogen content of the liver is upto

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

126. In glycogenesis a branch point in the molecule is established by the enzyme

(A) Amylo[1→ 4][1→ 6] transglucosidase
(B) α [1→ 4] α [1→ 4] Glucan transferase
(C) Amylo [1→ 6] glucosidase
(D) Glycogen synthase

127. In glycogenolysis, the enzyme which transfers a trisaccharide unit from one branch to the other exposing 1→ 6 branch point is

(A) Phosphorylase
(B) α-[1→ 4]→ α-[1→ 4]→ Glucan transferase
(C) Amylo [1→ 6] glucosidase
(D) Amylo[1→ 4]→ [1→ 6] transglucosidase

128. In the synthesis of glycogen from glucose the reversible step is

(A) Glucose → glucose 6-phosphate
(B) Glucose 6-phosphate → glucose 1-phosphate
(C) Glucose 1-phosphate → UDP glucose
(D) UDP glucose → glycogen

129. The enzyme glucose-6-phosphatase which catalyses the conversion of glucose 6-phosphate to glucose is not found in

(A) Liver (B) Muscle
(C) Intestine (D) Kidney

130. Allosteric activator of glycogen synthase is

(A) Glucose (B) Glucose-6-Phosphate
(C) UTP (D) Glucose-1-phosphate

131. Action of glycogen synthase is inhibited by

(A) Insulin (B) Glucose
(C) Mg^{2+} (D) Cyclic AMP

132. The hormone activating the glycogen synthase activity is

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

133. Characteristic features of active site are

(A) Flexible in nature (B) Site of binding
(C) Acidic (D) Both (A) and (B)

134. Von Gierke's disease is characterized by the deficiency of

(A) Glucose-6-phosphatase
(B) α-1 → 4 Glucosidase
(C) 1 → 6 Glucosidase
(D) Liver phosphorylase

135. Cori disease (Limit dextrinosis) is caused due to absence of

(A) Branching enzyme
(B) Debranching enzyme
(C) Glycogen synthase
(D) Phosphorylase

136. Mc Ardle's syndrome is characterized by the absence of

(A) Liver phosphorylase
(B) Muscle phosphorylase
(C) Branching enzyme
(D) Debranching enzyme

137. Pompe's disease is caused due to deficiency of

(A) Lysosomal α-1$\rightarrow$4 and 1$\rightarrow$6-glucosidase
(B) Glucose-6-phosphatase
(C) Glycogen synthase
(D) Phosphofructokinase

138. Amylopectinosis is caused due to absence of

(A) Debranching enzyme
(B) Branching enzyme
(C) Acid maltase
(D) Glucose-6-phosphatase

139. Her's disease is characterized by deficiency of

(A) Muscle phosphorylase
(B) Liver phosphorylase
(C) Debranching enzyme
(D) Glycogen synthase

140. Tarui disease is characterized by the deficiency of the enzyme:

(A) Liver phosphorylase
(B) Muscle phosphorylase
(C) Muscle and erythrocyte phosphofructokinase
(D) Lysosomal acid maltase

141. The hexose monophosphate pathway includes the enzyme:

(A) Maltase dehydrogenase
(B) Hexokinase
(C) α-Ketoglutarate dehydrogenase
(D) Glucose-6-phosphate dehydrogenase

142. The hydrogen acceptor used in pentose phosphate pathway is

(A) NAD (B) NADP
(C) FAD (D) FMN

143. The enzymes of the pentose phosphate pathway are found in the

(A) Cytosol
(B) Mitochondria
(C) Nucleus
(D) Endoplasmic reticulum

144. In pentose phosphate pathway, D-ribulose-5-phosphate is converted to D-ribose-5-phosphate by the enzyme:

(A) Fumarase (B) Ketoisomerase
(C) G-6-PD (D) Epimerase

145. The transketolase enzyme in the pentose phosphate pathway requires the B vitamin.

(A) Pantothenic acid (B) Thiamin
(C) Riboflavin (D) Nicotinic acid

146. Xylulose-5-phosphate serves as a donar of active glycolaldehyde, the acceptor is

(A) Erythrose 4-phosphate
(B) Ribose 5-phosphate
(C) Glyceraldehyde 3-phosphate
(D) Sedoheptulose 7-phosphate

147. Pentose phosphate pathway is of significance because it generates

(A) NADPH for reductive synthesis
(B) Regenerates glucose 6-phosphate
(C) Generates fructose 6-phosphate
(D) Forms glyceraldehyde 3-phosphate

148. The pentose phosphate pathway protects erythrocytes against hemolysis by assisting the enzyme:

(A) Superoxide dismutase
(B) Catalase
(C) Glutathionic peroxidase
(D) Cytochrome oxidase

149. Hemolytic anemia is caused by the deficiency of certain enzymes of the pentose phosphate pathway, the principal enzyme involved is

(A) Glucose-6-phosphate dehydrogenase
(B) Aldolase
(C) Fructose 1, 6-bisphosphatase
(D) Phosphohexose isomerase

150. The sites for gluconeogenesis are

(A) Liver and kidney
(B) Skin and pancreas
(C) Lung and brain
(D) Intestine and lens of eye

151. An enzyme involved in gluconeogenesis is

(A) Pyruvate kinase
(B) Pyruvate carboxylase
(C) Hexokinase
(D) Phosphohexose isomerase

152. The enzyme pyruvate carboxylase is present in

(A) Cytosol (B) Mitochondria
(C) Nucleus (D) Golgi bodies

153. The enzyme phosphoenolpyruvate carboxykinase catalyses the conversion of oxaloacetate to phosphoenolpyruvate requires

(A) ATP (B) ADP
(C) AMP (D) GTP

154. The enzyme glucose 6-phosphatase is present in

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

155. In gluconeogensis, an allosteric activator required in the synthesis of oxaloacetate from bicarbonate and pyruvate, which is catalysed by the enzyme pyruvate carboxylase is

(A) Acetyl CoA (B) Succinate
(C) Isocitrate (D) Citrate

156. The number of ATP molecules required to convert 2 molecules of lactate into glucose in mammalian liver is

(A) 2 (B) 4
(C) 5 (D) 6

157. For conjugation with many enogenous and exogenous substances before elimination in urine, the uronic acid pathway provides

(A) Active glucuronate (B) Gulonate
(C) Xylulose (D) Xylitol

158. UDP glucose is converted to UDP glucurronate, a reaction catalysed by UDP glucose dehydrogenase requires

(A) NAD^+ (B) FAD
(C) NADP (D) FMN

159. Pentosuria is a rare hereditary disease is characterized by increased urinary excretion of

(A) L-xylulose
(B) Xylitol
(C) Xylulose 5-phosphate
(D) Ribose 5-phosphate

160. The enzyme involved in essential pentosuria is

(A) Reductase (B) Hydroxylase
(C) Isomerase (D) Racemase

161. Galactose is synthesized from glucose in

(A) Mammary gland (B) Intestine
(C) Kidney (D) Adipose tissue

162. Galactose is readily converted to glucose in

(A) Liver (B) Intestine
(C) Kidney (D) Adipose tissue

163. Galactose 1-phosphate is converted to uridine diphosphate galactose, the reaction is catalysed by the enzyme:

(A) Glactokinase
(B) Galactose 1-phosphate uridyl transferase
(C) Uridine diphospho galactose 4-epimerase
(D) UDP glucose pyrophosphorylase

164. The best known cause of galactosemia is the deficiency of

(A) Galactose 1-phosphate and uridyl transferase
(B) Phosphoglucomutase
(C) Galactokinase
(D) Lactose synthase

165 Conversion of fructose to sorbitol is catalysed by the enzyme:

(A) Sorbitol dehydrogenase
(B) Aldose reductase
(C) Fructokinase
(D) Hexokinase

166. A specific fructokinase present in liver has a very high affinity for its substrate because

(A) K_m for fructose is very high
(B) K_m for fructose is very low
(C) Activity is affected by fasting
(D) Activity is affected by insulin

167. Insulin has no effect on the activity of the enzyme:

(A) Glycogen synthetase
(B) Fructokinase
(C) Pyruvate kinase
(D) Pyruvate dehydrogenase

168. The pathogenesis of diabetic cataract involves accumulation of

(A) Galactose (B) Mannitol
(C) Sorbitol (D) Pyruvate

169. Hereditary fructose intolerance involves the absence of the enzyme:

(A) Aldalose B
(B) Fructokinase
(C) Triokinase
(D) Phosphotriose isomerase

170. Essential fructosuria is characterized by the lack of the hepatic enzyme:

(A) Phosphohexose isomerase
(B) Aldalose A
(C) Aldolase B
(D) Fructokinase

171. In normal individuals glycosuria occurs when the venous blood glucose concentration exceeds

(A) 5–6 mmol/L
(B) 7–8 mmol/L
(C) 8.5–9 mmol/L
(D) 9.5–10 mmol/L

172. Phlorizin inhibits

(A) Renal tubular reabsorption of glucose
(B) Glycolysis
(C) Gluconeogenesis
(D) Glycogenolysis

173. Renal glycosuria is characterized by

(A) Hyperglycemia
(B) Hyperglycemia with glycosuria
(C) Normal blood glucose level with glycosuria
(D) Hyperglycemia with ketosis

174. Acute hemolytic anemia in person's sensitive to the Fava beans is due to the deficiency of the enzyme:

(A) Pyruvate dehydrogenase
(B) G-6-PD
(C) Aconitase
(D) Transketolase

175 Acute hemolytic episode after administration of antimalarial, primaquin, is due to deficiency of the enzyme:

(A) 6-Phosphogluconate dehydrogenase
(B) Glucose-6-phosphate dehydrogenase
(C) Epimerase
(D) Transketolase

176. The pH optima of gastric lipase is

(A) 3.0–6.0 (B) 1.0–2.0
(C) 8.0 (D) 8.6

177. The optimum pH of pancreatic lipase is

(A) 2.0 (B) 4.0
(C) 6.0 (D) 8.0

178. Gastric lipae is activated in the presence of

(A) Bile salts (B) Cu^{++}
(C) K^+ (D) Na^+

179. An example of enzyme inhibition:

(A) Reversible inhibition
(B) Irreversible inhibition
(C) Allosteric inhibition
(D) All of these

180. The formation of Δ^2-trans-enoyl-CoA from acyl-CoA requires the enzyme:

(A) Acyl-CoA synthetase
(B) Acyl-CoA dehydrogenase
(C) 3-Hydroxy acyl-CoA dehydrogenase
(D) Thiolase

181. In β-oxidation 3-ketoacyl-CoA is splitted at the 2, 3 position by the enzyme:

(A) Hydratase (B) Dehydrogenase
(C) Reducatse (D) Thiolase

182. Fatty acids with odd number of carbon atoms yield acetyl-CoA and a molecule of

(A) Succinyl-CoA (B) Propionyl-CoA
(C) Malonyl-CoA (D) Acetoacetyl-CoA

183 For each of the first 7-acetyl-CoA molecules formed by α-oxidation of palmitic acid, the yield of high energy phosphates is

(A) 12 (B) 24
(C) 30 (D) 35

184. The net gain of ATP/mol of palmitic acid on complete oxidation is

(A) 88 (B) 105
(C) 129 (D) 135

185. ω-oxidation is normally a very minor pathway and is brought by hydroxylase enzymes involving

