

CHAPTER 5

VITAMINS

1. Vitamins are

- (A) Accessory food factors
- (B) Generally synthesized in the body
- (C) Produced in endocrine glands
- (D) Proteins in nature

2. Vitamin A or retinal is a

- (A) Steroid
- (B) Polyisoprenoid compound containing a cyclohexenyl ring
- (C) Benzoquinone derivative
- (D) 6-Hydroxychromane

3. β -Carotene, precursor of vitamin A, is oxidatively cleaved by

- (A) β -Carotene dioxygenase
- (B) Oxygenase
- (C) Hydroxylase
- (D) Transferase

4. Retinal is reduced to retinol in intestinal mucosa by a specific retinaldehyde reductase utilising

- (A) NADPH + H⁺ (B) FAD
- (C) NAD (D) NADH + H⁺

5. Preformed Vitamin A is supplied by

- (A) Milk, fat and liver
- (B) All yellow vegetables
- (C) All yellow fruits
- (D) Leafy green vegetables

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

- (A) NAD or NADP (B) NADH + H⁺
- (C) NADPH (D) FAD

7. Fat soluble vitamins are

- (A) Soluble in alcohol
- (B) one or more Propene units
- (C) Stored in liver
- (D) All these

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

- (A) 0.3 μ g of Vitamin A alcohol
- (B) 0.344 μ g of Vitamin A alcohol
- (C) 0.6 μ g of Vitamin A alcohol
- (D) 1.0 μ g of Vitamin A alcohol

9. Lumirhodopsin is stable only at temperature below

- (A) -10°C (B) -20°C
- (C) -40°C (D) -50°C

10. Retinol is transported in blood bound to

- (A) Aporetinol binding protein
- (B) α_2 -Globulin
- (C) β -Globulin
- (D) Albumin

- 11. The normal serum concentration of vitamin A in mg/100 ml is**
(A) 5–10 (B) 15–60
(C) 100–150 (D) 0–5
- 12. One manifestation of vitamin A deficiency is**
(A) Painful joints
(B) Night blindness
(C) Loss of hair
(D) Thickening of long bones
- 13. Deficiency of Vitamin A causes**
(A) Xerophthalmia
(B) Hypoprothrombinemia
(C) Megaloblastic anemia
(D) Pernicious anemia
- 14. An important function of vitamin A is**
(A) To act as coenzyme for a few enzymes
(B) To play an integral role in protein synthesis
(C) To prevent hemorrhages
(D) To maintain the integrity of epithelial tissue
- 15. Retinal is a component of**
(A) Iodopsin (B) Rhodopsin
(C) Cardiolipin (D) Glycoproteins
- 16. Retinoic acid participates in the synthesis of**
(A) Iodopsin (B) Rhodopsin
(C) Glycoprotein (D) Cardiolipin
- 17. On exposure to light rhodopsin forms**
(A) All trans-retinal (B) Cis-retinal
(C) Retinol (D) Retinoic acid
- 18. Carr-Price reaction is used to detect**
(A) Vitamin A (B) Vitamin D
(C) Ascorbic acid (D) Vitamin E
- 19. The structure shown below is of**
(A) Cholecalciferol
(B) 25-Hydroxycholecalciferol
(C) Ergocalciferol
(D) 7-Dehydrocholesterol
- 20. Vitamin D absorption is increased in**
(A) Acid pH of intestine
(B) Alkaline pH of intestine
(C) Impaired fat absorption
(D) Contents of diet
- 21. The most potent Vitamin D metabolite is**
(A) 25-Hydroxycholecalciferol
(B) 1,25-Dihydroxycholecalciferol
(C) 24, 25-Dihydroxycholecalciferol
(D) 7-Dehydrocholesterol
- 22. The normal serum concentration of 25-hydroxycholecalciferol in ng/ml is**
(A) 0–8 (B) 60–100
(C) 100–150 (D) 8–55
- 23. The normal serum concentration of 1,25-dihydroxycholecalciferol in pg/ml is**
(A) 26–65 (B) 1–5
(C) 5–20 (D) 80–100
- 24. The normal serum concentration of 24,25-dihydroxycholecalciferol in ng/ml is**
(A) 8–20 (B) 25–50
(C) 1–5 (D) 60–100
- 25. A poor source of Vitamin D is**
(A) Egg (B) Butter
(C) Milk (D) Liver
- 26. Richest source of Vitamin D is**
(A) Fish liver oils (B) Margarine
(C) Egg yolk (D) Butter
- 27. Deficiency of vitamin D causes**
(A) Ricket and osteomalacia
(B) Tuberculosis of bone
(C) Hypothyroidism
(D) Skin cancer
- 28. One international unit (I.U) of vitamin D is defined as the biological activity of**
(A) 0.025 µg of cholecalciferol
(B) 0.025 µg of 7-dehydrocholecalciferol
(C) 0.025 µg of ergosterol
(D) 0.025 µg of ergocalciferol

- 29. The β -ring of 7-dehydrocholesterol is cleaved to form cholecalciferol by**
- (A) Infrared light
 - (B) Dim light
 - (C) Ultraviolet irradiation with sunlight
 - (D) Light of the tube lights
- 30. Calcitriol synthesis involves**
- (A) Both liver and kidney
 - (B) Intestine
 - (C) Adipose tissue
 - (D) Muscle
- 31. Insignificant amount of Vitamin E is present in**
- (A) Wheat germ oil (B) Sunflower seed oil
 - (C) Safflower seed oil (D) Fish liver oil
- 32. The activity of tocopherols is destroyed by**
- (A) Commercial cooking
 - (B) Reduction
 - (C) Conjugation
 - (D) All of these
- 33. The requirement of vitamin E is increased with greater intake of**
- (A) Carbohydrates
 - (B) Proteins
 - (C) Polyunsaturated fat
 - (D) Saturated fat
- 34. Vitamin E reduces the requirement of**
- (A) Iron (B) Zinc
 - (C) Selenium (D) Magnesium
- 35. The most important natural antioxidant is**
- (A) Vitamin D (B) Vitamin E
 - (C) Vitamin B₁₂ (D) Vitamin K
- 36. Tocopherols prevent the oxidation of**
- (A) Vitamin A (B) Vitamin D
 - (C) Vitamin K (D) Vitamin C
- 37. Creatinuria is caused due to the deficiency of vitamin**
- (A) A (B) K
 - (C) E (D) D
- 38. All the following conditions produce a real or functional deficiency of vitamin K except**
- (A) Prolonged oral, broad spectrum antibiotic therapy
 - (B) Total lack of red meat in the diet
 - (C) The total lack of green leafy vegetables in the diet
 - (D) Being a new born infant
- 39. Vitamin K is found in**
- (A) Green leafy plants (B) Meat
 - (C) Fish (D) Milk
- 40. Function of Vitamin A:**
- (A) Healing epithelial tissues
 - (B) Protein synthesis regulation
 - (C) Cell growth
 - (D) All of these
- 41. Vitamin K₂ was originally isolated from**
- (A) Soyabean (B) Wheat gram
 - (C) Alfa Alfa (D) Putrid fish meal
- 42. Vitamin synthesized by bacterial in the intestine is**
- (A) A (B) C
 - (C) D (D) K
- 43. Vitamin K is involved in posttranslational modification of the blood clotting factors by acting as cofactor for the enzyme:**
- (A) Carboxylase (B) Decarboxylase
 - (C) Hydroxylase (D) Oxidase
- 44. Vitamin K is a cofactor for**
- (A) Gamma carboxylation of glutamic acid residue
 - (B) β -Oxidation of fatty acid
 - (C) Formation of γ -amino butyrate
 - (D) Synthesis of tryptophan
- 45. Hypervitaminosis K in neonates may cause**
- (A) Porphyria (B) Jaundice
 - (C) Pellagra (D) Prolonged bleeding
- 46. Dicoumarol is antagonist to**
- (A) Riboflavin (B) Retinol
 - (C) Menadione (D) Tocopherol

- 47. In the individuals who are given liberal quantities of vitamin C, the serum ascorbic acid level is**
- (A) 1–1.4 $\mu\text{g}/100\text{ ml}$
 (B) 2–4 $\mu\text{g}/100\text{ ml}$
 (C) 1–10 $\mu\text{g}/100\text{ ml}$
 (D) 10–20 $\mu\text{g}/100\text{ ml}$
- 48. The vitamin which would most likely become deficient in an individual who develop a completely carnivorous life style is**
- (A) Thiamin (B) Niacin
 (C) Vitamin C (D) Cobalamin
- 49. In human body highest concentration of ascorbic acid is found in**
- (A) Liver (B) Adrenal cortex
 (C) Adrenal medulla (D) Spleen
- 50. The vitamin required for the formation of hydroxyproline (in collagen) is**
- (A) Vitamin C (B) Vitamin A
 (C) Vitamin D (D) Vitamin E
- 51. Vitamin required for the conversion of p-hydroxyphenylpyruvate to homogentisate is**
- (A) Folacin (B) Cobalamin
 (C) Ascorbic acid (D) Niacin
- 52. Vitamin required in conversion of folic acid to folinic acid is**
- (A) Biotin (B) Cobalamin
 (C) Ascorbic acid (D) Niacin
- 53. Ascorbic acid can reduce**
- (A) 2, 6-Dibromobenzene
 (B) 2, 6-Diiodoxy pyridine
 (C) 2, 6-Dichlorophenol indophenol
 (D) 2, 4-Dinitrobenzene
- 54. Sterilised milk lacks in**
- (A) Vitamin A (B) Vitamin D
 (C) Vitamin C (D) Thiamin
- 55. Scurvy is caused due to the deficiency of**
- (A) Vitamin A (B) Vitamin D
 (C) Vitamin K (D) Vitamin C
- 56. Both Wernicke's disease and beriberi can be reversed by administrating**
- (A) Retinol (B) Thiamin
 (C) Pyridoxine (D) Vitamin B₁₂
- 57. The Vitamin B₁ deficiency causes**
- (A) Ricket (B) Nyctalopia
 (C) Beriberi (D) Pellagra
- 58. Concentration of pyruvic acid and lactic acid in blood is increased due to deficiency of the vitamin**
- (A) Thiamin (B) Riboflavin
 (C) Niacin (D) Pantothenic acid
- 59. Vitamin B₁ coenzyme (TPP) is involved in**
- (A) Oxidative decarboxylation
 (B) Hydroxylation
 (C) Transamination
 (D) Carboxylation
- 60. Increased glucose consumption increases the dietary requirement for**
- (A) Pyridoxine (B) Niacin
 (C) Biotin (D) Thiamin
- 61. Thiamin is oxidized to thiochrome in alkaline solution by**
- (A) Potassium permanganate
 (B) Potassium ferricyanide
 (C) Potassium chlorate
 (D) Potassium dichromate
- 62. Riboflavin is a coenzyme in the reaction catalysed by the enzyme**
- (A) Acyl CoA synthetase
 (B) Acyl CoA dehydrogenase
 (C) β -Hydroxy acyl CoA
 (D) Enoyl CoA dehydrogenase
- 63. The daily requirement of riboflavin for adult in mg is**
- (A) 0–1.0 (B) 1.2–1.7
 (C) 2.0–3.5 (D) 4.0–8.0
- 64. In new born infants phototherapy may cause hyperbilirubinemia with deficiency of**
- (A) Thiamin (B) Riboflavin
 (C) Ascorbic acid (D) Pantothenic acid

