MBBS First Year Biochemistry Paper-I Important Question Bank

Essay Questions:

1. Describe the structure of biological membranes. Discuss the various transport mechanisms across membranes with suitable examples.
2. What are the components of Mitochondrial Electron Transport Chain .Describe the events and inhibitors of Oxidative phosphorylation.
3. Explain the significance and reactions of Hexose MonoPhosphate shunt and disorders associated to it.
4. Describe the chemistry, sources, daily requirement, biochemical functions and deficiency manifestations of Vitamin –B12
5. Describe how cholesterol is synthesized in our body. What are the products formed from Cholesterol?
6. Name the ketone bodies? How are they formed and utilised in the body. Add a note on the metabolic changes in diabetic ketoacidosis.
7. 1. Significance of hexose mono phosphate shunt. 2. Galactosemia. 3. Dietary fiber. 4. Reverse cholesterol transport. 5. Iron absorption. III. Short answers on: (10 x 2 = 20) 1. Uncouplers of electron transport chain. 2. Beriberi. 3. Niemann-Pick disease. 4. Any two mucopolysaccharides –location and its functions. 5. Rapoport Luebering shunt. 6. Glycated hemoglobin. 7. Essential fatty acids. 8. Reactions catalyzed by biotin. 9. Anti-oxidant vitamins and minerals. 10. Wilson's disease
8. Describe in detail the components and chemiosmotic theory of electron transport chain.
9. Describe in detail TCA cycle and the energetics of the same. Justify why TCA cycle is called an amphibolic cycle.
10. Describe the how bilirubin is formed and excreted in the body.
11. Describe the process by which ATP is synthesized in the body.

12. What is the normal blood glucose level? Discuss the factors regulating blood glucose in the fasting and postprandial states. Write the diagnostic criteria for diabetes mellitus.
13. How are dietary lipids digested and absorbed? Write about the transport of lipids in plasma.
14. Explain the Regulation of Blood Glucose in Starvation and well fed state.
15. Write in detail about the Galactose Metabolism and its Applied aspects.
16. Iron – Dietary sources, factors affecting dietary iron absorption, transport and storage, causes and clinical features of Iron deficiency anemia.
17. Describe the dietary sources, daily requirement, biochemical function and deficiency symptoms of vitamin C.
18. Explain the site, steps and energetics of β oxidation of even chain fatty acids. Add a note on its regulation.

19. Describe the digestion and absorption of carbohydrates. Briefly write the metabolic fate of pyruvate.
20. Write in detail about the dietary sources, daily requirement and biochemical functions of Thiamine. Add a note on the deficiency manifestations.
21. Write a note on the metabolism of Vitamin D.
22. Component and function of phospholipids.
23. Describe the synthesis of glucose from alanine and mention its regulation.
24. How are low-density lipoproteins (LDL) produced in the body? Describe with the help of a diagram, their metabolic fate. What determines this process of their metabolic fate? Explain the clinical significance of this lipoprotein.
25. Describe the beta oxidation of Palmitic acid and its regulation.
26. Explain the glycogen metabolism and its regulation. Add a note on associated disorders.
27. Describe the sources, daily requirement, absorption, biochemical function and deficiency manifestations and toxicity of iron.
28. Mention the source, daily requirement of vitamin B12. Describe its absorption biochemical function and deficiency manifestations
29. What is the normal blood sugar level? Describe in detail how it is maintained within normal limits.
30. Classify enzymes. Describe in detail the various factors affecting enzyme action. Add a note on enzyme regulation
31. Describe the components and reactions of electron transport chain. Add a note on its inhibitors.

Short Answer Questions:

1. Competitive inhibition of enzyme activity
2. Biochemical features seen in blood and urine of a patient with hemolytic anemia
3. Functions of Vita – C

4. Anaplerotic role of citric acid cycle
5. Isoenzymes of Lactate dehydrogenase and their significance
6. Functions, Deficiency Symptoms of Vita Thiae
7. Calcium homeostasis and its disorder
8. Metabolic adaptation in Fed state
9. What are the various muco polysaccharides Add a note
10. on hyaluronic acid
11. Line Weaver Burk's Plot and its significance
12. Enzymes, coenzymes, inhibitors of Pyruvate
13. Dehydrogenase Reaction
14. Alcohol metabolism
15. Fredrickson's classification of hyperlipprotenemias

16. Mention the types of heteropolysaccharides and their functions
17. Cardiolipin
18. Mention the types of fatty acid oxidation
19. What are the products of Arachidonic acid?
20. Carnitine
21. Anomerism
22. How Haemoglobin binds to oxygen
23. Km Value and its significance
24. Bronze Diabetes
25. WHO criteria for Diagnosis of Diabetes mellitus
26. Zellweger's syndrome
27. Active form of Vita D and its biochemical role
28. Catabolism of Hemoglobin
29. Protein energy malnutrition
30. Ketogenesis
31. Fatty acid synthase complex
32. Glycogen Metabolism
33. Enzyme inhibition
34. Glycosylated hemoglobin
35. Oxidation phosphorylation
36. Regulation of blood glucose
37. III Short Answer Questions :
38. Zymogen
39. Name two zinc containing enzymes
40. Ferritin
41. Define Km
42. Functions of selenium
43. What are cytochromes?
44. Brown adipose tissue
45. Lactose intolerance
46. Define respiratory quotient
47. Functions of Vita K
48. Role of Niacin as Coenzyme
49. Classification of hyperlipidemias and their clinical importance
50. Sphingolipidoses