(A) Cytochrome a (B) Cytochrome b
(C) Cytochrome c (D) Cytochrome p-450

186. α-Oxidation i.e., the removal of one carbon at a time from the carboxyl end of the molecule has been detected in

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

187. In β-oxidation, the coenzyme for acyl-CoA dehydrogenase is

(A) FMN (B) NAD
(C) NADP (D) FAD

188. The coenzyme involved in dehydrogenation of 3-hydroxy acyl-CoA is

(A) FAD (B) FMN
(C) NAD (D) NADP

189. The concentration of ketone bodies in the blood does not normally exceed

(A) 0.2 mmol/L (B) 0.4 mmol/L
(C) 1 mmol/L (D) 2 mmol/L

190. In humans under normal conditions loss of ketone bodies via urine is usually less than

(A) 1 mg/24 hr (B) 4 mg/24 hr
(C) 8 mg/24 hr (D) 10 mg/24 hr

191. The structure which appears to be the only organ to add significant quantities of ketone bodies to the blood is

(A) Brain (B) Erythrocytes
(C) Liver (D) Skeletal muscle

192. The starting material for ketogenesis is

(A) Acyl-CoA (B) Acetyl-CoA
(C) Acetoacetyl-CoA (D) Malonyl-CoA

193. Enzymes responsible for ketone body formation are associated mainly with the

(A) Mitochondria
(B) Endoplasmic reticulum
(C) Nucleus
(D) Golgi apparatus

194. The synthesis of 3-hydroxy-3-methyl-glutaryl-CoA can occur

(A) Only in mitochondria of all mammalian tissues
(B) Only in the cytosol of all mammalian tissue
(C) In both cytosol and mitochondria
(D) In lysosomes

195. In the pathway leading to biosynthesis of acetoacetate from acetyl-CoA in liver, the immediate precursor of aceotacetate is

(A) Acetoacetyl-CoA
(B) 3-Hydroxybutyryl-CoA
(C) 3-Hydroxy-3-methyl-glutaryl-CoA
(D) 3-Hydroxybutyrate

196. Ketone bodies serve as a fuel for

(A) Extrahepatic tissues
(B) Hepatic tissues
(C) Erythrocytes
(D) Mitochondria

197. In extra hepatic tissues, one mechanism for utilization of acetoacetate involves

(A) Malonyl-CoA (B) Succinyl-CoA
(C) Propionyl-CoA (D) Acetyl-CoA

198. Ketosis reflects

(A) Increased hepatic glucose liberation
(B) Increased fatty acid oxidation
(C) Increased carbohydrate utilisation
(D) Incresed gluconeogenesis

199. Ketosis is associated with the disease:

(A) Nephritis
(B) Diabetes mellitus
(C) Edema
(D) Coronary artery diseases

200. The main pathway for denovo synthesis of fatty acids occur in

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

201. Chain elongation of fatty acids in mammalian liver occurs in

(A) Nucleus (B) Ribosomes
(C) Lysosomes (D) Microsomes

202. Acetyl-CoA is the principal building block of fatty acids. It is produced within the mitochondria and does not diffuse readily into cytosol. The availability of acetyl CoA involves

(A) Carnitine acyl transferase
(B) Pyruvate dehydrogenase
(C) Citrate lyase
(D) Thiolase

203. The synthesis of fatty acids is often termed reductive synthesis.

(A) $NADP^+$ (B) NADH
(C) $FADH_2$ (D) NADPH

204. The protein, which is in fact a multifunctional enzyme complex in higher organism is

(A) Acetyl transacylase
(B) Malonyl transacylase
(C) 3-Hydroxy acyl-ACP dehyratase
(D) Fatty acid synthase

205. The fatty acid synthase complex catalyses

(A) 4 sequential enzymatic steps
(B) 6 sequential enzymatic steps
(C) 7 sequential enzymatic steps
(D) 8 sequential enzymatic steps

206. The main source of reducing equivalents (NADPH) for lipogenesis is

(A) Pentose phosphate pathway
(B) Citric acid cycle
(C) Glycolysis
(D) Glycogenolysis

207. In fatty acids synthase of both bacteria and mammals, ACP (acyl carrier protein) contain the vitamin:

(A) Thiamin (B) Pyridoxine
(C) Riboflavin (D) Pantothenic acid

208. Carboxylation of acetyl-CoA to malonyl-CoA requires the enzyme:

(A) Acetyl-CoA carboxylase
(B) Pyruvate carboxylase
(C) Acetyl transacylase
(D) Acyl CoA-synthetase

209. The rate limiting reaction in the lipogenic pathway is

(A) Acetyl-CoA carboxylase step
(B) Ketoacyl synthase step
(C) Ketoacyl reductase step
(D) Hydratase step

210. Conversion of fatty acyl-CoA to an acyl-CoA derivative having 2 more carbon atoms involves as acetyl donar:

(A) Acetyl-CoA (B) Succinyl-CoA
(C) Propionyl-CoA (D) Malonyl-CoA

211. A cofactor required for the conversion of acetyl-CoA to malonyl-CoA in extramitochondrial fatty acid synthesis is

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

212. The glycerol for fatty acid esterification in adipocytes is

(A) For the most part, derived from glucose
(B) Obtained primarily from phosphorylation of glycerol by glycerol kinase
(C) Formed from gluconeogenesis
(D) Formed from glycogenolysis

213. In the biosynthesis of triglycerides from glycerol 3-phosphate and acyl-CoA, the first intermediate formed is

(A) 2-Monoacylglycerol
(B) 1, 2-Diacylglycerol
(C) Lysophosphatidic acid
(D) Phosphatidic acid

214. The enzyme glycerol kinase is low activity in

(A) Liver (B) Kidney
(C) Intestine (D) Adipose tissue

215. The common precursor in the biosynthesis of triacylglycerol and phospholipids is

(A) 1, 2-Diacylglycerol phosphate
(B) 1-Acylglycerol 3-phosphate
(C) Glycerol 3-phosphate
(D) Dihydroxyacetone phosphate

216. Synthesis of polyunsaturated fatty acids involves the enzyme systems:

(A) Acyl transferase and hydratase
(B) Desaturase and elongase
(C) Ketoacyl-CoA reductase and hydratase
(D) Dihydroxyacetone phosphate

217. The desaturation and chain elongation system of polyunsaturated fatty acid are enhanced by

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

218. Higher rate of lipogenesis is associated with

(A) High proportion of carbohydrate in diet
(B) Restricted caloric intake
(C) High fat diet
(D) Deficiency of insulin

219. Example of enzyme specificity:

(A) Stereo specificity (B) Reaction specificity
(C) Substrate specificity (D) All of these

220. Phospholipase C attacks the ester bond liberating 1, 2-diacylglycerol and a phosphoryl base at position

(A) 1 (B) 2
(C) Both (A) and (B) (D) 3

221. Synthesis of phosphatidylinositol by transfer of inositol to CDP diacylglycerol is catalysed by the enzyme:

(A) CTP phosphatidate cytidyl transferase
(B) Phosphatidate phosphohydrolase
(C) CDP-diacylglycerol inositol transferase
(D) Choline kinase

222. Synthesis of sphingosine requires the cofactor

(A) NAD (B) NADP
(C) $NADPH^+$ (D) ATP

223. Ceramide is formed by the combination of sphingosine and

(A) Acetyl-CoA (B) Acyl-CoA
(C) Malonyl-CoA (D) Propionyl-CoA

224. The amino alcohol sphingosine is synthesized in

(A) Mitochondria
(B) Cytosol
(C) Nucleus
(D) Endoplasmic reticulum

225. The output of free fatty acids from adipose tissue is reduced by

(A) Insulin (B) Glucagon
(C) Growth hormone (D) Epinephrine

226. The principal action of insulin in adipose tissue is to inhibit the activity of the

(A) Hormone sensitive lipoprotein lipase
(B) Glycerol phosphate acyltransferase
(C) Acetyl-CoA carboxylase
(D) Pyruvate dehydrogenase

227. In non shivering thermogenesis

(A) Glucose is oxidized to lactate
(B) Fatty acids uncouple oxidative phosphorylation
(C) Ethanol is formed
(D) ATP is burned for heat production

228. Brown adipose tissue is

(A) A prominent tissue in human
(B) Characterised by high content of mitochondria
(C) Associated with high activity of ATP synthase
(D) Characterised by low content of cytochromes

229. Fatty liver is caused due to accumulation of

(A) Fatty acids (B) Cholesterol
(C) Phospholipids (D) Triacylglycerol

230. A lipotropic factor is

(A) Choline (B) Palmitic acid
(C) Calcium (D) Vitamin C

231. Fatty liver is also caused by

(A) CH_3Cl (B) CCl_4
(C) Na_2SO_4 (D) Riboflavin

232. All the enzymes involved in the synthesis of cholesterol are found in

(A) Mitochondria
(B) Golgi apparatus
(C) Nucleus
(D) Endoplasmic reticulum and cytosol

233. The source of all the carbon atoms in cholesterol is

(A) Acetyl-CoA (B) Bicarbonate
(C) Propionyl-CoA (D) Succinyl-CoA

234. Two molecules of acetyl-CoA condense to form acetoacetyl-CoA catalysed by

(A) Thiolase (B) Kinase
(C) Reductase (D) Isomerase

235. Acetoacetyl-CoA condenses with one more molecule of acetyl-CoA to form

(A) Mevalonate
(B) Acetoacetate
(C) β-Hydroxybutyrate
(D) 3-Hydroxy 3-methyl-glutaryl-CoA

236. HMG-CoA is converted to mevalonate by reduction catalysed by

(A) HMG-CoA synthetase
(B) HMG-CoA reductase
(C) Mevalonate kinase
(D) Thiolase

237. For reduction enzyme HMG-CoA reductase requires cofactor:

(A) NADPH (B) NADP
(C) NAD (D) FAD

238. In the biosynthesis of cholesterol, the step which controls the rate and locus of metabolic regulation is

(A) Geranyl pyrophosphate farnesyl pyrophosphate
(B) Squalene → lanosterol
(C) HMG CoA → mevalonate
(D) Lanosterol → 1, 4-desmethyl lanosterol

239. The cyclisation of squalene in mammals results in the direct formation of the sterol.

(A) Cholesterol (B) Lanosterol
(C) Sistosterol (D) Zymosterol

240. In the biosynthesis of cholesterol, the rate limiting enzyme is

(A) Mevalonate kinase
(B) HMG-CoA synthetase
(C) HMG-CoA reductase
(D) Cis-prenyl transferase

241. Cholesterol by a feed back mechanism inhibits the activity of

(A) HMG-CoA synthetase
(B) HMG-CoA reductase
(C) Thilase
(D) Mevalonate kinase

242. The activity of HMG-CoA reductase is inhibited by

(A) A fungal inhibitor mevastatin
(B) Probucol
(C) Nicotinic acid
(D) Clofibrate

243. Hypolipidemic drugs reduce serum cholesterol and triacylglycerol. The effect of clofibrate is attributed to

(A) Block in absorption from G.I.T.
(B) Decrease in secretion of triacylglycerol and cholesterol containing VLDL by liver
(C) Block in the reabsorption of bile acids
(D) Decreased synthesis of cholesterol