- 65. Riboflavin deficiency causes**
(A) Cheilosis
(B) Loss of weight
(C) Mental deterioration
(D) Dermatitis
- 66. Magenta tongue is found in the deficiency of the vitamin**
(A) Riboflavin (B) Thiamin
(C) Nicotinic acid (D) Pyridoxine
- 67. Corneal vascularisation is found in deficiency of the vitamin:**
(A) B₁ (B) B₂
(C) B₃ (D) B₆
- 68. The pellagra preventive factor is**
(A) Riboflavin (B) Pantothenic acid
(C) Niacin (D) Pyridoxine
- 69. Pellagra is caused due to the deficiency of**
(A) Ascorbic acid (B) Pantothenic acid
(C) Pyridoxine (D) Niacin
- 70. Niacin or nicotinic acid is a monocarboxylic acid derivative of**
(A) Pyridine (B) Pyrimidine
(C) Flavin (D) Adenine
- 71. Niacin is synthesized in the body from**
(A) Tryptophan (B) Tyrosine
(C) Glutamate (D) Aspartate
- 72. The proteins present in maize are deficient in**
(A) Lysine (B) Threonine
(C) Tryptophan (D) Tyrosine
- 73. Niacin is present in maize in the form of**
(A) Niatin (B) Nicotin
(C) Niacytin (D) Nicyn
- 74. In the body 1 mg of niacin can be produced from**
(A) 60 mg of pyridoxine
(B) 60 mg of tryptophan
(C) 30 mg of tryptophan
(D) 30 mg of pantothenic acid
- 75. Pellagra occurs in population dependent on**
(A) Wheat (B) Rice
(C) Maize (D) Milk
- 76. The enzymes with which nicotinamide act as coenzyme are**
(A) Dehydrogenases (B) Transaminases
(C) Decarboxylases (D) Carboxylases
- 77. Dietary requirement of Vitamin D:**
(A) 400 I.U. (B) 1000 I.U.
(C) 6000 I.U. (D) 700 I.U.
- 78. The Vitamin which does not contain a ring in the structure is**
(A) Pantothenic acid (B) Vitamin D
(C) Riboflavin (D) Thiamin
- 79. Pantothenic acid is a constituent of the coenzyme involved in**
(A) Decarboxylation (B) Dehydrogenation
(C) Acetylation (D) Oxidation
- 80. The precursor of CoA is**
(A) Riboflavin (B) Pyridoxamine
(C) Thiamin (D) Pantothenate
- 81. 'Burning foot syndrome' has been ascribed to the deficiency of**
(A) Pantothenic acid (B) Thiamin
(C) Cobalamin (D) Pyridoxine
- 82. Pyridoxal phosphate is central to**
(A) Deamination (B) Amidation
(C) Carboxylation (D) Transamination
- 83. The vitamin required as coenzyme for the action of transaminases is**
(A) Niacin
(B) Pantothenic acid
(C) Pyridoxal phosphate
(D) Riboflavin
- 84. Vitamin B₆ deficiency may occur during therapy with**
(A) Isoniazid (B) Terramycin
(C) Sulpha drugs (D) Aspirin

- 85. Deficiency of vitamin B₆ may occur in**
 (A) Obese person (B) Thin person
 (C) Alcoholics (D) Diabetics
- 86. 'Xanthurenic acid index' is a reliable criterion for the deficiency of the vitamin**
 (A) Pyridoxal (B) Thiamin
 (C) Pantothenic acid (D) Cobalamin
- 87. Epileptiform convulsion in human infants have been attributed to the deficiency of the vitamin**
 (A) B₁ (B) B₂
 (C) B₆ (D) B₁₂
- 88. Biotin is a coenzyme of the enzyme**
 (A) Carboxylase (B) Hydroxylase
 (C) Decarboxylase (D) Deaminase
- 89. The coenzyme required for conversion of pyruvate to oxaloacetate is**
 (A) FAD (B) NAD
 (C) TPP (D) Biotin
- 90. In biotin-containing enzymes, the biotin is bound to the enzyme by**
 (A) An amide linkage to carboxyl group of glutamine
 (B) A covalent bond with CO₂
 (C) An amide linkage to an amino group of lysine
 (D) An amide linkage to α-carboxyl group of protein
- 91. A molecule of CO₂ is captured by biotin when it acts as coenzyme for carboxylation reaction. The carboxyl group is covalently attached to**
 (A) A nitrogen (N₁) of the biotin molecule
 (B) Sulphur of thiophene ring
 (C) α-Amino group of lysine
 (D) α-Amino group of protein
- 92. Consumption of raw eggs can cause deficiency of**
 (A) Biotin (B) Pantothenic acid
 (C) Riboflavin (D) Thiamin
- 93. The cofactor or its derivative required for the conversion of acetyl CoA to malonyl-CoA is**
 (A) FAD (B) ACP
 (C) NAD⁺ (D) Biotin
- 94. A cofactor required in oxidative decarboxylation of pyruvate is**
 (A) Lipoate
 (B) Pantothenic acid
 (C) Biotin
 (D) Para aminobenzoic acid
- 95. The central structure of B₁₂ referred to as corrin ring system consists of**
 (A) Cobalt (B) Manganese
 (C) Magnesium (D) Iron
- 96. The central heavy metal cobalt of vitamin B₁₂ is coordinately bound to**
 (A) Cyanide group (B) Amino group
 (C) Carboxyl group (D) Sulphide group
- 97. Vitamin B₁₂ has a complex ring structure (corrin ring) consisting of four**
 (A) Purine rings (B) Pyrimidine rings
 (C) Pyrrole rings (D) Pteridine rings
- 98. Empirical formula of cobalamin is**
 (A) C₆₃H₈₈N₁₂O₁₄P.CO
 (B) C₆₁H₈₂N₁₂O₁₂P.CO
 (C) C₆₁H₈₈N₁₂O₁₄P.CO
 (D) C₆₃H₈₈N₁₄O₁₄P.CO
- 99. A deficiency of vitamin B₁₂ causes**
 (A) Beri-Beri
 (B) Scurvy
 (C) Pernicious anemia
 (D) Ricket
- 100. Vitamin B₁₂ deficiency can be diagnosed by urinary excretion of**
 (A) Pyruvate (B) Methylmalonate
 (C) Malate (D) Lactate
- 101. Subacute combined degeneration of cord is caused due to deficiency of**
 (A) Niacin (B) Cobalamin
 (C) Biotin (D) Thiamin

- 102. Vitamin required for metabolism of diols e.g. conversion of ethylene glycol to acetaldehyde is**
(A) Thiamin (B) Cobalamin
(C) Pyridoxine (D) Folic acid
- 103. Both folic acid and methyl cobalamin (vitamin B₁₂) are required in**
(A) Deamination of serine
(B) Deamination of threonine
(C) Conversion of pyridoxal phosphate to pyridoxamine phosphate
(D) Methylation of homocystein to methionine
- 104. Folic acid or folate consists of the**
(A) Base pteridine, p-amino benzoic acid and aspartate
(B) Base purine, p-amino benzoic acid and glutamate
(C) Base pteridine, p-amino benzoic acid and glutamate
(D) Base purine, p-hydroxy benzoic acid and glutamate
- 105. Folate as a coenzyme is involved in the transfer and utilization of**
(A) Amino group
(B) Hydroxyl group
(C) Single carbon moiety
(D) Amido group
- 106. Folic acid deficiency can be diagnosed by increased urinary excretion of**
(A) Methylmalonate (B) Figlu
(C) Cystathionine (D) Creatinine
- 107. Sulpha drugs interfere with bacterial synthesis of**
(A) Lipoate (B) Vitamin E
(C) Tetrahydrofolate (D) Ascorbic acid
- 108. Folate deficiency causes**
(A) Microcytic anemia
(B) Hemolytic anemia
(C) Iron deficiency anemia
(D) Megaloblastic anemia
- 109. Thiamin is heat stable in**
(A) Acidic medium (B) Alkaline medium
(C) Both (A) and (B) (D) None of these
- 110. Thiamin deficiency includes**
(A) Mental depression (B) Fatigue
(C) Beriberi (D) All of these
- 111. Thiamin diphosphate is required for oxidative decarboxylation of**
(A) α -Keto acids (B) α -Amino acids
(C) Fatty acids (D) All of these
- 112. Loss of thiamin can be decreased by using**
(A) Unpolished rice
(B) Parboiled rice
(C) Whole wheat flour
(D) All of these
- 113. Daily requirement of thiamin is**
(A) 0.1 mg/1,000 Calories
(B) 0.5 mg/1,000 Calories
(C) 0.8 mg/1,000 Calories
(D) 1.0 mg/1,000 Calories
- 114. Thiamin requirement is greater in**
(A) Non-vegetarians
(B) Alcoholics
(C) Pregnant women
(D) Both B and C
- 115. People consuming polished rice as their staple food are prone to**
(A) Beriberi (B) Pellagra
(C) Both (A) and (B) (D) None of these
- 116. Riboflavin is heat stable in**
(A) Acidic medium (B) Alkaline medium
(C) Neutral medium (D) Both (A) and (C)
- 117. FAD is a coenzyme for**
(A) Succinate dehydrogenase
(B) Glycerol-3-phosphate dehydrogenase
(C) Sphingosine reductase
(D) All of these
- 118. Riboflavin deficiency can cause**
(A) Peripheral neuritis (B) Diarrhoea
(C) Angular stomatitis (D) None of these
- 119. Pellagra preventing factor is**
(A) Thiamin (B) Riboflavin
(C) Niacin (D) Pyridoxine

- 120. Niacin contains a**
 (A) Sulphydryl group (B) Carboxyl group
 (C) Amide group (D) All of these
- 121. NADP is required as a coenzyme in**
 (A) Glycolysis (B) Citric acid cycle
 (C) HMP shunt (D) Gluconeogenesis
- 122. NAD is required as a coenzyme for**
 (A) Malate dehydrogenase
 (B) Succinate dehydrogenase
 (C) Glucose-6-phosphate dehydrogenase
 (D) HMG CoA reductase
- 123. NAD is required as a coenzyme in**
 (A) Citric acid cycle
 (B) HMP shunt
 (C) β -Oxidation of fatty acids
 (D) Both (A) and (C)
- 124. Niacin can be synthesised in human beings from**
 (A) Histidine (B) Phenylalanine
 (C) Tyrosine (D) Tryptophan
- 125. Daily requirement of niacin is**
 (A) 5 mg (B) 10 mg
 (C) 20 mg (D) 30 mg
- 126. Niacin deficiency is common in people whose staple food is**
 (A) Wheat
 (B) Polished rice
 (C) Maize and /or sorghum
 (D) None of these
- 127. In pellagra, dermatitis usually affects**
 (A) Exposed parts of body
 (B) Covered parts of body
 (C) Trunk only
 (D) All parts of the body
- 128. Niacin deficiency can occur in**
 (A) Hartnup disease (B) Phenylketonuria
 (C) Alkaptonuria (D) None of these
- 129. Pantothenic acid contains an amino acid which is**
 (A) Aspartic acid (B) Glutamic acid
 (C) β -Alanine (D) β -Aminoisobutyric acid
- 130. Sulphydryl group of coenzyme a is contributed by**
 (A) β -Alanine
 (B) β -Aminoisobutyric acid
 (C) Methionine
 (D) Thioethanolamine
- 131. Coenzyme A contains a nitrogenous base which is**
 (A) Adenine (B) Guanine
 (C) Choline (D) Ethanolamine
- 132. The following is required for the formation of coenzyme A:**
 (A) ATP (B) GTP
 (C) CTP (D) None of these
- 133. Coenzyme A is required for catabolism of**
 (A) Leucine (B) Isoleucine
 (C) Valine (D) All of these
- 134. Deficiency of pantothenic acid in human beings can affect**
 (A) Nervous system (B) Digestive system
 (C) Both (A) and (B) (D) None of these
- 135. Pyridoxal phosphate is a coenzyme for**
 (A) Glutamate oxaloacetate transaminase
 (B) Glutamate pyruvate transaminase
 (C) Tyrosine transaminase
 (D) All of these
- 136. Pyridoxal phosphate is required as a coenzyme in**
 (A) Transamination (B) Transulphuration
 (C) Desulphuration (D) All of these
- 137. Pyridoxal phosphate is a coenzyme for**
 (A) Glycogen synthetase
 (B) Phosphorylase
 (C) Both (A) and (B)
 (D) None of these
- 138. Pyridoxine deficiency can be diagnosed by measuring urinary excretion of**
 (A) Pyruvic acid (B) Oxaloacetic acid
 (C) Xanthurenic acid (D) None of these

- 139. Pyridoxine deficiency can be diagnosed by measuring the urinary excretion of xanthurenic acid following a test dose of**
(A) Glycine (B) Histidine
(C) Tryptophan (D) Pyridoxine
- 140. Pyridoxine requirement depends upon the intake of**
(A) Carbohydrates (B) Proteins
(C) Fats (D) None of these
- 141. Anti-egg white injury factor is**
(A) Pyridoxine (B) Biotin
(C) Thiamin (D) Liponic acid
- 142. When eggs are cooked**
(A) Biotin is destroyed but avidin remains unaffected
(B) Avidin is inactivated but biotin remains unaffected
(C) Both avidin and biotin are inactivated
(D) Both avidin and biotin remain unaffected
- 143. Biotin is required as a coenzyme by**
(A) Anaerobic dehydrogenases
(B) Decarboxylases
(C) Aerobic dehydrogenases
(D) Carboxylases
- 144. Biotin is a coenzyme for**
(A) Pyruvate carboxylase
(B) Acetyl CoA carboxylase
(C) Propionyl CoA carboxylase
(D) All of these
- 145. Lipoic acid is a coenzyme for**
(A) Pyruvate dehydrogenase
(B) α -Ketoglutarate dehydrogenase
(C) Both (A) and (B)
(D) None of these
- 146. Chemically, lipoic acid is**
(A) Saturated fatty acid
(B) Unsaturated fatty acid
(C) Amino acid
(D) Sulphur containing fatty acid
- 147. Folic acid contains**
(A) Pteridine
(B) p-Amino benzoic acid
(C) Glutamic acid
(D) All of these
- 148. Conversion of folate into tetrahydrofolate requires**
(A) NADH (B) NADPH
(C) FMNH₂ (D) FADH₂
- 149. Riboflavin deficiency symptoms are**
(A) Glossitis (B) stomatitis
(C) Vomiting (D) Both (A) and (B)
- 150. Vitamin B₁₂ forms coenzymes known as**
(A) Cobamide (B) Transcobalamin I
(C) Transcobalamin II (D) Both (B) and (C)
- 151. Methylcobalamin is required for formation of**
(A) Serin from glycine
(B) Glycine from serine
(C) Methionine from homocysteine
(D) All of these
- 152. Absorption of Vitamin B₁₂ requires the presence of**
(A) Pepsin (B) Hydrochloric acid
(C) Intrinsic factor (D) Both (B) and (C)
- 153. Intrinsic factor is chemically a**
(A) Protein
(B) Glycoprotein
(C) Mucopolysaccharide
(D) Peptide
- 154. Chemically, Extrinsic Factor of Castle is a**
(A) Mucoprotein
(B) Glycoprotein
(C) Mucopolysaccharide
(D) Cyanocobalamin
- 155. Vitamin B₁₂ is**
(A) Not stored in the body
(B) Stored in bone marrow
(C) Stored in liver
(D) Stored in RE cells

- 156. Vitamin B₁₂ is transported in blood by**
(A) Albumin (B) Transcortin
(C) Transcobalamin I (D) Transcobalamin II
- 157. Vitamin B₁₂ is synthesized by**
(A) Bacteria only (B) Plants only
(C) Animals only (D) Both (A) and (C)
- 158. Deficiency of vitamin B₁₂ can occur because of**
(A) Decreased intake of vitamin B₁₂
(B) Atrophy of gastric mucosa
(C) Intestinal malabsorption
(D) All of these
- 159. Deficiency of vitamin B₁₂ can be diagnosed by**
(A) Carr-Price reaction
(B) Ames assay
(C) Watson-Schwartz test
(D) Schilling test
- 160. Gastrectomy leads to megaloblastic anaemia within a few**
(A) Days (B) Weeks
(C) Months (D) Years
- 161. Ascorbic acid is required to synthesise all of the following except**
(A) Collagen (B) Bile acids
(C) Bile pigments (D) Epinephrine
- 162. Vitamin C enhances the intestinal absorption of**
(A) Potassium (B) Iodine
(C) Iron (D) None of these
- 163. Vitamin C activity is present in**
(A) D-Ascorbic acid
(B) D-Dehydroascorbic acid
(C) L-Ascorbic acid
(D) Both A and B
- 164. Vitamin C is required for the synthesis of**
(A) Bile acids from cholesterol
(B) Bile salts from bile acids
(C) Vitamin D from cholesterol
(D) All of these
- 165. Deficiency of vitamin C causes**
(A) Beriberi
(B) Pellagra
(C) Pernicious anaemia
(D) Scurvy
- 166. An early diagnosis of vitamin C deficiency can be made by**
(A) Measuring plasma ascorbic acid
(B) Measuring urinary ascorbic acid
(C) Ascorbic acid saturation test
(D) All of these
- 167. Daily requirement of vitamin C in adults is about**
(A) 100 mg (B) 25 mg
(C) 70 mg (D) 100 mg
- 168. The vitamin having the highest daily requirement among the following is**
(A) Thiamin (B) Riboflavin
(C) Pyridoxine (D) Ascorbic acid
- 169. Anaemia can occur due to the deficiency of all the following except**
(A) Thiamin (B) Pyridoxine
(C) Folic acid (D) Cyanocobalamin
- 170. A vitamin which can be synthesized by human beings is**
(A) Thiamin (B) Niacin
(C) Folic acid (D) Cyanocobalamin
- 171. Laboratory diagnosis of vitamin B₁₂ deficiency can be made by measuring the urinary excretion of**
(A) Xanthurenic acid
(B) Formiminoglutamic acid
(C) Methylmalonic acid
(D) Homogentisic acid
- 172. The molecule of vitamin A₁ contains**
(A) Benzene ring (B) β -Ionone ring
(C) β -Carotene ring (D) None of these
- 173. Precursor of Vitamin A is**
(A) α -Carotene (B) β -Carotene
(C) γ -Carotene (D) All of these