244. In biosynthesis of cholesterol triparanol inhibits the activity of the enzyme:

(A) Δ^{24} Reductase
(B) Oxidosqualene-lanosterol cyclase
(C) Isomerase
(D) Squalene epoxidase

245. HMG-CoA reductase activity is increased by administration of the hormone:

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

246. The principal sterol excreted in feces is

(A) Coprostanol (B) Zymosterol
(C) Lanosterol (D) Desmosterol

247. The principal rate limiting step in the biosynthesis of bile acids is at the

(A) 7-Hydroxylase reaction
(B) 12 α-Hydroxylase reaction
(C) Conjugation reaction
(D) Deconjugation reaction

248. Hypercholesterolemia is found in

(A) Xanthomatosis
(B) Thyrotoxicosis
(C) Hemolytic jaundice
(D) Malabsorption syndrom

249. Hypocholesterolemia is found in

(A) Thyrotoxicosis
(B) Diabetes mellitus
(C) Obstructive jaundice
(D) Nephrotic syndrome

250. The major source of extracellular cholesterol for human tissue is

(A) Very low density lipoprotein
(B) High density lipoprotein
(C) Low density lipoprotein
(D) Albumin

251. Correct ordering of lipoprotein molecules from lowest to the greater density is

(A) LDL, IDL, VLDL, chylomicron
(B) Chylomicron, VLDL, IDL, LDL
(C) VLDL, IDL, LDL, chylomicron
(D) LDL, VLDL, IDL, chylomicron

252. In Hurler's syndrome, urine shows the presence of

(A) Keratan sulphate I
(B) Chondroitin sulphate
(C) Dermatan sulphate and heparan sulphate
(D) Keratan sulphate II

253. Defective enzyme in Hunter's syndrome is

(A) α-L-iduronidase (B) Iduronate sulphatase
(C) Arylsulphatase B (D) C-acetyl transferase

254. In Hunter's syndrome

(A) There is progressive corneal opacity
(B) Keratan sulphate is excreted in the urine
(C) Enzyme defective is arylsulphatase B
(D) Hearing loss is perceptive

255. An important feature of Von-Gierke's disease is

(A) Muscle cramps (B) Cardiac failure
(C) Hypoglycemia (D) Respiratory alkalosis

256. The affected organ in Mc Ardle's syndrome is

(A) Liver (B) Kidney
(C) Liver and Heart (D) Skeletal muscle

257. Refsum's disease is due to deficiency of the enzyme:

(A) Pytantate-α-oxidase
(B) Glucocerebrosidase
(C) Galactocerebrosidase
(D) Ceramide trihexosidase

258. An important finding in Refsum's disease is

(A) Accumulation of ceramide trihexoside in the kidney
(B) Accumulation of phytanic acid in the blood and tissues
(C) Accumulation of gangliosides in brain and spleen
(D) Skin eruptions

259. α-Galactosidase enzyme is defective in

(A) Tay-sach's disease
(B) Refsum's disease
(C) Sandhoff's disease
(D) Fabry's disease

260. The hypothesis to explain enzyme–substrate complex formation:

(A) Lock and key model
(B) Induced fit theory
(C) Proenzyme theory
(D) Both (A) and (B)

261. An important finding in Tay-sach's disease is

(A) Renal failure
(B) Accumulation of gangliosides in brain and spleen
(C) Cardiac failure
(D) Anemia

262. The enzyme deficient in Krabbe's disease is

(A) Hexosaminidase A (B) Arylsuphatase A
(C) β-Galactosidase (D) α-Fucosidase

263. The enzyme ceramidase is deficient in

(A) Farber's disease (B) Fabry's disease
(C) Sandhoff's disease (D) Refsum's disease

264. Niemann-Pick disease is due to deficiency of the enzyme

(A) Ceramidase
(B) Glucocerebrosidase
(C) Galactocerebrosidase
(D) Sphingomyelinase

265. Wolman's disease is due to deficiency of

(A) Cholesteryl ester hydrolase
(B) Hexosaminidase A
(C) α-Fucosidase
(D) Arylsulphatase A

266. The enzyme deficient in Sandhoff's disease is

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

267. Jamaican vomiting sickness is due to inactivation of the enzyme

(A) Pyruvate carboxylase
(B) Acyl-Co-A synthetase
(C) Acyl-Co-A dehydrogense
(D) Thiolase

268. Zellweger's syndrome is due to inherited absence of

(A) Peroxisomes
(B) Phospholipase A_1
(C) Acyl-Co-A dehydrogenase
(D) Thiolase

269. Bassen-Kornzweig syndrome is due to

(A) Absence of Apo-C-II
(B) Defect in Apo-B synthesis
(C) Absence of Apo-E
(D) Absence of Apo-D

270. Enzyme deficient in Hyperammonemia type II is

(A) Glutamine synthetase
(B) Glutaminase
(C) Ornithine transcarbamoylase
(D) Carbamoylphosphate synthetase

271. An important finding in Hyperammonemia type II is

(A) Increased serum gluatmine level
(B) Enlarged liver
(C) Mental retardation
(D) Increased carbamoyl phosphate synthetase level

272. Absence of the enzyme argininosuccinate synthetase causes

(A) Argininosuccinic aciduria
(B) Hyperargininemia
(C) Tricorrhexis nodosa
(D) Citrullinemia

273. Tricorrhexis nodosa is a characteristic finding of

(A) Argininosuccinic aciduria
(B) Citrullinemia
(C) Phenylketonuria
(D) Hyperargininemia

274. Elevated blood argininosuccinate level is found in

(A) Hyperargininemia
(B) Argininosuccinic aciduria
(C) Citrullinemia
(D) Tyrosinosis

275. Hyperargininemia, a defect in urea synthesis develops due to deficiency of the enzyme:

(A) Ornithine transcarbamoylase
(B) Argininosuccinase
(C) Arginase
(D) Argininosuccinate synthetase

276. Albinism is due to deficiency of the enzyme:

(A) Phenylalanine hydroxylase
(B) Tyrosinase
(C) p-Hydroxyphenylpyruvic acid oxidase
(D) Tyrosine dehydrogenase

277. Neonatal tyrosinemia is due to deficiency of the enzyme:

(A) p-Hydroxyphenylpyruvate hydroxylase
(B) Fumarylacetoacetate hydrolase
(C) Phenylalanine hydroxylase
(D) Tyrosine dehydrogenase

278. Which of the following is a substrate-specific enzyme?

(A) Hexokinase (B) Thiokinase
(C) Lactase (D) Aminopeptidase

279. Coenzymes combine with

(A) Proenzymes (B) Apoenzymes
(C) Holoenzymes (D) Antienzymes

280. Coenzymes are required in which of the following reactions?

(A) Oxidation-reduction
(B) Transamination
(C) Phosphorylation
(D) All of these

281. Which of the following coenzyme takes part in hydrogen transfer reactions?

(A) Tetrahydrofolate (B) Coenzyme A
(C) Coenzyme Q (D) Biotin

282. Which of the following coenzyme takes part in oxidation-reduction reactions?

(A) Pyridoxal phosphate
(B) Lipoic acid
(C) Thiamin diphosphate
(D) None of these

283. In conversion of glucose to glucose-6-phsophate, the coenzyme is

(A) Mg^{++}
(B) ATP
(C) Both (A) and (B)
(D) None of these

284. A coenzyme required in transamination reactions is

(A) Coenzyme A (B) Coenzyme Q
(C) Biotin (D) Pyridoxal phosphate

285. Coenzyme A contains a vitamin which is

(A) Thiamin (B) Ascorbic acid
(C) Pantothenic acid (D) Niacinamide

286. Cobamides contain a vitamin which is

(A) Folic acid (B) Ascorbic acid
(C) Pantothenic acid (D) Vitamin B_{12}

287. A coenzyme required in carboxylation reactions is

(A) Lipoic acid (B) Coenzyme A
(C) Biotin (D) All of these

288. Which of the following coenzyme takes part in tissue respiration?

(A) Coenzyme Q (B) Coenzyme A
(C) NADP (D) Cobamide

289. The enzyme hexokinase is a

(A) Hydrolase (B) Oxidoreductase
(C) Transferase (D) Ligase

290. Which of the following is a proteolytic enzyme?

(A) Pepsin (B) Trypsin
(C) Chymotrypsin (D) All of these

291. Enzymes which catalyse binding of two substrates by covalent bonds are known as

(A) Lyases (B) Hydrolases
(C) Ligases (D) Oxidoreductases

292. The induced fit model of enzyme action was proposed by

(A) Fischer (B) Koshland
(C) Mitchell (D) Markert

293. Allosteric inhibition is also known as

(A) Competitive inhibition
(B) Non-competitive inhibition
(C) Feedback inhibition
(D) None of these

294. An allosteric enzyme is generally inhibited by

(A) Initial substrate of the pathway
(B) Substrate analogues
(C) Product of the reaction catalysed by allosteric enzyme
(D) Product of the pathway

295. When the velocity of an enzymatic reaction equals V_{max}, substrate concentration is

(A) Half of K_m (B) Equal to K_m
(C) Twice the K_m (D) Far above the K_m

296. In Lineweaver-Burk plot, the y-intercept represents

(A) V_{max} (B) K_m
(C) K_m (D) $1/K_m$

297. In competitive inhibition, the inhibitor

(A) Competes with the enzyme
(B) Irreversibly binds with the enzyme
(C) Binds with the substrate
(D) Competes with the substrate

298 Competitive inhibitors

(A) Decrease the K_m (B) Decrease the V_{max}
(C) Increase the K_m (D) Increase the V_{max}

299. Competitive inhibition can be relieved by raising the

(A) Enzyme concentration
(B) Substrate concentration
(C) Inhibitor concentration
(D) None of these

300. Physostigmine is a competitive inhibitor of

(A) Xanthine oxidase
(B) Cholinesterase
(C) Carbonic anhydrase
(D) Monoamine oxidase

301. Carbonic anhydrase is competitively inhibited by

(A) Allopurinol (B) Acetazolamide
(C) Aminopterin (D) Neostigmine

302. Serum lactate dehydrogenase rises in

(A) Viral hepatitis
(B) Myocardial infarction
(C) Carcinomatosis
(D) All of these

303. Which of the following serum enzyme rises in myocardial infarction:

(A) Creatine kinase (B) GOT
(C) LDH (D) All of these

304. From the following myocardial infarction, the earliest serum enzyme to rise is

(A) Creatine Kinase (B) GOT
(C) GPT (D) LDH

305. Proenzymes:

(A) Chymotrysinogen (B) Pepsinogen
(C) Both (A) and (B) (D) None of these

306. Alkaline phosphatase is present in

(A) Liver (B) Bones
(C) Placenta (D) All of these

307. Which of the following isoenzyme of lactate dehydrogenase is raised in serum in myocardial infarction:

(A) LD_1 (B) LD_2
(C) LD_1 and LD_2 (D) LD_5

308. Enzymes which are always present in an organism are known as

(A) Inducible enzymes
(B) Constitutive enzymes
(C) Functional enzymes
(D) Apoenzymes