- 174. Two molecules of vitamin A can be formed from 1 molecule of**
(A) α -Carotene (B) β -Carotene
(C) γ -Carotene (D) All of these
- 175. Conversion of β -carotene into retinal requires the presence of**
(A) β -Carotene dioxygenase
(B) Bile salts
(C) Molecular oxygen
(D) All of these
- 176. Conversion of retinal into ritonal requires the presence of**
(A) NADH (B) NADPH
(C) FADH₂ (D) Lipoic acid
- 177. Retinal is converted into retinoic acid in the presence of**
(A) Retinal oxidase (B) Retinal carboxylase
(C) Retinene reductase (D) Spontaneously
- 178. Vitamin A absorbed in intestine is released into**
(A) Portal circulation (B) Lacteals
(C) Both (A) and (B) (D) None of these
- 179. Vitamin A is stored in the body in**
(A) Liver
(B) Adipose tissue
(C) Reticuloendothelial cells
(D) All of these
- 180. Rhodopsin contains opsin and**
(A) 11-cis-retinal (B) 11-trans-retinal
(C) All-cis-retinal (D) All trans-retinal
- 181. When light falls on rod cells**
(A) All-cis-retinal is converted into all-trans-retinal
(B) 11-cis-retinal is converted into 11-trans-retinal
(C) 11-trans-retinal is converted into all-trans-retinal
(D) 11-cis-retinal is converted into all-trans-retinal
- 182. Conversion of all-trans-retinal into all-trans-retinol requires**
(A) NAD (B) NADH
(C) NADP (D) NADPH
- 183. Retinol isomerase is present in**
(A) Retina (B) Liver
(C) Both (A) and (B) (D) None of these
- 184. Anti-oxidant activity is present in**
(A) β -Carotene (B) Retinol
(C) Retinoic acid (D) All of these
- 185. One international Unit of vitamin A is the activity present in**
(A) 0.3 μ g of β -Carotene
(B) 0.3 μ g of retinol
(C) 0.6 μ g of retinoic acid
(D) All of these
- 186. Daily requirement of vitamin A in an adult man can be expressed as**
(A) 400 IU (B) 1,000 IU
(C) 5,000 IU (D) 10,000 IU
- 187. Vitamin B₆ includes**
(A) Pyridoxal (B) Pyridoxamine
(C) Pyridoxine (D) All of these
- 188. An early effect of vitamin a deficiency is**
(A) Xerophthalmia
(B) Keratomalacia
(C) Prolonged dark adaptation time
(D) Follicular hyperkeratosis
- 189. Nyctalopia is**
(A) Drying of eyes
(B) Destruction of cornea
(C) Blindness
(D) Inability to see in dimlight
- 190. Rod cells possess a trans-membrane protein which is**
(A) Adenylate cyclase (B) Transducin
(C) Rhodopsin (D) B as well as C
- 191. Provitamins A include**
(A) Retinal (B) Retionic acid
(C) Carotenes (D) All of these
- 192. Retinoic acid can**
(A) Act as a photo receptor
(B) Support growth and differentiation
(C) Act as an anti-oxidant
(D) None of these

- 193. Prosthetic group in cone cell photoreceptors is**
 (A) Iodine (B) Opsin
 (C) 11-cis-retinal (D) all-trans-retinal
- 194. Retinoic acid is involved in the synthesis of**
 (A) Rhodopsin (B) Iodopsin
 (C) Porphyrinopsin (D) Glycoproteins
- 195. Transducin is a**
 (A) Signal transducer (B) Stimulatory G-protein
 (C) Trimer (D) All of these
- 196. Provitamin D₃ is**
 (A) Cholecalciferol
 (B) Ergosterol
 (C) 7-Dehydrocholesterol
 (D) Ergocaliferol
- 197. Ergosterol is found in**
 (A) Animals (B) Plants
 (C) Bacteria (D) All of these
- 198. A provitamin D synthesized in human beings is**
 (A) Ergosterol
 (B) 7-Dehydrocholesterol
 (C) Cholecalciferol
 (D) 25-Hydroxycholecalciferol
- 199. 25-Hydroxylation of vitamin D occurs in**
 (A) Skin (B) Liver
 (C) Kidneys (D) Intestinal mucosa
- 200. Tubular reabsorption of calcium is increased by**
 (A) Cholecalciferol
 (B) 25-Hydroxycholecalciferol
 (C) Calcitriol
 (D) All of these
- 201. Parathormone is required for the conversion of**
 (A) Cholecalciferol into 1-hydroxycholecalciferol
 (B) Cholecalciferol into 25-hydroxycholecalciferol
 (C) 25-Hydroxycholecalciferol into calcitriol
 (D) Cholesterol into 7-dehydrocholesterol
- 202. Calcitriol inhibits the conversion of**
 (A) Cholesterol into 7-dehydrocholesterol
 (B) Cholecalciferol into 1-hydroxycholecalciferol
 (C) Cholecalciferol into 25-hydroxycholecalciferol
 (D) 25-Hydroxycholecalciferol into 1,25-dihydroxycholecalciferol
- 203. Bowlegs and knock-knees can occur in**
 (A) Rickets (B) Osteomalacia
 (C) Both A and B (D) Hypervitaminosis D
- 204. Calcification of soft tissues can occur in**
 (A) Osteomalacia
 (B) Rickets
 (C) Hypervitaminosis D
 (D) None of these
- 205. Levels of serum calcium and inorganic phosphorus are increased in**
 (A) Hypervitaminosis D
 (B) Hypoparathyroidism
 (C) Hypovitaminosis D
 (D) None of these
- 206. Requirement of vitamin E increases with the increasing intake of**
 (A) Calories (B) Proteins
 (C) PUFA (D) Cholesterol
- 207. In human beings, vitamin E prevents**
 (A) Sterility
 (B) Hepatic necrosis
 (C) Muscular dystrophy
 (D) None of these
- 208. Vitamin E protects**
 (A) Polyunsaturated fatty acids against aeroxidation
 (B) Vitamin A and carotenes against oxidation
 (C) Lung tissue against atmospheric pollutants
 (D) All of these
- 209. Intestinal bacteria can synthesise**
 (A) Phyllogquinone (B) Farnoquinone
 (C) Both (A) and (B) (D) Menadione

- 210. A water soluble form of vitamin K is**
(A) Phylloquinone (B) Farnoquinone
(C) Menadione (D) None of these
- 211. Prothrombin time is prolonged in**
(A) Vitamin K deficiency
(B) Liver damage
(C) Both (A) and (B)
(D) None of these
- 212. A synthetic form of vitamin K is**
(A) Menadione (B) Farnoquinone
(C) Phylloquinone (D) None of these
- 213. Retinal is reduced to retinol by retinene reductase in presence of the coenzyme**
(A) NAD⁺ (B) NADP⁺
(C) NADH + H⁺ (D) NADPH + H⁺
- 214. Retinal exists as an ester with higher fatty acids in the**
(A) Liver (B) Kidney
(C) Lung (D) All of these
- 215. Retinol is transported to the blood as retinol attached to**
(A) α_1 -globulin (B) α_2 -globulin
(C) β -globulin (D) γ -globulin
- 216. Carotenes are transported with the**
(A) Minerals (B) Proteins
(C) Lipids (D) Lipoproteins
- 217. The drugs that form complexes with pyridoxal are**
(A) Isoniazid (B) Penicillamine
(C) Rifampicin (D) Both (A) and (B)
- 218. In the blood the vitamin esters are attached to**
(A) α_1 -lipoproteins (B) α_2 -lipoproteins
(C) β -lipoproteins (D) γ -lipoproteins
- 219. The percentage of Vitamin A in the form of esters is stored in the liver:**
(A) 80 (B) 85
(C) 90 (D) 95
- 220. The performed Vitamin A is supplied by foods such as**
(A) Butter (B) Eggs
(C) Fish liver oil (D) All of these
- 221. The non-protein part of rhodopsin is**
(A) Retinal (B) Retinol
(C) Carotene (D) Repsin
- 222. Lumirhodopsin is stable only at a temperature below**
(A) -35°C (B) -40°C
(C) -45°C (D) -50°C
- 223. The normal concentration of vitamin A in blood in I.V/dl:**
(A) 20-55 (B) 24-60
(C) 30-65 (D) 35-70
- 224. Continued intake of excessive amounts of vitamin A especially in children produces**
(A) Irritability (B) Anorexia
(C) Headache (D) All of these
- 225. Vitamin D₂ is also said to be**
(A) Activated ergosterol
(B) Fergocalciferol
(C) Viosterol
(D) All of these
- 226. The poor sources of vitamin D:**
(A) Eggs (B) Butter
(C) Milk (D) Liver
- 227. The activity of tocopherols is destroyed by**
(A) Oxidation (B) Reduction
(C) Conjugation (D) All of these
- 228. Some tocopherols are**
(A) Terpenoid in structure
(B) Dional in structure
(C) Isoprenoid in structure
(D) Farnesyl in structure
- 229. The methyl groups in the aromatic nucleus of a tocopherols are**
(A) 2 (B) 3
(C) 4 (D) 5

- 230. Vitamin E stored in**
 (A) Mitochondria (B) Microsomes
 (C) Both (A) and (B) (D) None of these
- 231. Vitamin E protects the polyunsaturated fatty acids from oxidation by molecular oxygen in the formation of**
 (A) Superoxide (B) Peroxide
 (C) Trioxide (D) All of these
- 232. The tocopherols prevent the oxidation of**
 (A) Vitamin A (B) Vitamin D
 (C) Vitamin K (D) Vitamin C
- 233. Vitamin E protects enzymes from destruction in**
 (A) Muscles (B) Nerves
 (C) Gonads (D) All of these
- 234. Vitamin K regulates the synthesis of blood clotting factors:**
 (A) VII (B) IX
 (C) X (D) All of these
- 235. Ascorbic acid can reduce**
 (A) 2, 4-dinitro benzene
 (B) 2, 6-Dichlorophenol Indophenol
 (C) 2, 4-dibromobenzene
 (D) 2, 6-dibromo benzene
- 236. Sterilized milk is devoid of**
 (A) Vitamin A (B) Vitamin B₁
 (C) Vitamin C (D) Vitamin D
- 237. The symptoms of scurvy are**
 (A) Poor healing of wounds
 (B) Loosening of teeth
 (C) Anaemia
 (D) All of these
- 238. Kwashiorkor results from**
 (A) Vitamin A deficiency
 (B) Vitamin D deficiency
 (C) Deficiency of minerals in diet
 (D) Protein and caloric deficiency in diet
- 239. Which among the following fatty acids is an essential fatty acid for man?**
 (A) Palmitic acid (B) Oleic acid
 (C) Linoleic acid (D) None of these
- 240. The number of nutritionally essential amino acids for man is**
 (A) 6 (B) 8
 (C) 10 (D) 12
- 241. Avidin is present in**
 (A) Cow's milk
 (B) Raw egg
 (C) Green leafy vegetables
 (D) Carrots
- 242. Marasmus is due to malnutrition of**
 (A) Proteins
 (B) Proteins and calories
 (C) Proteins and vitamins
 (D) Proteins and minerals
- 243. Energy value in kilocalorie per gram of fat in the body is**
 (A) 1 (B) 4
 (C) 9 (D) 18
- 244. Which among the following is an essential amino acid for man?**
 (A) Alanine (B) Serine
 (C) Valine (D) Glutamic acid
- 245. Under what condition to basal metabolic rate goes up?**
 (A) Cold environment
 (B) Hot environment
 (C) Intake of base forming foods
 (D) Hypothyroidism
- 246. What is the major form of caloric storage in human body?**
 (A) ATP
 (B) Glycogen
 (C) Creatine phosphate
 (D) triacylglycerol
- 247. The phosphoprotein of milk is**
 (A) Lactalbumin (B) Lactoglobulin
 (C) Vitellin (D) Casein
- 248. Dietary deficiency of this vitamin leads to night blindness:**
 (A) Retinol (B) Niacin
 (C) Ascorbic acid (D) Cholecalciferol

- 249. A non essential amino acid is not**
(A) Absorbed in the intestines
(B) Required in the diet
(C) Incorporated into the protein
(D) Metabolized by the body
- 250. The deficiency of Vitamin B₁₂ leads to**
(A) Pernicious anaemia
(B) Megaloblastic anaemia
(C) Both (A) and (B)
(D) None of these
- 251. Which among the following is a nutritionally essential amino acid for man?**
(A) Alanine (B) Glycine
(C) Tyrosine (D) Isoleucine
- 252. The maximum specific dynamic action of food stuff is exerted by**
(A) carbohydrates (B) fats
(C) proteins (D) vitamins
- 253. The essential amino acids**
(A) must be supplied in the diet because the organism has lost the capacity to aminate the corresponding ketoacids
(B) must be supplied in the diet because the human has an impaired ability to synthesize the carbon chain of the corresponding ketoacids
(C) are identical in all species studied
(D) are defined as these amino acids which cannot be synthesized by the organism at a rate adequate to meet metabolic requirements
- 254. Fibre in the diet is beneficial in**
(A) Hyper glycaemia
(B) Hyper cholesteremia
(C) Colon cancer
(D) All of these
- 255. Sucrose intolerance leads to**
(A) Hyper glycaemia (B) Glycosuria
(C) Diarrhoea (D) Hypoglycaemia
- 256. There can be intolerance with respect to the following sugar:**
(A) Glucose (B) Lactose
(C) Maltose (D) Xylose
- 257. Milk contains very poor amounts of**
(A) Calcium (B) Phosphate
(C) Iron (D) Riboflavin
- 258. Egg contains very little**
(A) Fat
(B) Proteins
(C) Carbohydrates
(D) Calcium and phosphorus
- 259. BMR (Basal Metabolic rate) is elevated in**
(A) Hyper thyroidism (B) Under nutrition
(C) Starvation (D) Hypothyroidism
- 260. Soyabean proteins are rich in**
(A) Lysine (B) Alanine
(C) Glycine (D) Aspartic acid
- 261. Corn and gliadin are low in**
(A) Lysine (B) Alanine
(C) Glycine (D) Aspartic acid
- 262. What is the disease caused by thiamine deficiency?**
(A) Nycalopia (B) Scurvy
(C) Rickets (D) Beriberi
- 263. Retinol and retinol-binding protein (RBP) bound with this protein:**
(A) Albumin (B) Prealbumin
(C) α_2 -globulin (D) β -globulin
- 264. Megaloblastic anemia is caused by the deficiency of**
(A) Folic acid (B) Vitamin B₆
(C) Iron (D) Protein
- 265. This vitamin acts as anti-oxidant:**
(A) Vitamin A (B) Vitamin D
(C) Vitamin E (D) Vitamin K
- 266. Calcitriol is**
(A) 1-OH-cholecalciferol
(B) 25-OH-cholecalciferol
(C) 24, 25-diOH cholecalciferol
(D) 1, 25-diOH cholecalciferol
- 267. 1-hydroxylation of 25-OH vitamin D₃ takes place in**
(A) Liver (B) Kidneys
(C) Intestine (D) Pancreas

- 268. 25-hydroxylation of vitamin D₃ takes place in**
 (A) Liver (B) Kidneys
 (C) Intestine (D) Pancreas
- 269. Hydroxylation of 25-hydroxy cholecalciferol is promoted by**
 (A) Cytochrome - a (B) Parathyroid hormone
 (C) Cytochrome-b (D) CAMP
- 270. The egg injury factor in raw egg white is**
 (A) Biotin (B) Avidin
 (C) Albumin (D) Calcium salts
- 271. The following has cyanide:**
 (A) Vitamin B₁₂
 (B) Adenyl cobamide
 (C) Benzimidazole cobamide
 (D) Methyl cobamide
- 272. The human species can biosynthesize**
 (A) Vitamin C (B) Vitamin B₁₂
 (C) Thiamine (D) Niacin
- 273. Retina contains this photosensitive pigment:**
 (A) Rhodopsin (B) Opsin
 (C) Retinol (D) Melanin
- 274. Anti xerophthalmic vitamin is**
 (A) Vitamin B₁ (B) Vitamin B₂
 (C) Vitamin B₆ (D) Vitamin A
- 275. One of the following is not a symptom of Addison's disease.**
 (A) Hypoglycemia (B) Hyponatremia
 (C) Hypokalemia (D) Hypochloremia
- 276. Gammmaxane is an antimetabolite of**
 (A) Thiamine (B) Riboflavin
 (C) Pyridoxin (D) Inositol
- 277. Pyridoxin deficiency may lead to convulsions as it is needed for the synthesis of**
 (A) GABA (B) PABA
 (C) EFA (D) SAM
- 278. Sulpha drugs are antimetabolites of**
 (A) Vitamin K (B) Pyridoxin
 (C) Folic acid (D) Vitamin B₂
- 279. This abnormal metabolite may be responsible for the neurological manifestation of pernicious anemia:**
 (A) Taurine (B) Methyl malonic acid
 (C) Xantherunic acid (D) Phenyl pyruvic acid
- 280. The vitamin in leafy vegetables:**
 (A) D (B) K
 (C) A (D) Both (B) and (C)
- 281. Isonicotinic acid hydrazide given in the treatment of tuberculosis may lead to a deficiency of**
 (A) Vitamin A (B) Pyridoxin
 (C) Folate (D) Inositol
- 282. Biotin is required for the reaction of CO₂ with**
 (A) Water
 (B) Acetyl CoA
 (C) NH₃
 (D) Incorporation of carbon δ in purine
- 283. A deficiency of folate leads to**
 (A) Megaloblastic anemia
 (B) Aplastic anemia
 (C) Pernicious anemia
 (D) Hypochromic microcytic anemia
- 284. A deficiency of Iron leads to**
 (A) Megaloblastic anemia
 (B) Aplastic anemia
 (C) Pernicious anemia
 (D) Hypochromic microcytic anemia
- 285. Corninoid coenzymes are coenzymes of**
 (A) Vitamin B₁₂ (B) Vitamin B₆
 (C) Vitamin B₂ (D) Vitamin B₁
- 286. Vitamin B₁₂ initially binds to the proteins known as**
 (A) Transcobalamin I
 (B) R-Proteins
 (C) Transcobalamin II
 (D) Intrinsic factor of castle
- 287. Extrinsic factor of castle is**
 (A) Vitamin B₁₂ (B) Glycoprotein
 (C) R-Proteins (D) Sigma protein