309. Inactive precursors of enzymes are known as

(A) Apoenzymes (B) Coenzymes
(C) Proenzymes (D) Holoenzymes

310. Whcih of the following is a proenzyme?

(A) Carboxypeptidase
(B) Aminopeptidase
(C) Chymotrypsin
(D) Pepsinogen

311. Allosteric enzymes regulate the formation of products by

(A) Feedback inhibition
(B) Non-competitive inhibition
(C) Competitive inhibition
(D) Repression-derepression

312 Regulation of some enzymes by covalent modification involves addition or removal of

(A) Acetate (B) Sulphate
(C) Phosphate (D) Coenzyme

313. Covalent modification of an enzyme generally requires a

(A) Hormone (B) cAMP
(C) Protein kinase (D) All of these

314. An inorganic ion required for the activity of an enzyme is known as

(A) Activator (B) Cofactor
(C) Coenzyme (D) None of these

315. The first enzyme found to have iso-enzymes was

(A) Alkaline Phosphatase
(B) Lactate dehydrogenase
(C) Acid Phosphatase
(D) Creatine kinase

316. Lactate dehydrogenase is located in

(A) Lysosomes (B) Mitochondria
(C) Cytosol (D) Microsomes

317. Lactate dehydrogenase is a

(A) Monomer (B) Dimer
(C) Tetramer (D) Hexamer

318. Ceruloplasmin is absent in

(A) Cirrhosis of liver (B) Wilson's disease
(C) Menke's disease (D) Copper deficiency

319. Ceruloplasmin oxidizes

(A) Copper (B) Iron
(C) Both (A) and (B) (D) None of these

320. Creatine kinase is present in all of the following except

(A) Liver (B) Myocardium
(C) Muscles (D) Brain

321. Alkaline phosphatase is present in

(A) Liver (B) Bones
(C) Intestinal mucosa (D) All of these

322. All of the following are zinc-containing enzymes except

(A) Acid Phosphatase
(B) Alkaline Phosphatase
(C) Carbonic anhydrase
(D) RNA polymerase

323. All of the following are iron-containing enzymes except

(A) Carbonic anhydrase
(B) Catalase
(C) Peroxidase
(D) Cytochrome oxidase

324. Biotin is a coenzyme for

(A) Pyruvate dehydrogenase
(B) Pyruvate carboxylase
(C) PEP carboxykinase
(D) Glutamate pyruvate transminase

325. Enzymes accelerate the rate of reactions by

(A) Increasing the equilibrium constant of reactions
(B) Increasing the energy of activation
(C) Decreasing the energy of activation
(D) Decreasing the free energy change of the reaction

326. Kinetics of an allosteric enzyme are explained by

(A) Michaelis-Menten equation
(B) Lineweaver-Burk plot
(C) Hill plot
(D) All of these

327. Covalent modification of an enzyme usually involves phosphorylation / dephosphorylation of

(A) Serine residue
(B) Proline residue
(C) Hydroxylysine residue
(D) Hydroxyproline residue

328. V_{max} of an enzyme may be affected by

(A) pH
(B) Temperature
(C) Non-competitive inhibitors
(D) All of these

329. In enzyme assays, all the following are kept constant except

(A) Substrate concentration
(B) Enzyme concentration
(C) pH
(D) Temperature

330. If the substrate concentration is much below the km of the enzyme, the velocity of the reaction is

(A) Directly proportional to substrate concentration
(B) Not affected by enzyme concentration
(C) Nearly equal to V_{max}
(D) Inversely proportional to substrate concentration

331. Enzymes requiring NAD as co-substrate can be assayed by measuring change in absorbance at

(A) 210 nm (B) 290 nm
(C) 340 nm (D) 365 nm

332. Different isoenzymes of an enzyme have the same

(A) Amino acid sequence
(B) Michaelis constant
(C) Catalytic activity
(D) All of these

333. From the pentapeptide, phe-ala-leu-lys-arg, phenylalanine residue is split off by

(A) Trypsin (B) Chymotrypsin
(C) Aminopeptidase (D) Carboxypeptidase

334. A high-energy phosphate among the following is

(A) Glucose-6-phosphate
(B) Glucose-1-phosphate
(C) 1, 3-Biphoglycerate
(D) All of these

335. The highest energy level is present amongst the following in

(A) 1, 3-Biphosphoglycerate
(B) Creatine phosphate
(C) Carbamoyl phosphate
(D) Phosphoenol pyruvate

336. Daily urinary urobilinogen excretion in adult men is

(A) 0–4 mg (B) 5–8 mg
(C) 9–12 mg (D) 13–20 mg

337. In obstructive jaundice, faecal urobilinogen is

(A) Absent (B) Decreased
(C) Increased (D) Normal

338. Acetyl-CoA can be formed from

(A) Pyruvate (B) Fatty acids
(C) ketone bodies (D) All of these

339. Pyruvate is converted into acetyl-CoA by

(A) Decarboxylation
(B) Dehydrogenation
(C) Oxidative decarboxylation
(D) Oxidative deamination

340. Conversion of pyruvate into acetyl CoA is catalysed by

(A) Pyruvate dehydrogenase
(B) Didrolipoyl acetyl transferase
(C) Dihydrolipoyl dehydrogenase
(D) All the 3 acting in concert

341. Pyruvate dehydrogenase complex is located in

(A) Cytosol
(B) Lysosomes
(C) Mitochondria
(D) Endoplasmic reticulum

342. A flavoprotein in pyruvate dehydrogenase complex is

(A) Pyruvate dehydrogenase
(B) Didrolipoyl acetyl transferase
(C) Dihydrolipoyl dehydrogenase
(D) None of these

343. Pyruvate dehydrogenase complex is regulated by

(A) Covalent modification
(B) Allosteric regulation
(C) Both (A) and (B)
(D) None of these

344. An allosteric inhibitor of pyruvate dehydrogenase is

(A) Acetyl CoA (B) ATP
(C) NADH (D) Pyruvate

345. Ribozymes:

(A) RNA enzyme (B) Non-protein enzymes
(C) Catalyst function (D) All of these

346. In citric acid cycle, NAD is reduced in

(A) One reactions (B) Two reactions
(C) Three reactions (D) Four reactions

347. Among citric acid cycle enzymes, a flavoprotein is

(A) Malate
(B) Fumarase
(C) Succinate dehrogenase
(D) Isocitrate dehrogenase

348. In citric acid cycle, GDP is phosphorylated by

(A) Succinate dehydrogenase
(B) Aconitase
(C) Succinate thiokinase
(D) Fumarse

349. Malonate is an inhibitor of

(A) Malate dehydrogenase
(B) α-Ketoglutarate dehydrogenase
(C) Succinate dehydrogenase
(D) Isocitrate dehydrogenase

350. Isocitrate dehydrogenase is allosterically inhibited by

(A) Oxalosuccinate (B) α-Ketoglutarate
(C) ATP (D) NADH

351. All of the following are allosteric enzymes except

(A) Citrate synthetase
(B) a-Ketoglutarate dehdrogenase
(C) Succinate thiokinase
(D) Succinate dehydrogenase

352. All of the following are intermediates of citric acid cycle except

(A) Oxalosuccinate (B) Oxaloacetate
(C) Pyruvate (D) Fumarate

353. All of the following intermediates of citric acid cycle can be formed from amino acids except

(A) α-Ketoglutarate (B) Fumarate
(C) Malate (D) Oxaloacetate

354. Glycolytic pathway is located in

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

355. End product of aerobic glycolysis is

(A) Acetyl CoA (B) Lactate
(C) Pyruvate (D) CO_2 and H_2O

356. During fasting, glucose is phosphorylated mainly by

(A) Hexokinase (B) Glucokinase
(C) Both (A) and (B) (D) None of these

357. Glucokinase is found in

(A) Muscles (B) Brain
(C) Liver (D) All of these

358. In anaerobic glycolysis, energy yield from each molecule of glucose is

(A) 2 ATP equivalents (B) 8 ATP equivalents
(C) 30 ATP equivalents (D) 38 ATP equivalents

359. Which of the following is an allosteric enzyme?

(A) Phosphohexose isomerase
(B) Phosphotriose isomerase
(C) Lactate dehydrogenase
(D) Phosphofructokinase

360. Glycolysis is anaerobic in

(A) Liver (B) Brain
(C) Kidneys (D) Erythrocytes

361. Phosphofructokinase is allosterically inhibited by

(A) Fructose-1, 6-biphosphate
(B) Lactate
(C) Pyruvate
(D) Citrate

362. Glucose-6-phosphate is an allosteric inhibitor of

(A) Glucokinase
(B) Hexokinase
(C) Phosphohexose isomerase
(D) None of these

363. ATP is a co-substrate as well as an allosteric inhibitor of

(A) Phosphofructokinase
(B) Hexokinase
(C) Glucokinase
(D) None of these

364. Complete oxidation of one molecule of glucose into CO_2 and H_2O yields

(A) 8 ATP equivalents
(B) 15 ATP equivalents
(C) 30 ATP equivalents
(D) 38 ATP equivalents

365. A unique by-product of glycolysis in erythrocytes is

(A) Lactate
(B) 1, 3-Biphosphoglycerate
(C) 2, 3-Biphosphoglycerate
(D) All of these

366. Which of the following enzymes incorporates inorganic phosphate into the substrate?

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

367. Rapoport-Luebering cycle is located in

(A) Liver (B) Muscles
(C) Brain (D) Erythrocytes

368. Glycerol can enter glycolytic pathway via

(A) Dihydroxyacetone phosphate
(B) 1, 3-Biphospoglycerate
(C) 3-Phosphoglycerate
(D) 2-Phosphoglycerate

369. HMP shunt is present in

(A) Erythrocytes (B) Liver
(C) Testes (D) All of these

370. Glucose-6-phosphate dehydrogenase is induced by

(A) 6-Phosphogluconolactone
(B) Glucose-6-phosphate
(C) Ribose-5-phosphate
(D) Insulin

371. The decarboxylation reaction in HMP shunt is catalysed by

(A) Gluconolactone hydrolase
(B) 6-Phosphogluconate dehydrogenase
(C) 6-Phosphogluconate decarboxylase
(D) Transaldolase

372. The first pentose formed in HMP shunt is

(A) Ribose-5-phosphate (B) Ribulose-5-phosphate
(C) Xylose-5-phosphate (D) Xylulose-5-phosphate

373. The regulatory enzyme in HMP shunt is

(A) Glucose-6-phosphate dehydrogenase
(B) 6-Phosphogluconate dehydrogenase
(C) Both (A) and (B)
(D) None of these

374. The rate of HMP shunt reactions is

(A) Increased by Insulin
(B) Increased in diabetes mellitus
(C) Increased by glucagons
(D) Increased in starvation

375. Glycogenesis requires

(A) GTP (B) CTP
(C) UTP (D) None of these

376. Glycogen synthetase catalyses the formation of

(A) α–1, 4-Glycosidic bonds
(B) α–1, 6-Glycosidic bonds
(C) Both (A) and (B)
(D) None of these