- 288. Intrinsic factor of castle is**
(A) Vitamin B₁₂ (B) Glycoprotein
(C) R-Proteins (D) Sigma protein
- 289. Pernicious means**
(A) Prolonged (B) Dangerous
(C) Intermittent (D) Idiopathic
- 290. Reduction of D-ribonucleotides to D-deoxy ribonucleotides in prokaryotes requires**
(A) 5, 6 dimethyl benzimidazole cobamide
(B) Thioredoxin
(C) Tetra hydrobiopterin
(D) Tetra hydrofolate
- 291. Biotin is also known as**
(A) Anti egg white injury factor
(B) Rutin
(C) Both (A) and (B)
(D) None of these
- 292. Angular stomatosis is due to**
(A) Ariboflavinoses
(B) Deficiency of Vitamin C
(C) Deficiency of Vitamin B₁
(D) Deficiency of folate
- 293. One of the main functions of Vitamin K is cofactor for**
(A) Carboxylate for the formation of γ carboxyglutamate
(B) Methylation of δ -adenosyl methionine
(C) Carboxylation of biotin
(D) One carbon transfer by tetrahydrofolate
- 294. Prothrombin time is prolonged by administering**
(A) Vitamin K (B) Dicoumarol
(C) Calcium (D) Prothrombin
- 295. This vitamin acts as antioxidant.**
(A) Vitamin A (B) Vitamin D
(C) Vitamin E (D) Vitamin K
- 296. This is a photo-labile vitamin.**
(A) Thiamine (B) Riboflavin
(C) Niacin (D) Cholecalciferol
- 297. Convulsive episodes occur when there is a severe deficiency of**
(A) Pyridoxine (B) Folic acid
(C) Thiamine (D) Riboflavin
- 298. Metastatic classification is seen in hyper-vitaminosis:**
(A) A (B) K
(C) D (D) E
- 299. The anti vitamin for para aminobenzoic acid is**
(A) Aminopterin (B) Dicoumarol
(C) Sulphonamides (D) Thiopanic acid
- 300. Several pantothenic acid deficiency in man has been reported to cause**
(A) Burning feet syndrome
(B) Scurvy
(C) Cataract
(D) Xerophthalmia
- 301. Cholesterol is a precursor in the biogenesis of**
(A) Vitamin A (B) Vitamin D
(C) Vitamin E (D) None of these
- 302. This vitamin is a potent antioxidant of vitamin A:**
(A) Vitamin C (B) Vitamin E
(C) Vitamin K (D) Vitamin D
- 303. In retinal rickets, the following hydroxylation of Vitamin D₃ does not take place:**
(A) 25 (B) 1
(C) 24 (D) 7
- 304. The following does not have phosphorous:**
(A) Riboflavin (B) TPP
(C) NAD⁺ (D) COASH
- 305. Convulsions and delirium could be caused by a severe deficiency of**
(A) Thiamine (B) Glutamate
(C) Niacin (D) Magnesium
- 306. Rice polishings contain this vitamin:**
(A) Riboflavin (B) Niacin
(C) Thiamine (D) Vitamin B₁₂

- 307. In beri beri there will be accumulation of _____ in blood.**
 (A) Aceto acetic acid (B) β -OH butyric acid
 (C) Pyruvic acid (D) Methyl malonic acid
- 308. Symptoms of pellagra are**
 (A) Dermatitis and diarrhea only
 (B) Dermatitis and dementia only
 (C) Diarrhea, dermatitis and dementia
 (D) Diarrhea and elements only
- 309. Pyridoxine deficiency leads to**
 (A) Megaloblastic anemia
 (B) Aplastic anemia
 (C) Hypochromic microcytic anemia
 (D) Pernicious anemia
- 310. The significant ocular lesion in arbo flavinosis:**
 (A) Keratomalacia
 (B) Bitot's spots
 (C) Vascularisation of the cornea
 (D) lachrymal metaplasia
- 311. Irradiation of foods raises the content of**
 (A) Vitamin A (B) Vitamin D
 (C) Vitamin E (D) Vitamin K
- 312. An anti-vitamin for folic acid is**
 (A) Amethoptesin (B) Dicoumarol
 (C) Pyriothamine (D) Isoniazid
- 313. Thymine is**
 (A) Water soluble vitamin
 (B) Fat soluble vitamin
 (C) Purine base
 (D) Pyrimidine base
- 314. The anti-vitamin for para amino benzoic acid is**
 (A) Aminopterrin (B) Dicoumarol
 (C) INH (D) Sulphonamides
- 315. The sulphur-containing vitamins among the following B-Vitamin is**
 (A) Thiamine (B) Riboflavin
 (C) Niacin (D) Pyridoxine
- 316. Taurinuria may be encountered in**
 (A) Pernicious anemia (B) Beriberi
 (C) Pellegra (D) Folate deficiency
- 317. The three vitamins which are specially required for proper nerve functions are acid:**
 (A) Thiamine, niacin and riboflavin
 (B) Thiamine, folic acid, choline
 (C) Thiamine, riboflavin, pantothenic acid
 (D) Thiamine, pyridoxin, vitamin B₁₂
- 318. This is a rich source for vitamin C.**
 (A) Rice (B) Milk
 (C) Egg (D) Lemon
- 319. The following vitamin is involved in coenzyme function in transaminations:**
 (A) Nicotinamide (B) Pyridoxine
 (C) Thiamine (D) Riboflavin
- 320. Methyl malonic aciduria is seen in the deficiency of**
 (A) Vitamin B₆ (B) Folic acid
 (C) Thiamine (D) Vitamin B₁₂
- 321. Deficiency of Vitamin C leads to**
 (A) Rickets (B) Scurvy
 (C) Night blindness (D) All of these
- 322. If no primer DNA was given, the following scientist could not have synthesized DNA.**
 (A) Ochoa (B) Okazaki
 (C) Kornberg (D) Monod
- 323. Antisterility vitamin is**
 (A) Vitamin B₁ (B) Vitamin B₂
 (C) Vitamin E (D) Vitamin K
- 324. All the following vitamins give rise to cofactors that are phosphorylated in the active form except**
 (A) Vitamin A (B) Vitamin B₁
 (C) Vitamin D (D) Vitamin E
- 325. Molecular Iron, Fe, is**
 (A) Stored in the body in combination with Ferritin
 (B) Stored primarily in the spleen
 (C) Excreted in the urine as Fe²⁺
 (D) absorbed in the intestine by albumin

- 326. Humans most easily tolerate a lack of which of the following nutrients?**
(A) Protein (B) Iodine
(C) Carbohydrate (D) Lipid
- 327. A deficiency of vitamin B₁₂ causes**
(A) Cheliosis (B) Beriberi
(C) Pernicious anemia (D) Scurvy
- 328. In adults a severe deficiency of vitamin D causes**
(A) Night blindness (B) Osteomalacia
(C) Rickets (D) Skin cancer
- 329. Which of the following vitamins would most likely become deficient in a person who develops a completely carnivorous life style?**
(A) Thiamine (B) Niacin
(C) Cobalamine (D) Vitamin C
- 330. Which of the following statements regarding Vitamin A is true?**
(A) It is not an essential Vitamin
(B) It is related to tocopherol
(C) It is a component of rhodopsin
(D) It is also known as Opsin
- 331. Fully activated pyruvate carboxylase depends upon the presence of**
(A) Malate and Niacin
(B) Acetyl CoA and biotin
(C) Acetyl CoA and thiamine pyrophosphate
(D) Oxaloacetate and biotin
- 332. Pantothenic acid is a constituent of coenzyme involved in**
(A) Acetylation (B) Decarboxylation
(C) Dehydrogenation (D) Oxidation
- 333. Biotin is involved in which of the following types of reactions?**
(A) Hydroxylation (B) Carboxylation
(C) Decarboxylation (D) Deamination
- 334. Which of the following vitamins is the precursor of CoA?**
(A) Riboflavin (B) Pantothenate
(C) Thiamine (D) Cobamide
- 335. Vitamins that function as dinucleotide derivatives include all the following except**
(A) Thiamine (B) Niacin
(C) Nicotinate (D) Vitamin B₂
- 336. Methyl malonic aciduria is seen in a deficiency of**
(A) Vitamin B₆ (B) Folic acid
(C) Thiamine (D) Vitamin B₁₂
- 337. What is the disease caused by thiamine deficiency?**
(A) Nyctalopia (B) Scurvy
(C) Rickets (D) Beriberi
- 338. Retinol and Retinol binding protein are bound with this protein:**
(A) Albumin (B) Prealbumin
(C) α -globulin (D) β -globulin
- 339. Megaloblastic anemia is caused by the deficiency of**
(A) Folic acid (B) Vitamin B₆
(C) Iron (D) Protein
- 340. This vitamin acts as anti oxidant.**
(A) Vitamin A (B) Vitamin D
(C) Vitamin E (D) Vitamin K
- 341. Calcitriol is**
(A) 1-hydroxy cholecalciferol
(B) 25-hydroxy cholecalciferol
(C) 24, 25-dihydroxy cholecalciferol
(D) 1, 25-dihydroxy cholecalciferol
- 342. 1-hydroxylation of 25-hydroxy Vitamin D₃ takes place in**
(A) Liver (B) Kidneys
(C) Intestine (D) Pancreas
- 343. 25-hydroxylation of Vitamin D₃ takes place in**
(A) Liver (B) Kidneys
(C) Intestines (D) Pancreas
- 344. Hydroxylation of 25-hydroxy cholecalciferol is promoted by**
(A) Cytochrome A (B) Panthyroid hormone
(C) Cytochrome b (D) cAMP

- 345. The egg injury factor in raw egg white is**
 (A) Biotin (B) Avidin
 (C) Albumin (D) Calcium salts
- 346. The following has cyanide:**
 (A) Vitamin B₁₂
 (B) Adenyl cobamide
 (C) Benzimidazole cobamide
 (D) Methyl cobamide
- 347. The human species can biosynthesize**
 (A) Vitamin C (B) Vitamin B₁₂
 (C) Thiamine (D) Niacin
- 348. Retina contains this photo sensitive pigment.**
 (A) Rhodopsin (B) Opsin
 (C) Retinol (D) Malanin
- 349. Antixerophthalmic vitamin is**
 (A) Vitamin B₁ (B) Vitamin B₂
 (C) Vitamin B₆ (D) Vitamin A
- 350. One of the following is not symptom of Addison's disease:**
 (A) Hypoglycemia (B) Hyponatremia
 (C) Hypokalemia (D) Hypochloremia
- 351. Gammaxine is an antimetabolite of**
 (A) Thiamine (B) Riboflavin
 (C) Pyridoxin (D) Inositol
- 352. Pyridoxine deficiency may lead to convulsions as it is needed for the synthesis of**
 (A) GABA (B) PABA
 (C) EFA (D) SAM
- 353. Sulpha drugs are antimetabolites of**
 (A) PABA (B) Pyridoxin
 (C) Vitamin B₂ (D) Pantothenic acid
- 354. This abnormal metabolite may be responsible for the neurological manifestation of pernicious anemia.**
 (A) Taurine (B) Methyl malonic acid
 (C) Xanthurenic acid (D) Phenyl pyruvic acid
- 355. Choline is not required for the formation of**
 (A) Lecithins (B) Acetyl choline
 (C) Sphingomyelin (D) Cholic acid
- 356. Isonicotinic acid hydrazide given in the treatment of tuberculosis may lead to a deficiency of**
 (A) Vitamin A (B) Pyridoxin
 (C) Folate (D) Inositol
- 357. Steroidal prohormone is**
 (A) Vitamin A (B) Vitamin C
 (C) Vitamin D (D) None of these
- 358. A deficiency of folate leads to**
 (A) Megaloblastic anemia
 (B) Aplastic anemia
 (C) Pernicious anemia
 (D) Hypochromic microcytic anemia
- 359. Deficiency of Iron leads to**
 (A) Megaloblastic anemia
 (B) Aplastic anemia
 (C) Pernicious anemia
 (D) Hypochromic microcytic anemia
- 360. Corrinoid coenzymes are coenzymes of**
 (A) Vitamin B₆ (B) Vitamin B₁₂
 (C) Vitamin B₂ (D) Vitamin B₁
- 361. Vitamin B₁₂ initially binds to the proteins known as**
 (A) Transcobalamin I
 (B) R-proteins
 (C) Transcobalamin II
 (D) Intrinsic factor of castle
- 362. Extrinsic factor of castle is**
 (A) Vitamin B₁₂ (B) Glycoprotein
 (C) R-proteins (D) Sigma protein
- 363. Intrinsic factor of castle is**
 (A) Vitamin B₁₂ (B) Glycoprotein
 (C) R-proteins (D) Sigma protein
- 364. Pernicious means**
 (A) Prolonged (B) Dangerous
 (C) Intermittent (D) Idiopathic
- 365. Reduction of D-ribonucleotides to D-deoxy ribonucleotides in prokaryotes requires**
 (A) 5, 6 dimethyl benzimidazole cobamide
 (B) Thiredoxin
 (C) Tetra hydrobiopterin
 (D) Tetra hydrofolate

- 366. Antirachitic vitamin is**
(A) Vitamin A (B) Vitamin D
(C) Vitamin E (D) Vitamin K
- 367. Angular stomatitis is due to**
(A) Ariboflavinosis
(B) Deficiency of Vitamin C
(C) Deficiency of Vitamin B₁
(D) Deficiency of folate
- 368. One of the main functions of Vitamin K is the cofactor for**
(A) Carboxylase for the formation of γ -carboxy glutamate
(B) Methylation by S-adenosyl methionine
(C) Carboxylation by biotin
(D) One carbon transfer by tetra hydrofolate
- 369. Prothrombin time is prolonged by administering**
(A) Vitamin K (B) Dicoumarol
(C) Calcium (D) Prothrombin
- 370. This Vitamin acts as antioxidant:**
(A) Vitamin A (B) Vitamin D
(C) Vitamin E (D) Vitamin K
- 371. This is photo labile vitamin:**
(A) Thiamine (B) Riboflavin
(C) Niacin (D) Cholecalciferol
- 372. Convulsive episodes occur when there is a severe deficiency of:**
(A) Pyridoxine (B) Folic acid
(C) Thiamine (D) Riboflavin
- 373. Metastatic calcification is seen in hyper-vitaminosis:**
(A) A (B) K
(C) D (D) E
- 374. The anti-vitamin for para amino benzoic acid is**
(A) Aminopterin (B) Dicoumasol
(C) Sulphanomides (D) Thiopamic acid
- 375. Severe pathothemic acid deficiency in man has been reported to cause**
(A) Burning feet syndrome
(B) Scurvy
(C) Cataract
(D) Xerophthalmia
- 376. Cholesterol is a precursor in the biogenesis of**
(A) Vitamin A (B) Vitamin D
(C) Vitamin E (D) None of these
- 377. Which of the vitamins is a potent anti-oxidant of Vitamin A?**
(A) Vitamin C (B) Vitamin E
(C) Vitamin K (D) Vitamin D
- 378. In renal rickets, the following hydroxylation of Vitamin D₃ does not take place:**
(A) 25 (B) 1
(C) 24 (D) 7
- 379. Which of the following does not have phosphorous?**
(A) Riboflavin (B) TPP
(C) NAD⁺ (D) CaASH
- 380. Rice-polishings contain which of the following Vitamin?**
(A) Riboflavin (B) Niacin
(C) Thiamine (D) Vitamin B₁₂
- 381. In beri beri there will be accumulation of _____ in blood.**
(A) Aceto acetic acid
(B) β -hydroxy butyric acid
(C) Pyruvic acid
(D) Methyl malonic acid
- 382. Symptoms of pellagra are**
(A) Dermatitis and diarrhea only
(B) Dermatitis and Dermentia only
(C) Diarrhea and dermentia only
(D) Diarrhea, Dermatitis and dementia
- 383. Pyridoxine deficiency leads to**
(A) Megaloblastic anemia
(B) Aplastic anemia
(C) Hypochromic microcytic anemia
(D) Pernicious anemia
- 384. The significant ocular lesion in a riboflavinosis is**
(A) Keratomalacia
(B) Bitot's spots
(C) Vascularisation of the cornea
(D) Lachrynal metaplasia

- 385. An anti-vitamin for folic acid is**
 (A) Aminopterin (B) Dicoumarol
 (C) Pyriothiamine (D) Isoniazid
- 386. Thiamine is**
 (A) Water-soluble vitamin
 (B) Fat soluble vitamin
 (C) Purine base
 (D) Pyrimidine base
- 387. The anti-vitamin for para amino benzoic acid is**
 (A) Aminopterin (B) Dicoumarol
 (C) INH (D) Sulphanomides
- 388. The sulphur containing vitamins among the following B Vitamin is**
 (A) Thiamine (B) Riboflavin
 (C) Niacin (D) Pyridoxine
- 389. Taurinuria may be encountered in**
 (A) Pernicious anemia (B) Beriberi
 (C) Pellagra (D) Folate deficiency
- 390. The three vitamins which are specially required for proper nerve functions are**
 (A) Thiamine, Niacin and Riboflavin
 (B) Thiamin, Folic acid, Choline
 (C) Thiamine, Riboflavin, Pantothenic acid
 (D) Thiamine, Pyridoxin, Vitamin B₁₂
- 391. This is a rich source for Vitamin C:**
 (A) Rice (B) Milk
 (C) Egg (D) Lemon
- 392. Which of the following vitamin is involved in coenzyme function in transaminations?**
 (A) Nicotinamide (B) Pyridoxine
 (C) Thiamine (D) Riboflavin
- 393. Methyl malonic aciduria is seen in a deficiency of**
 (A) Vitamin B₆ (B) Folic acid
 (C) Thiamine (D) Vitamin B₁₂
- 394. In pernicious anemia, Urine contains high amounts of**
 (A) Methyl malonic acid (B) FIGLU
 (C) VMA (D) 5 HIAA
- 395. Anti sterility Vitamin is**
 (A) Vitamin B₁ (B) Vitamin B₂
 (C) Vitamin E (D) Vitamin K
- 396. Biotin deficiency is characterized by the following except**
 (A) Muscular pain (B) Anaemia
 (C) Nausea (D) Dermatitis
- 397. Deficiency of thiamine causes**
 (A) Beri beri (B) Scurvy
 (C) Night blindness (D) Rickets
- 398. Deficiency of Vitamin D leads to**
 (A) Rickets (B) Osteomalacia
 (C) Xerophthalmia (D) Both (A) and (B)
- 399. The vitamin that is useful in cancer is**
 (A) A (B) B complex
 (C) C (D) E
- 400. Vitamin A over dosage causes injury to**
 (A) Mitochondria (B) Microtubules
 (C) Lysosomes (D) E.R
- 401. Which is a pro vitamin or vitamin that has antioxidant properties?**
 (A) Beta carotene (B) Vitamin E
 (C) Vitamin C (D) Vitamin D
- 402. The vitamin required for carboxylation reaction is**
 (A) Vitamin B₂ (B) Vitamin B₆
 (C) Biotin (D) Vitamin B₁₂
- 403. Biological activity of tocopherols has been attributed in part to their action as**
 (A) Antioxidant
 (B) Anticoagulents
 (C) Provitamin
 (D) Carriers in electron transport system
- 404. Biotin is essential for**
 (A) Translation (B) Carboxylation
 (C) Hydroxylation (D) Transamination
- 405. Which of the following vitamin act as a respiratory catalyst?**
 (A) B₂ (B) Pyridoxine
 (C) B₁₂ (D) C

- 406. Metal in Vitamin B₁₂ is**
(A) Copper (B) Cobalt
(C) Iron (D) Zinc
- 407. Whole wheat is an excellent source of**
(A) Vitamin D (B) Vitamin C
(C) Vitamin A (D) Thiamine
- 408. Vitamin used in the treatment of homocystinuria is**
(A) B₁ (B) B₅
(C) B₁₂ (D) B₆
- 409. Which of the following is not a component of coenzyme A?**
(A) Pantothenic acid (B) Adenylic acid
(C) Acetic acid (D) Sulfhydryl group
- 410. The most active form of Vitamin D is**
(A) 25-Hydroxycholecalciferol
(B) 1, 25-dihydroxycholecalciferol
(C) 25-dihydroxyergocalciferol
(D) None of these
- 411. The important part in the structure of flavoprotein is**
(A) Vitamin B₆ (B) Vitamin B₂
(C) Vitamin B₁ (D) Vitamin A
- 412. Vitamin essential for transamination is**
(A) B₁ (B) B₂
(C) B₆ (D) B₁₂
- 413. The action of Vitamin K in formation of clotting factor is through**
(A) Post transcription
(B) Post translation
(C) Golgi complex
(D) Endoplasmic reticulum
- 414. Vitamin necessary for CoA synthesis:**
(A) Pantothenic acid (B) Vitamin C
(C) B₆ (D) B₁₂
- 415. Cofactor for transamination is**
(A) Thymine (B) Riboflavin
(C) Pyridoxine (D) Niacin
- 416. During deficiency of thiamine the concentration of the following compound rises in blood and intracellular fluid:**
(A) Glycogen (B) Sugar
(C) Amino acids (D) Pyruvic acid
- 417. The conversion of carotenoids to Vitamin A takes place in**
(A) Intestine (B) Liver
(C) Kidney (D) Skin
- 418. Man cannot synthesize vitamin:**
(A) A (B) B
(C) C (D) D
- 419. Vitamin A is required for the formation of a light receptor protein known as**
(A) Globulin (B) Lycoprotein
(C) Chromoprotein (D) Rhodospin
- 420. Excessive vitamin A in children produces**
(A) Irritability (B) Anorexia
(C) Headache (D) All of these
- 421. Tocopherols prevent the oxidation of**
(A) Vitamin A (B) Vitamin D
(C) Vitamin K (D) Vitamin C
- 422. Vitamin K regulates the synthesis of blood clotting factors.**
(A) VII (B) IX
(C) X (D) All of these
- 423. The colour of cyanomethemoglobin is**
(A) Pale yellow (B) Pink
(C) Brown (D) Bright red
- 424. Transketolase activity is affected in**
(A) Biotin deficiency
(B) Pyridoxine deficiency
(C) PABA deficiency
(D) Thiamine deficiency
- 425. The hydrolysis of glucose-6-PO₄ is catalyzed by a phosphatase that is not found in which of the following?**
(A) Liver (B) Kidney
(C) Muscle (D) Small intestine