377. Glycogenoloysis is increased by

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

378. Hepatic glycogenoloysis is increased by

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

379. Glycogen phosphorylase liberates the following from glycogen

(A) Glucose
(B) Glucose-6-phosphate
(C) Glucose-1-phosphate
(D) Maltose

380. After the action of phosphorylase, glycogen is converted into

(A) Amylopectin (B) dextrin
(C) Amylose (D) Maltose

381. Glucose-1-phosphate liberated from glycogen cannot be converted into free glucose in

(A) Liver (B) Kidneys
(C) Muscles (D) Brain

382. A coenzyme present in phosphorylase is

(A) NAD
(B) Pyridoxal phosphate
(C) Thiamin pyrophosphate
(D) Coenzyme A

383. If glucose-1-phosphate formed by glycogenoloysis in muscles is oxidized to CO_2 and H_2O, the energy yield will be

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

384. A molecule of phosphorylase kinase is made up of

(A) 4 subunits (B) 8 subunits
(C) 12 subunits (D) 16 subunits

385. Cyclic AMP binds to

(A) Catalytic subunits of protein kinase
(B) Regulatory subunits of protein kinase
(C) Catalytic subunits of phosphorylase kinase
(D) Regulatory subunits of phosphorylase kinase

386. Glucose is the only source of energy for

(A) Myocardium (B) Kidneys
(C) Erythrocytes (D) Thrombocytes

387. Glycerol-3-phosphate for the synthesis of triglycerides in adipose tissue is derived from

(A) Phosphatidic acid (B) Diacylglycerol
(C) Glycerol (D) Glucose

388. Gluconeogenesis does not occur in

(A) Brain (B) Kidneys
(C) Muscles (D) Liver

389. Glucose cannot be synthesized from

(A) Glycerol (B) Lactate
(C) Alanine (D) Leucine

390. Coenzyme for phosphoenolpyruvate carboxykinase is

(A) ATP (B) ADP
(C) GTP (D) GDP

391. Therapeutic enzymes:

(A) Streptokinase (B) Asparaginase
(C) Riboflavinase (D) Both (A) and (B)

392. A gluconeogenic enzyme among the following is

(A) Phosphofructokinase
(B) Pyruvate kinase
(C) Phosphoenol pyruvate carboxykinase
(D) Glucokinase

393. Glucose-6-phosphatase and PEP carboxy kinase are regulated by

(A) Covalent modification
(B) Allosteric regulation
(C) Induction and repression
(D) All of these

394. The maximum possible chain length of fatty acids formed in the pathway of de novo synthesis is

(A) 16 Carbon atoms (B) 18 Carbon atoms
(C) 20 Carbon atoms (D) 24 Carbon atoms

395. Acetyl CoA required for de novo synthesis of fatty acids is obtained from

(A) Breakdown of existing fatty acids
(B) Ketone bodies
(C) Acetate
(D) Pyruvate

396. Formation of acetyl CoA from pyruvate for de novo synthesis of fatty acids requires

(A) Pyruvate dehydrogenase complex
(B) Citrate synthetase
(C) ATP citrate lyase
(D) All of these

397. The major site for elongation of medium chain fatty acids is

(A) Mitochondria (B) Cytosol
(C) Microsomes (D) All of these

398. β-oxidation of fatty acids is inhibited by

(A) NADPH (B) Acetyl CoA
(C) Malonyl CoA (D) None of these

399. The enzyme regulating extramitochondrial fatty acid synthesis is

(A) Thioesterase
(B) Acetyl CoA carboxylase
(C) Acyl transferase
(D) Multi-enzyme complex

400. Acetyl CoA carboxylase is activated by

(A) Citrate (B) Insulin
(C) Both (A) and (B) (D) None of these

401. All the following statements about acetyl CoA carboxylase are true except:

(A) It is activated by citrate
(B) It is inhibited by palmitoyl CoA
(C) It can undergo covalent modification
(D) Its dephosphorylated form is inactive

402. All the following statements about acetyl CoA carboxylase are true except

(A) It is required for de novo synthesis of fatty acids
(B) It is required for mitochondrial elongation of fatty acids
(C) It is required for microsomal elongation of fatty acids
(D) Insulin converts its inactive form into its active form

403. Both Acyl carrier protein (ACP) of fatty acid synthetase and coenzyme (CoA) are

(A) Contain reactive phosphorylated
(B) Contain thymidine
(C) Contain phosphopantetheine reactive groups
(D) Contain cystine reactive groups

404. Which one of the following transfers acyl groups?

(A) Thiamine pyrophosphate
(B) Lipomide
(C) ATP
(D) NADH

405. Which one of the following cofactors must be utilized during the conversion of acetyl CoA to malonyl CoA?

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

406. Which one of the following enzymes requires a coenzyme derived from the vitamin whose structure is shown below?

(A) Enoyl CoA hydratase
(B) Phosphofructokinase
(C) Glucose-6-phosphatase
(D) Glucose-6-phosphate dehydrogenase

407. Coenzymes derived from the vitamin shown below are required by enzymes involved in the synthesis of which of the following?

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

408. Coenzymes derived from the vitamin shown below are required by which of the following enzymes?

(A) Lactate dehydrogenase
(B) Glutamate dehydrogenase
(C) Pyruvate dehydrogenase
(D) Malate dehydrogenase

409. All the following are coenzymes except

(A) Ubiquinone
(B) CoA
(C) Pyruvate dehydrogenase
(D) Lipoic acid

410. Which of the following is not a cofactor?

(A) Mg (B) Iron
(C) Cu (D) Methylcobalamine

411. All the following compounds are members of the electron transport chain except

(A) Ubiquinone (B) Carnitine
(C) NAD (D) FAD

412. Thiamine is essential for

(A) Pyruvate dehydrogenase
(B) Isocitrate dehydrogenase
(C) Succinate dehydrogenase
(D) Acetyl CoA synthetase

413. Adenylate cyclase is activated by

(A) Insulin (B) Glucagon
(C) Prostaglandin E_1 (D) Ca^{2+} ions

414. Maximum enzyme activity is observed at

(A) Acidic pH (B) Neutral pH
(C) Basic pH (D) Optimum pH

415. Which of the following is known as bone forming enzyme?

(A) Alkaline phosphatase
(B) Acid phosphatase
(C) Leucine aminopeptidase
(D) γ-glutamyl transpeptidase

416. Conversion of pepsinogen to pepsin is

(A) Intra molecular rearrangement
(B) Breaking of hydrogen bonds
(C) Covalent modification
(D) Polymerisation

417. Which of the following is not having an apoenzyme and coenzyme?

(A) Lactate dehydrogenase
(B) Succinate dehydrogenase
(C) Malate dehydrogenase
(D) Pepsin

418. Pyruvate dehydrogenase is a/an

(A) Isomerase (B) Lyase
(C) Ligase (D) Oxido reductase

419. Homogentisic oxidase is an

(A) Oxidase
(B) Monooxygenase
(C) Dioxygenase
(D) Anaerotic dehydrogenase

420. Isocitrate dehydrogenase can use _____ as a cofactor.

(A) NAD^+ only (B) $NADP^+$ only
(C) NAD^+ or $NADP^+$ (D) FMN and FAD

421. The rate of most enzyme catalysed reactions changes with pH. As the pH increases, this rate

(A) reaches a minimum, then increases
(B) reaches a maximum, then decreases
(C) increases
(D) decreases

422. A substrate for the enzyme aldolase is

(A) galactose-6-phosphate
(B) isocitric acid
(C) Glucose-1-phosphate
(D) Fructose 1, 6 diphosphate

423. Decarboxylation of α-keto acids requires

(A) Thiamine pyrophosphate, FAD, NAD^+
(B) Flavin mononucleotide
(C) $NADP^+$
(D) NAD^+ only

424. Coenzyme A contains the vitamin:

(A) Riboflavin (B) Pantothenic acid
(C) Pyridoxine (D) Thiamine

425. Which of the following is not a component of coenzyme A?

(A) Adenylic acid
(B) Pantothenic acid
(C) β-mercaptoethylamine
(D) Deoxyadenylic acid

426. Malic enzyme convers malic acid, in the presence of $NADP^+$ to Pyruvic acid. This reaction is a/an

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

427. The following reaction is characteristic of what type of enzymes?

$2H_2O_2 \rightarrow {}_2H_2O + O_2$

(A) Peroxides
(B) Catalase
(C) Dehydrogenase
(D) Copper containing oxidases

428. Of Which warburg's yellow enzyme contains as a prosthetic group?

(A) Thiamine pyrophosphate
(B) Biotin
(C) NAD^+
(D) Riboflavin-5-phosphate

429. Dehydrogenases utilize, as coenzymes, all of the following except

(A) NAD^+ (B) $NADP^+$
(C) FAD (D) FH_4

430. Urea is produced physiologically by the action of the enzyme:

(A) Urease (B) Glutaminase
(C) Arginase (D) None of these

431. Urease is a

(A) Lyase (B) Ligase
(C) Isomerase (D) Hydrolase

432. Velocity maximum for an enzyme at half the substrate concentration gives

(A) The molecular weight of the enzyme
(B) Km value
(C) Isoelectric pH
(D) Pk value

433. Which of the following amino acid has been shown as one of the active site of phosphoglucomutase?

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

434. The inhibition of succinate dehydrogenase by malonate by

(A) Competitive inhibition
(B) Non-competitive inhibition
(C) Uncompetitive inhibition
(D) Feedback inhibition

435. Cobamide coenzymes are

(A) Vitamin B_1 (B) Riboflavin
(C) Pyridoxine (D) Vitamin B_{12}

436. The isozyme CK-MB is specifically increased in the blood of patients who had

(A) Skeletal muscle disease
(B) Recent myocardial infarction
(C) Infective hepatitis
(D) Myxoedema

437. FAD containing enzyme, catalyzing formation of α, β unsaturated fatty acyl CoA derivative.

(A) Acyl CoA dehydrogenase
(B) Enoyl hydrase
(C) β-OH acyl CoA dehydrogenase
(D) Thiolase

438. Immobilized enzymes:

(A) Potentiation of activity
(B) Presentation of activity
(C) Preparation of activity
(D) All of these

439. This catalyzes formation of CoA derivatives from fatty acid, CoA and ATP:

(A) Acyl CoA dehydrogenase
(B) Enoyl hydrase
(C) β-OH acyl CoA dehydrogenase
(D) Thio kinase

440. Fructose 2, 3 bi phosphate is a powerful allosteric activator of

(A) Fructose 1, 6 diphosphatase
(B) Phosphofructokinase
(C) Hexokinase
(D) Fructokinase

441. 'Clearing factor' is

(A) Lipoprotein lipase
(B) Crotonase
(C) 7-dehydro cholesterol
(D) β-sitosterol

442. Maltase attacks only

(A) α-glucosides (B) β-glucosides
(C) Starch (D) Dextrins

443. Pepsin is

(A) Exo-peptidase (B) Endo-peptidase
(C) Carboxy peptidase (D) Amino peptidase

444. An enzyme in saliva which hydrolyzes starch is

(A) Pepsinogen (B) Chymotrysin
(C) α-Amylase (D) Malate

445. If a coenzyme is required in an enzyme reaction, the former usually has the function of

(A) Acting as an acceptor for one of the cleavage products of the substrate
(B) Enhancing the specificity of the apo enzyme
(C) Increasing the number of receptor sites of the apo enzyme
(D) Activating the substrate

446. The Michaehis-Menten hypothesis:

(A) Postulates the formation of an enzyme substrate complex
(B) Enables us to calculate the isoelectric point of an enzyme
(C) States that the rate of a chemical reaction may be independent of substrate concentration
(D) States that the reaction rate is proportional to substrate concentration

447. Schardinger's enzyme is

(A) Lactate dehydrogenase
(B) Xanthine dehydrogenase
(C) Uric oxidase
(D) L amino acid dehydrogenase

448. Tryptophan pyrolase is currently known as

(A) Tryptophan deaminase
(B) Tryptophan dioxygenase
(C) Tryptophan mono oxygenase
(D) Tryptophan decarboxylase

449. An enzyme which brings about lysis of bacterial cell wall is

(A) Amylase (B) Lysozyme
(C) Trypsin (D) Lipase

450. Trypsin has no action on

(A) Hemoglobin (B) Albumin
(C) Histone (D) DNA

451. Multiple forms of the same enzymes are known as

(A) Zymogens (B) Isoenzymes
(C) Proenzymes (D) Pre-enzymes

452. In non-competitive enzyme action

(A) V_{max} is increased
(B) Apparent k_m is increased
(C) Apparent k_m is decreased
(D) Concentration of active enzyme molecule is reduced

453. An allosteric enzyme influences the enzyme activity by

(A) Competiting for the catalytic site with the substrate
(B) Changing the specificity of the enzyme for the substrate
(C) Changing the conformation of the enzyme by binding to a site other than catalytic site
(D) Changing the nature of the products formed

454. Which of the following regulatory reactions involves a reversible covalent modification of an enzyme?

(A) Phosphorylation of serine OH on the enzyme
(B) Allosteric modulation
(C) Competitive inhibition
(D) Non-competitive inhibition

455. A competitive inhibitor of an enzyme has which of the following properties?

(A) It is frequently a feedback inhibitor
(B) It becomes covalently attached to an enzyme
(C) It decreases the V_{max}
(D) It interferes with substrate binding to the enzyme

456. When [s] is equal to K_m, which of the following conditions exist?

(A) Half the enzyme molecules are bound to substrate
(B) The velocity of the reaction is equal to Vmax
(C) The velocity of the reaction is independent of substrate concentration
(D) Enzyme is completely saturated with substrate

457. Which of the following statements about an enzyme exhibiting allosteric kinetics with cooperative interaction is false?

(A) A plot of V-V_k [s] has a sigmaidal shape
(B) An inhibitor may increase the apparent K_m
(C) Line weaver Bnrk plot is useful for determining K_m and V_{max}
(D) Removal of allosteric inhibitor may result in hyperbolic V-S [s] plot

458. Pantothenic acid acts on

(A) NADP (B) NADPH
(C) FAD (D) CoA

459. Vitamin deficiency that causes fatty liver includes all except

(A) Vitamin E (B) Pyridoxine
(C) Retionic acid (D) Pantothenic acid

460. In which of the following types of enzymes an inducer is not required?

(A) Inhibited enzyme (B) Cooperative enzyme
(C) Allosteric enzyme (D) Constitutive enzyme

461. In which of the following types of enzyme water may be added to a C—C double bond without breaking the bond?

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

462. 'Lock' and 'Key' model of enzyme action proposed by Fisher implies that

(A) The active site is flexible and adjusts to substrate
(B) The active site requires removal of PO_4 group
(C) The active site is complementary in shape to that of the substrate
(D) Substrates change conformation prior to active site interaction

463. In competitive inhibition of enzyme action

(A) The apparent K_m is decreased
(B) The apparent K_m is increased
(C) V_{max} is decreased
(D) Apparent concentration of enzyme molecules decreased

464. In competitive inhibition which of the following kinetic effect is true ?

(A) Decreases both K_m and V_{max}
(B) Increases both K_m and V_{max}
(C) Decreases K_m without affecting V_{max}
(D) Increases K_m without affecting V_{max}

465. Enzymes increase the rates of reactions by

(A) Increasing the free energy of activation
(B) Decreasing the energy of activation
(C) Changing the equilibrium constant of the reaction
(D) Increasing the free energy change of the reaction

466. The most useful test for the diagnosis of acute hemorrhagic pancreatitis during the first few days is

(A) Urinary lipase test (B) Serum calcium
(C) Urinary amylase (D) Serum amylase

467. The best test for acute pancreatitis in the presence of mumps is

(A) A serological test for mumps
(B) Serum amylase
(C) Urinary amylase
(D) Serum lipase

468. The slow moving fraction of LDH is typically increased in pancreas with

(A) Cerebrovascular accidents
(B) Acute myocardial infarction
(C) Acute pancreatitis
(D) Acute viral hepatits

469. Which of the following enzyme typically elevated in alcoholism?

(A) Serum ALP
(B) Serum GOT
(C) Serum γ-GT
(D) Serum acid phosphatase

470. Patients with hepatocellular jaundice, as compared to those with purely obstructive jaundice tend to have

(A) Lower serum ALP, LDH and AST activity
(B) Lower serum ALP, Higher LDH and AST activity
(C) Higher serum ALP, LDH and AST activity
(D) Higher serum ALP, Lower LDH and AST activity

471. If results of the serum bilirubin, serum ALP, LDH and AST determinations suggest obstructive jaundice, the best confirmatory test would be the estimation of

(A) Serum ALT
(B) Serum 5' nucleotidase
(C) Serum Pseudo cholinesterase
(D) None of these

472. Which enzyme estimation will be helpful in differentiating the elevated serum ALP found in obstructive jaundice as well as bone disorders?

(A) Serum AST (B) Serum ALT
(C) Serum LDH (D) Serum γ-GT

473. Cardiac muscle contains which of the following CK osoenzyme?

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

474. Liver and skeletol measle disorders are characterized by on disk proportionate increase in which of the LDH isoenzyme fraction?

(A) LDH-1 (B) LDH-1 and LDH-2
(C) LDH-3 and LDH-4 (D) LDH-2 and LDH-3
(E) LDH-5

475. On the third day following onset of acute myocardial infarction, which enzyme estimation will have the best predictive value?

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

476. Serum AST activity is not characteristically elevated as the result of

(A) Myocardial infarction
(B) Passive congestion of liver
(C) Muscular dystrophies
(D) Peptic ulcer

477. On which day following acute myocardial infarction the estimation of serum AST will be of greatest significance?

(A) First day (B) Second day
(C) Third day (D) Fourth day

478. In which diseases of the following organs, isoenzymes LDH-1 and LDH-2 will be released in plasma?

(A) Kidney, R.B.C and Liver
(B) Heart, Kidney and R.B.C
(C) Heart, Kidney and Liver
(D) Heart, Lungs and Brain

479. Plasma non-functional enzymes are

(A) totally absent
(B) low concentration in plastic
(C) important for diagnosis of several disease
(D) All of these

480. Pyruvate dehydrogenase contains all except

(A) Biotin (B) NAD
(C) FAD (D) CoA

481. An increase in LDH-5 enzyme is seen in the following except

(A) Acute hepatitis (B) Muscular distrophies
(C) Breast carcinoma (D) Pulmonary embolism

482. Diastase can be used for the hydrolysis can be used for the hydrolysis of

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

483. Which of the following statements is true?

(A) Enzymes have names ending ase
(B) Enzymes are highly specific in their action
(C) Enzymes are living organisms
(D) Enzymes get activated on heating

484. Enzymes activity is controlled by

(A) pH of the solution
(B) Temperature
(C) Concentration of the enzyme
(D) Concentration of the substrate
(E) All of these

485. Which of the following is not true regarding enzymes?

(A) They catalyze only a particular type of reaction
(B) They remain active even after separation from the source
(C) They are destroyed after the completion of the reaction they catalyse
(D) They are irreversibly destroyed at high temperature
(E) Their activity depends on the pH of the solution

486 The number of enzymes known is about

(A) 10,000 (B) 100
(C) 50 (D) 26

487. Nicotine present in tobacco is a/an

(A) Alkaloid (B) Terpene
(C) Steroid (D) Protein

488. The poisonous alkaloid present in the oil of hemlock is

(A) Cocaine (B) Nicotine
(C) Quinine (D) Morphine

489. Alkaloids are usually purified by extraction with

(A) Ether (B) Dil HCl
(C) NaOH (D) Chloroform

490. The number of N-MC groups in alkaloids is best estimate with the help of

(A) HI (B) H_2SO_4
(C) $(CH_3CO)_2CO$ (D) CH_3 Mg I

491. A 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 both V_{max} and Km

492. The Michaelis constant, K_m is

(A) Numerically equal to ½ V_{max}
(B) Dependent on the enzyme concentration
(C) Independent of pH
(D) Numerically equal to the substrate concentration that gives half maximal velocity

493. The rate of an enzyme catalyzed reaction was measured using several substrate concentrations that were much lower than K_m, the dependence of reaction velocity on substrate concentration can best be described as

(A) Independent of enzyme concentration
(B) A constant fraction of V_{max}
(C) Equal to K_m
(D) Proportional to the substrate concentration

494. The presence of a non competitive inhibitor

(A) Leads to both an increase in the V_{max} of a reaction and an increase in K_m
(B) Leads to a decrease in the observed Vmax
(C) Leads to a decrease in K_m and V_{max}
(D) Leads to an increase in K_m without affecting V_{max}

495. Which one of the following statements is not characteristic of allosteric enzymes?

(A) They frequently catalyze a committed step early in a metabolic pathway
(B) They are often composed of subunits
(C) They follow Michaelis-Menten kinetics
(D) They frequently show cooperativity for substrate binding

496. The abnormal isoenzyme need not

(A) Be an oxidoreductase
(B) Have any coenzyme
(C) Require ATP
(D) Be localized intracellularly
(E) Be a catalyst

497. LDH assays are most useful in diagnosing diseases of the

(A) Heart (B) Pancreas
(C) Brain (D) Kidney

498. The chemical forces that bind most coenzymes and substrates to enzymes such as LDH are

(A) Hydrogen bonds (B) Peptide bonds
(C) Coordinate bonds (D) Covalent bonds

499. How many different proteins may be present in normal LDH?

(A) One (B) Two
(C) Three (D) Four

500. All the isoenzymes function with the coenzyme:

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

501. 'Lock' and 'Key' theory was proposed by

(A) Sorenson (B) Fischer
(C) Mehler (D) Sanger

502. Which of the following forms part of a coenzyme?

(A) Zn^{2+} (B) Lipase
(C) Vitamin B_2 (D) Lysine

503. The shape of an enzyme and consequently its activity can be reversibly altered from moment to moment by

(A) Heat (B) Amino acid substrate
(C) Allosteric subunits (D) Sulfur substitutions

504. Which one of the following regulatory actions involves a reversible covalent modification of the enzyme?

(A) Phosphorylation of ser-OH on the enzyme
(B) Allosteric modulation
(C) Competitive inhibition
(D) Non-competitive inhibition

505. An enzyme is a

(A) Carbohydrate (B) Lipid
(C) Protein (D) Nucleic acid

506. An enzyme promotes a chemical reaction by

(A) Lowering the energy of activation
(B) Causing the release of heat which acts as a primer
(C) Increasing molecular motion
(D) Changing the free energy difference between substrate and product