426. Vitamin K₂ was originally isolated from

- (A) Soyabean (B) Putrid fishmeal
(C) Alfa alfa (D) Oysters

427. The following form of vitamin A is used in the visual cycle:

- (A) Retinol (B) Retinoic acid
(C) Retinaldehyde (D) Retinyl acetate

428. Increased carbohydrate consumption increases the dietary requirement for

- (A) Thiamine (B) Riboflavine
(C) Pyridoxine (D) Folic acid

429. Increased protein intake is accompanied by an increased dietary requirement for

- (A) Thiamine (B) Riboflavine
(C) Folic acid (D) Nicotinic acid

430. The deficiency of which one of the following vitamin causes creatinuria?

- (A) Vitamin E (B) Vitamin K
(C) Vitamin A (D) Vitamin B₆

431. A biochemical indication of vitamin B₁₂ deficiency can be obtained by measuring the urinary excretion of

- (A) Pyruvic acid
(B) Malic acid
(C) Methyl malonic acid
(D) Urocanic acid

ANSWERS

1. A	2. B	3. A	4. A	5. A	6. A
7. D	8. A	9. D	10. A	11. B	12. B
13. A	14. D	15. B	16. C	17. A	18. A
19. A	20. A	21. B	22. D	23. A	24. C
25. C	26. A	27. A	28. A	29. C	30. A
31. D	32. A	33. C	34. C	35. B	36. A
37. C	38. B	39. A	40. D	41. D	42. D
43. A	44. A	45. B	46. C	47. A	48. C
49. B	50. A	51. D	52. C	53. C	54. C
55. D	56. B	57. C	58. A	59. A	60. D
61. B	62. B	63. B	64. B	65. A	66. A
67. B	68. C	69. D	70. A	71. A	72. C
73. C	74. B	75. C	76. A	77. A	78. A
79. C	80. D	81. A	82. D	83. C	84. A
85. C	86. A	87. C	88. A	89. D	90. C
91. A	92. A	93. D	94. A	95. A	96. A
97. C	98. D	99. C	100. B	101. B	102. B
103. D	104. C	105. C	106. B	107. C	108. D
109. A	110. D	111. A	112. D	113. B	114. D
115. A	116. D	117. D	118. C	119. C	120. B
121. C	122. A	123. D	124. D	125. C	126. C
127. A	128. A	129. C	130. D	131. A	132. A
133. D	134. C	135. D	136. D	137. B	138. C
139. C	140. B	141. B	142. B	143. D	144. D
145. C	146. D	147. D	148. B	149. D	150. A
151. C	152. D	153. B	154. D	155. C	156. D
157. A	158. D	159. D	160. D	161. C	162. C
163. C	164. A	165. D	166. C	167. C	168. D
169. A	170. B	171. C	172. B	173. D	174. B
175. D	176. B	177. D	178. B	179. A	180. A
181. D	182. D	183. B	184. A	185. B	186. C
187. D	188. C	189. D	190. C	191. C	192. B
193. C	194. D	195. D	196. C	197. B	198. B
199. B	200. C	201. C	202. D	203. A	204. C
205. A	206. C	207. D	208. D	209. B	210. C
211. C	212. A	213. C	214. D	215. A	216. D
217. D	218. C	219. D	220. D	221. A	222. D
223. B	224. D	225. D	226. C	227. A	228. A
229. B	230. C	231. B	232. A	233. D	234. D
235. B	236. C	237. B	238. D	239. C	240. B
241. B	242. B	243. C	244. C	245. A	246. C

247. D	248. A	249. B	250. C	251. D	252. C
253. B	254. D	255. C	256. B	257. C	258. C
259. A	260. B	261. D	262. D	263. B	264. A
265. C	266. D	267. B	268. A	269. B	270. B
271. A	272. D	273. A	274. D	275. C	276. D
277. A	278. C	279. A	280. D	281. D	282. B
283. B	284. A	285. D	286. B	287. B	288. A
289. B	290. B	291. A	292. B	293. A	294. A
295. B	296. C	297. B	298. A	299. C	300. C
301. A	302. B	303. B	304. A	305. D	306. D
307. C	308. C	309. C	310. B	311. C	312. A
313. D	314. D	315. A	316. A	317. D	318. D
319. B	320. D	321. C	322. C	323. C	324. B
325. A	326. C	327. C	328. B	329. D	330. C
331. B	332. A	333. B	334. B	335. A	336. D
337. D	338. B	339. A	340. D	341. D	342. B
343. A	344. B	345. B	346. A	347. D	348. A
349. D	350. C	351. D	352. A	353. A	354. B
355. D	356. B	357. C	358. A	359. D	360. B
361. B	362. A	363. B	364. B	365. A	366. B
367. A	368. A	369. B	370. C	371. B	372. A
373. C	374. C	375. A	376. B	377. B	378. B
379. A	380. C	381. C	382. D	383. C	384. C
385. A	386. D	387. D	388. A	389. A	390. D
391. D	392. B	393. D	394. A	395. C	396. B
397. A	398. D	399. A	400. C	401. B	402. C
403. B	404. B	405. A	406. B	407. D	408. D
409. C	410. A	411. B	412. C	413. B	414. A
415. C	416. D	417. A	418. C	419. D	420. D
421. A	422. D	423. D	424. D	425. C	426. B
427. C	428. A	429. A	430. C	431. C	

EXPLANATIONS FOR THE ANSWERS

7. D The four fat soluble vitamins (A, D, E, K) are soluble in fats, oils and fat solvents (alcohol, acetone etc.). Their occurrence in the diet, absorption and transport are associated with fat. All the fat soluble vitamins contain one or more of isoprene units (5 carbon units). They can be stored in liver and adipose tissue.
40. D Vitamin A is essential to maintain healthy epithelial tissues and proper immunity. Retinol and retinoic acid functions like steroid hormones. They regulate protein synthesis and thus are involved in cell growth and differentiation. β -Carotene functions as an antioxidant and reduces the risk for heart attack, cancers etc.
77. A The recommended dietary allowances for vitamin D is around 400 I.U. In countries with good sunlight (like India), it is much lower. *i.e.*, 200 I.U. The good sources include fatty fish, fish liver oils, egg yolk.
110. D The earliest symptoms of thiamin deficiency include constipation, appetite suppression, nausea as well as mental depression, peripheral neuropathy and fatigue. Chronic thiamin deficiency leads to more severe neurological symptoms including ataxia, mental confusion and loss of eye coordination. Other clinical symptoms of prolonged thiamin deficiency are related to cardiovascular and muscular defects. The severe thiamin deficiency disease is known as Beriberi.
149. D Riboflavin deficiency is often seen in chronic alcoholics due to their poor diabetic habits. Symptoms associated with riboflavin deficiency include, glossitis, seborrhea, angular stomatitis, cheilosis and photophobia. Riboflavin decomposes when exposed to visible light.
187. D Pyridoxal, pyridoxamine and pyridoxine are collectively known as vitamin B₆. All three compounds are efficiently converted to the biologically active form of vitamin B₆, pyridoxal phosphate. This conversion is catalyzed by the ATP requiring enzyme, pyridoxal kinase.
217. D Isoniazid (anti-tuberculosis drug) and penicillamine (used to treat rheumatoid arthritis and cystinurias) are two drugs that complex with pyridoxal and pyridoxal phosphate resulting in a deficiency in this vitamin.
250. C The liver can store up to six years worth of vitamin B₁₂, hence deficiencies in this vitamin are rare. Pernicious anemia is a megaloblastic anemia resulting from vitamin B₁₂ deficiency that develops as a result a lack of intrinsic factor in the stomach leading to malabsorption of the vitamin.
291. A Biotin is also called anti-egg white injury factor because, egg white contains a protein called avidin, which combines with biotin in the intestinal tract and prevents absorption of biotin from intestines.
321. B Deficiency in Vitamin C leads to the disease scurvy due to the role of the vitamin in the post-translational modification of collagens. Scurvy is characterized by easily bruised skin, muscle fatigue, soft swollen gums, decreased wound healing and hemorrhaging, osteoporosis and anemia.
357. C Vitamin D is a steroid prohormone. It is represented by steroids that occur in animals, plants and yeast. Active form of the hormone is 1, 25-dihydroxy vitamin D₃ (1, 25-(OH)₂D₃, also termed calcitriol). Calcitriol functions primarily to regulate calcium and phosphorous homeostasis.
398. D The main symptom of vitamin D deficiency in children is rickets and in adults is osteomalacia. Rickets is characterized by improper mineralization during the development of the bones resulting in soft bones. Osteomalacia is characterized by demineralization of previously formed bone leading to increased softness and susceptibility to fracture.

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