507. In most metabolic pathways, all needed enzymes are arranged together in a multienzyme complex within a

(A) Solution of ATP
(B) Membrane
(C) Quanternary protein
(D) Coenzyme

508. An enzyme catalyzes the conversion of an aldose sugar to a ketose sugar would be classified as one of the

(A) Transferases (B) Isomerases
(C) Oxido reductases (D) Hydrolases

509. The function of an enzyme is to

(A) Cause chemical reactions that would not otherwise take place
(B) Change the rates of chemical reactions
(C) Control the equilibrium points of reactions
(D) Change the directions of reactions

510. In which of the following types of enzymes, water may be added to a C—C double bond without breaking the bond?

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

511. Enzymes increases the rate of reactions by

(A) Increasing the free energy of activation
(B) Decreasing the energy of activation
(C) Changing the equilibrium constant of the reaction
(D) Increasing the free energy change of the reaction

512. The active site of an enzyme is formed by a few of the enzymes:

(A) R groups of the amino acids
(B) Amino groups of the amino acids
(C) Carboxyl group of the amino acids
(D) Exposed sulfur bonds

513. Allosteric enzymes contain

(A) Multiple subunits (B) Single chain
(C) Two chains (D) Three chains

514. Isoenzymes of lactate dehydrogenase are useful for the diagnosis of

(A) Heart disease (B) Kidney disease
(C) Liver disease (D) Both (A) and (C)

515. IUB had divided enzymes into how many classes?

(A) 6 (B) 5
(C) 8 (D) 4

516. The first enzyme isolated, purified and crystallied from Jack bean (Canavalia) by summer in 1926 was

(A) Urease (B) Insulin
(C) Ribonuclease (D) Zymase

517. Who suggested that enzymes are proteinaceous?

(A) Buchner (B) Kuhne
(C) Sumner (D) Pasteur

518. Feedback inhibition of enzyme action is affected by

(A) Enzyme (B) Substrate
(C) End products (D) None of these

519. The enzyme that converts glucose to glucose-6-phosphate is

(A) Phosphatase (B) Hexokinase
(C) Phosphorylase (D) Glucose synthetase

520. Enzymes are required in traces because they

(A) Have high turnover number
(B) Remain unused at the end of reaction and are re used
(C) Show cascade effect
(D) All correct

521. An organic substance bound to an enzyme and essential for the activity of enzyme is called

(A) Holoenzyme (B) Apoenzyme
(C) Coenzyme (D) Isoenzyme

522. Enzyme catalysed reactions occur in

(A) Pico seconds (B) Micro seconds
(C) Milli seconds (D) None of these

523. An enzyme can accelerate a reaction up to

(A) 10^{10} times (B) 10^{1} times
(C) 10^{100} times (D) 10 times

524. In plants, enzymes occur in

(A) Flowers only (B) Leaves only
(C) All living cells (D) Storage organs only

525. Zymogen is a

(A) Vitamin (B) Enzyme precursor
(C) Modulator (D) Hormone

526. Cofactor (Prosthetic group) is a part of holoenzyme, it is

(A) Inorganic part loosely attached
(B) Accessory non-protein substance attached firmly
(C) Organic part attached loosely
(D) None of these

527. A protein having both structural and enzymatic traits is

(A) Myosin (B) Collagen
(C) Trypsin (D) Actin

528. Enzymes are different from catalysts in

(A) Being proteinaceous
(B) Not used up in reaction
(C) Functional at high temperature
(D) Having high rate of diffusion

529. Enzymes, vitamins and hormones are common in

(A) Being proteinaceous
(B) Being synthesized in the body of organisms
(C) Enhancing oxidative metabolism
(D) Regulating metabolism

530. Dry seeds endure higher temperature than germinating seeds as

(A) Hydration is essential for making enzymes sensitive to temperature
(B) Dry seeds have a hard covering
(C) Dry seeds have more reserve food
(D) Seedlings are tender

531. Coenzymes FMN and FAD are derived from vitamin

(A) C (B) B_6
(C) B_1 (D) B_2

532. Template/lock and key theory of enzyme action is supported by

(A) Enzymes speed up reaction
(B) Enzymes occur in living beings and speed up certain reactions
(C) Enzymes determine the direction of reaction
(D) Compounds similar to substrate inhibit enzyme activity

533. Combination of apoenzyme and coenzyme produces

(A) Prosthetic group
(B) Holoenzyme
(C) Enzyme substrate complex
(D) Enzyme product complex

534. Enzyme inhibition caused by a substance resembling substrate molecule is

(A) Competitive inhibition
(B) Non-competitive inhibition
(C) Feedback inhibition
(D) Allosteric inhibition

535. An enzyme brings about

(A) Decrease in reaction time
(B) Increase in reaction time
(C) Increase in activation energy
(D) Reduction in activation energy

536. Feedback inhibition of enzyme is influenced by

(A) Enzyme (B) External factors
(C) End product (D) Substrate

537. Coenzyme is

(A) Often a vitamin (B) Always an inorganic compound
(C) Always a protein (D) Often a metal

538. Genetic engineering requires enzyme:

(A) DNA ase
(B) Amylase
(C) Lipase
(D) Restriction endonuclease

539. Which is not true about inorganic catalysts and enzymes?

(A) They are specific
(B) Inorganic catalysts require specific not needed by enzymes
(C) They are sensitive to pH
(D) They speed up the rate of chemical reaction

540. Key and lock hypothesis of enzyme action was given by

(A) Fischer (B) Koshland
(C) Buchner (D) Kuhne

541. An example of feedback inhibition is

(A) Allosteric inhibition of hexokinase by glucose-6-phosphate
(B) Cyanide action on cytochrome
(C) Sulpha drug on folic acid synthesizer bacteria
(D) Reaction between succinic dehydrogenase and succinic acid

542. Feedback term refers to

(A) Effect of substrate on rate of enzymatic reaction
(B) Effect of end product on rate reaction
(C) Effect of enzyme concentration on rate of reaction
(D) Effect of external compound on rate of reaction

543. Allosteric inhibition

(A) Makes active site unifit for substrate
(B) Controls excess formation and end product
(C) Both (A) and (B)
(D) None of these

544. The ratio of enzyme to substrate molecules can be as low as

(A) 1 : 100,000 (B) 1 : 500,000
(C) 1 : 10,000 (D) 1 : 1,000

545. Vitamin B_2 is component of coenzyme:

(A) Pyridoxal phosphate
(B) TPP
(C) NAD
(D) FMN/FAD

546. K_m value of enzyme is substrate concentration at

(A) ½ V_{max} (B) 2 V_{max}
(C) ½ V_{max} (D) 4 V_{max}

547. Part of enzyme which combines with non-protein part to form functional enzyme is

(A) Apoenzyme (B) Coenzyme
(C) Prosthetic group (D) None of these

548. Who got Nobel Prize in 1978 for working on enzymes?

(A) Koshland (B) Arber and Nathans
(C) Nass and Nass (D) H.G. Khorana

549. Site of enzyme synthesis in a cell is

(A) Ribosomes (B) RER
(C) Golgi bodies (D) All of these

550. The fruit when kept is open, tastes bitter after 2 hours because of

(A) Loss of water from juice
(B) Decreased concentration of fructose in juice
(C) Fermentation by yeast
(D) Contamination by bacterial enzymes

551. Hexokinase (Glucose + ATP → Glucose-6–P + ADP) belongs to the category:

(A) Transferases (B) Lysases
(C) Oxidoreductases (D) Isomerases

552. Which enzyme is concerned with transfer of electrons?

(A) Desmolase (B) Hydrolase
(C) Dehydrogenase (D) Transaminase

553. The best example of extracellular enzymes (exoenzyme) is

(A) Nucleases
(B) Digestive enzymes
(C) Succinic dehydrogenase
(D) None of these

554. Which mineral element controls the activity of Nitrate reductase ?

(A) Fe (B) Mo
(C) Zn (D) Ca

555. Name the enzyme that acts both as carboxylase at one time and oxygenase at another time.

(A) PEP carboxylase
(B) RuBP carboxylase
(C) Carbonic anyhdrase
(D) None of these

556. A metabolic pathways is a

(A) Route taken by chemicals
(B) Sequence of enzyme facilitated chemical reactions
(C) Route taken by an enzyme from one reaction to another
(D) Sequence of origin of organic molecules

557. The energy required to start an enzymatic reaction is called

(A) Chemical energy (B) Metabolic energy
(C) Activation energy (D) Potential energy

558. Out of the total enzymes present in a cell, a mitochondrion alone has

(A) 4% (B) 70%
(C) 95% (D) 50%

559. Creatine phosphokinase isoenzyme is a marker for

(A) Kidney disease
(B) Liver disease
(C) Myocardial infarction
(D) None of these

560. Which inactivates an enzyme by occupying its active site?

(A) Competitive inhibitor
(B) Allosteric inhibitor
(C) Non-competitive inhibitor
(D) All of these

561. Which one is coenzyme?

(A) ATP (B) Vitamin B and C
(C) CoQ and CoA (D) All of these

562. The active site of an enzyme is formed by

(A) R group of amino acids
(B) NH_2 group of amino acids
(C) CO group of amino acids
(D) Sulphur bonds which are exposed

563. Carbonic anhydrase enzyme has maximum turn over number (36 million). Minimum turn over number for an enzyme:

(A) DNA polymerase
(B) Lysozyme
(C) Penicillase
(D) Lactase dehydrogenase

564. In cell, digestive enzymes are found mainly in

(A) Vacuoles (B) Lysosomes
(C) Ribosomes (D) Lomasomes

565. Substrate concentration at which an enzyme attains half its maximum velocity is

(A) Threshold value
(B) Michaelis-Menton constant
(C) Concentration level
(D) None of these

566. Which enzyme hydrolyses starch?

(A) Invertase (B) Maltase
(C) Sucrase (D) Diastase

567. Enzymes functional in cell or mitochondria are

(A) Endoenzymes (B) Exoenzymes
(C) Apoenzymes (D) Holoenzymes

568. The enzymes present in the membrane of mitochondria are

(A) Flavoproteins and cytochromes
(B) Fumarase and lipase
(C) Enolase and catalase
(D) Hexokinase and zymase

569. A mitochondrial marker enzyme is

(A) Aldolase
(B) Amylase
(C) Succinic dehydrogenase
(D) Pyruvate dehydrogenase

570. The enzyme used in polymerase chain reaction (PCR) is

(A) Taq polymerase (B) RNA polymerase
(C) Ribonuclease (D) Endonuclease

571. Which of the following is a microsomal enzyme inducer?

(A) Indomethacin (B) Clofibrate
(C) Tolbutamide (D) Glutethamide

572. Identify the correct molecule which controls the biosynthesis of proteins in living organisms.

(A) DNA (B) RNA
(C) Purines (D) Pyrimidines

573. The tear secretion contains an antibacterial enzyme known as

(A) Zymase (B) Diastase
(C) Lysozyme (D) Lipase

574. Identify one of the canbonic anhydrase inhibitor that inhibit only luminal carbonic anhydrase enzyme.

(A) Methazolamide (B) Acetazolamide
(C) Dichlorphenamide (D) Benzolamide

575. Group transferring Co-enzyme is

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

576. The co-enzyme containing an automatic hetero ring in the structure is

(A) Biotin (B) TPP
(C) Sugar Phosphate (D) Co-enzyme

577. The example of hydrogen transferring Co-enzyme is:

(A) B_6-PO_4 (B) $NADP^+$
(C) TPP (D) ATP

578. Enzyme catalyzed hydrolysis of proteins produces amino acid of the form

(A) D (B) DL
(C) L (D) Racemic

579. Transaminase activity needs the Co-enzyme:

(A) ATP (B) B_6-PO_4
(C) FADT (D) NAD^+

580. The biosynthesis of urea occurs mainly in the liver:

(A) Cytosol (B) Mitochondria
(C) Microsomes (D) Nuclei

581. Bile salts make emulsification with fat for the action of

(A) Amylose (B) Lipase
(C) Pepsin (D) Trypsin

582. All of the following compounds are intermediates of TCA cycle except

(A) Maleate (B) Pyruvate
(C) Oxaloacetate (D) Fumarate

583. In conversion of lactic acid to glucose, three reactions of glycolytic pathway are circumvented, which of the following enzymes do not participate?

(A) Pyruvate carboxylase
(B) Phosphoenol pyruvate carboxy kinase
(C) Pyruvate kinase
(D) Glucose-6-phosphatase

584. In the normal resting state of human most of the blood glucose burnt as fuel is consumed by

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

585. A regulator of the enzyme glucogen synthase is

(A) Citric Acid (B) Pyruvate
(C) Glucose-6-PO_4 (D) GTP

586. A specific inhibitor for succinate dehydrogenase is

(A) Arsenite (B) Malonate
(C) Citrate (D) Fluoride

ANSWERS

1. A	2. B	3. A	4. D	5. C	6. D
7. C	8. A	9. B	10. D	11. C	12. D
13. A	14. B	15. D	16. A	17. B	18. C
19. B	20. D	21. A	22. A	23. B	24. B
25. D	26. B	27. A	28. A	29. A	30. B
31. C	32. A	33. B	34. C	35. A	36. B
37. A	38. B	39. D	40. C	41. D	42. A
43. A	44. B	45. C	46. A	47. D	48. B
49. C	50. B	51. B	52. A	53. A	54. C
55. C	56. D	57. C	58. C	59. A	60. B
61. A	62. C	63. A	64. D	65. A	66. D
67. A	68. C	69. B	70. B	71. A	72. B
73. A	74. B	75. A	76. B	77. C	78. C
79. A	80. A	81. C	82. C	83. B	84. D
85. B	86. B	87. D	88. D	89. D	90. A
91. A	92. A	93. A	94. B	95. A	96. B
97. A	98. A	99. A	100. A	101. A	102. B
103. A	104. C	105. A	106. D	107. B	108. A
109. D	110. C	111. B	112. B	113. D	114. A
115. B	116. A	117. B	118. C	119. B	120. C
121. A	122. C	123. C	124. D	125. A	126. A
127. B	128. B	129. B	130. B	131. C	132. A
133. D	134. A	135. B	136. B	137. A	138. B
139. B	140. C	141. D	142. B	143. A	144. B
145. B	146. A	147. A	148. C	149. A	150. A
151. B	152. B	153. D	154. A	155. A	156. D
157. A	158. A	159. A	160. A	161. A	162. A
163. B	164. A	165. A	166. B	167. B	168. C
169. A	170. D	171. D	172. A	173. C	174. B
175. B	176. A	177. C	178.A	179. D	180. B
181. D	182. B	183. D	184. C	185. C	186. A
187. D	188. C	189. A	190. A	191. C	192. C
193. A	194. C	195. A	196. A	197. B	198. B
199. B	200. A	201. D	202. C	203. D	204. D
205. B	206. A	207. D	208. A	209. A	210. D
211. A	212. A	213. D	214. D	215. A	216. A
217. A	218. A	219. D	220. D	221. C	222. C
223. B	224. D	225. A	226. A	227. B	228. B
229. D	230. A	231. B	232. D	233. A	234. A
235. D	236. B	237. A	238. C	239. B	240. C
241. B	242. A	243. B	244. A	245. A	246. A
247. A	248. A	249. A	250. C	251. B	252. C

253. B 254. D 255. C 256. D 257. A 258. B
259. D 260. C 261. B 262. C 263. A 264. D
265. A 266. B 267. C 268. A 269. B 270. C
271. C 272. A 273. D 274. A 275. B 276. C
277. B 278. C 279. B 280. D 281. C 282. B
283. B 284. D 285. C 286. D 287. C 288. A
289. C 290. D 291. C 292. B 293. C 294. D
295. D 296. B 297. D 298. C 299. B 300. B
301. B 302. D 303. D 304. A 305. B 306. D
307. C 308. B 309. C 310. D 311. A 312. C
313. D 314. B 315. B 316. C 317. C 318. B
319. B 320. A 321. D 322. A 323. A 324. B
325. C 326. C 327. A 328. D 329. B 330. A
331. C 332. C 333. C 334. C 335. D 336. A
337. A 338. D 339. C 340. D 341. C 342. C
343. C 344. A 345. D 346. C 347. C 348. C
349. C 350. C 351. C 352. C 353. C 354. B
355. C 356. A 357. C 358. A 359. D 360. D
361. D 362. B 363. A 364. D 365. C 366. A
367. D 368. A 369. D 370. D 371. C 372. B
373. C 374. A 375. C 376. A 377. B 378. B
379. C 380. B 381. C 382. B 383. B 384. D
385. B 386. C 387. D 388. C 389. D 390. C
391. D 392. C 393. C 394. A 395. D 396. D
397. C 398. C 399. B 400. C 401. D 402. B
403. C 404. B 405. D 406. D 407. A 408. C
409. C 410. D 411. B 412. B 413. B 414. D
415. A 416. C 417. D 418. D 419. C 420. C
421. B 422. D 423. A 424. B 425. D 426. B
427. B 428. D 429. D 430. C 431. D 432. B
433. C 434. A 435. D 436. B 437. A 438. B
439. D 440. B 441. A 442.A 443. B 444. C
445. A 446. A 447. B 448. B 449. B 450. D
451. B 452. C 453. C 454. A 455. D 456. A
457. D 458. B 459. C 460. D 461. B 462. C
463. B 464. D 465. B 466. D 467. D 468. D
469. C 470. B 471. B 472. D 473. D 474. C
475. D 476. D 477. B 478. B 479. D 480. A
481. D 482. B 483. B 484. C 485. C 486. C
487. A 488. A 489. B 490. A 491. A 492. D
493. C 494. B 495. C 496. A 497. A 498. D
499. D 500. D 501. D 502. C 503. C 504. A
505. C 506. A 507. B 508. B 509. B 510. A

511. B	512. C	513. A	514. D	515. A	516. A
517. C	518. C	519. B	520. D	521. C	522. C
523. A	524. C	525. B	526. B	527. A	528. A
529. D	530. A	531. D	532. D	533. B	534. A
535. D	536. C	537. A	538. D	539. B	540. A
541. A	542. B	543. C	544. A	545. D	546. D
547. C	548. A	549. B	550. D	551. C	552. A
553. C	554. A	555. B	556. B	557. C	558. B
559. C	560. A	561. D	562. A	563. B	564. B
565. B	566. D	567. A	568. A	569. C	570. D
571. D	572. A	573. C	574. B	575. A	576. C
577. D	578. C	579. B	580. B	581. B	582. B
583. B	584. B	585. C	586. B		

EXPLANATIONS FOR THE ANSWERS

4. D The functional unit of an enzyme is referred to as a holoenzyme. It is often made up of an apoenzyme (the protein part) and a coenzyme (the non-protein part).

47. D Concentration of enzyme, concentration of substrate, temperature, pH, presence of products, activators and inhibitors are some of the important factors that influence enzyme activity.

89. D It is a straight line graphic representation depicting the relation between substrate concentration and enzyme velocity. This plot is commonly employed for the calculation of Km values for enzymes.

133. D Active site is the small region of an enzyme where substrate binds. It is flexible in nature and it exists due to the tertiary structure of proteins. Acidic, basic and hydroxyl amino aicds are frequently found at the active site.

179. D There are three broad categories of enzyme inhibition:

(a) ***Reversible inhibition:*** The inhibitor binds non-covalently with the enzyme and the inhibition is reversible. Competitive, non-competitive and uncompetitive come under this category.

(b) ***Irreversible inhibition:*** The inhibitor covalently binds with the enzyme which is irreversible.

(c) ***Allosteric inhibition:*** Certain enzymes possessing allosteric sites are regulated by allosteric effectors.

219. D Enzymes are highly specific in their action compared with chemical catalysts. Three types of enzyme specificities are well-recognized.

(a) ***Stereospecificity:*** The enzymes act only on one isomer and therefore exhibit stereoisomerism. e.g., L-amino acid oxidase on L-amino acids; hexokinase on D-hexose (Note: isomerases do not exhibit stereospecificity).

(b) ***Reaction specificity:*** The same substrate can undergo different types of reactions, each catalysed by a separate enzyme e.g., amino acids undergoing transamination, decarboxylation etc.

(c) ***Substrate specifity:*** This may be absolute, relative or broad e.g., urease, ligase, hexokinase.

260. D

(a) ***Lock and Key model*** (Fischer's Template theory): The substrate fits to active site of an enzyme just as a key fits into a proper lock. Thus, the active site of the enzyme is rigid and preshaped where only a specific substrate can bind.

(b) ***Induced fit theory*** (Koshland model): As per this, the substrate induces a conformational change in the enzyme resulting in the formation of substrate binding (active) site.

305. C Some enzymes are synthesized in an inactive form which are referred to as proenzymes (or zymogens). They undergo irreversible modification to produce active enzymes. *e.g.,* proenzymes – chymotrypsinogen and pepsinogen are respectively converted to chymotrypsin and pepsin.

345. D The RNAs that can function as enzymes are referred to as ribozymes. They are thus non-protein enzymes. It is believed that RNAs were functioning as catalysts before the occurance of proteins during evolution.

391. D ***Streptokinase*** is used for clearing blood clots.
Asparaginase is employed in the treatment of leukemias.

438. B Certain enzymes can be made to bind to insoluble inorganic matrix (*e.g.,* cyanogens bromide activated sepharose) to preserve their catalytic activity for long periods. Such enzymes are referred to as immobilized enzymes.

479. D These enzymes are either totally absent or present at a low concentration in plasma compared to their levels found in tissues. Estimation of plasma non-functional enzymes is important for the diagnosis and prognosis of several diseases.

514. D Lactate dehydrogenase (LDH) gas five distinct isoenzymes (LDH_1 ... LDH_5). Each one is an oligomeric protein composed of 4 subunits (N and/ or H). Isoenzymes of LDH are important for the diagnosis of heart and liver related disorders i.e., serum LDH_1 is elevated in myocardial infarction while LDH_5 is increased in liver diseases.

559. C Creatine kinase (CK) or creatine phosphokinase (CPK) exists as 3 isoenzymes. Each isoenzyme is a dimmer composed of two subunits (M or B or both). Elevation of CPK2 (MB) in serum is an early reliable diagnostic indication of myocardial infarction.

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