51. Biochemical role of Vita C
52. Cori’s cycle and Glucose Alanine cycle
53. High Density Lipoprotein cycle
54. Glycogenolysis
55. Isomerism in carbohydrates
56. Balanced Diet
57. Fructose intolerance

58.III Short Answer Questions :
59. Markers for lysosomes and mitochondria
60. Fluorosis
61. Role of Apo CII
62. Define metalloenzymes with examples
63. Pulmonary surfactant – Structure and clinical importance
64. Iodine number and its importance
65. What is the function of Lipoprotein lipase?
66. Structure of lecithin
67. Net Protein Utilization
68. Chondroitin sulphate - Structure
69. Double Reciprocal plot
70. Alkaline phosphatase as a diagnostic tool
71. What are the different forms of calcium in blood?
72. RDA and functions of Iodine
73. Why Arachidonic acid is not considered 'purely' an essential fatty acid?
74. Define Gluconeogenesis and explain the various steps
75. Formation and fate of Pyruvate
76. Biological value of Proteins
77. Enumerate the compounds derived from cholesterol and mention their biochemical
78.functions
79. Synthesis and regulation of Porphyrins
80.Structure and functions of Mitochondria
81.Reverse Cholesterol Transport and Anti - Atherogenic effect of HDL
82. Wald's Visual Cycle and Deficiency Manifestation of Vita A
83. IsoEnzymes - Definition and Examples
84.Iron – Dietary sources, factors affecting dietary iron absorption, transport and
85.storage, causes and clinical features of Iron deficiency anemia
86.Lactic acidosis
87. Explain why B deficiency causes macrocytic anemia
88. How are dietary lipids distributed after digestion and absorption?
89. Phospholipids
90. Types, functions, tissue specificity and physiological relevance of glucose

91.transporters relevant to insulin secretion and action
92.Importance of HbAc testing
93. Wernicke-Karsakoff syndrome
94. What is the effect of non-competitive inhibition of Km and Vmax?
95. Schematic representation of the electron transport chain
96. Carnitine transport
97. Vita K cycle
98. Metabolic basis of role of aspirin as an anti-platelet agent
99.Importance of HbAc testing

100. Wernicke-Karsakoff syndrome
101. What are metalloenzymes? Give two examples
102. What is glycemic index? Mention two examples of high glycemic index food
103. Limiting aoacids with examples
104. Mechanism of action of methotrexate and dicoumarol
105. Fluorosis
106. Hemochromatosis
107. Serum lipid profile
108. Refsum's disease
109. Essential pentosuria
110. Lecithin sphingomyelin ratio
111. Biochemical functions of Vita B
112. Functions of calcium
113. Glucose transporters
114. Von Gierke disease
115. Metabolism in adipose tissue during starvation
116. Functions of endoplasmic reticulum
117. Dietary fiber
118. Physiological importance of glycogenolysis
119. Define BMR Give its value
120. Antiatherogenic role of high density lipoprotein cholesterol
121. IUBMB classification of enzymes
122. Cori cycle
123. Suicide inhibition of enzymes
124. Importance of brown fat
125. Importance of sphingomyelin
126. Significance of hexose mono phosphate shunt
127. Galactosemia
128. Dietary fiber
129. Reverse cholesterol transport
130. Iron absorption
131. Uncouplers of electron transport chain
132. Beriberi
133. Niemann-Pick disease

134. Any two mucopolysaccharides –location and its functions
135. Rapoport Luebering shunt
136. Glycated hemoglobin
137. Essential fatty acids
138. Reactions catalyzed by biotin
139. Anti-oxidant vitas and erals
140. Wilson's disease
141. What is the effect of non-competitive inhibition of Km and Vmax?

142. Schematic representation of the electron transport chain
143. Carnitine transport
144. Vita K cycle
145. Metabolic basis of role of aspirin as an anti-platelet agent
146. Active Transport with Examples
147. Iron – Dietary sources, factors affecting dietary iron absorption, transport and
148. storage, causes and clinical features of Iron deficiency anemia
149. Metabolism of Ketone Bodies
150. Write important difference between Ricketes and Ostomalacia
151. What is the role of gamma - Carboxylation in coagulations
152. Name the enzyme defect in Niemann Pick disease Gaucher disease
153. Name two components of metabolic syndrome
154. Name the enzyme defect in Pentosuria
155. Name of the defect in Refsum's Disease
156. Name of difference between Coenzyme and Cofactor
157. Insulin and its Clinical importance
158. Name a Vth complex of ETC
159. Define active site of enzymes
160. Glycosidic Bond and Clinically important Glycosides
161. Name two Functions of endo plasmic recticulum
162. Name three essential fatty acids
163. Name the enzyme require for Glucuronidation of bilirubin
164. Daily requirement of Vita A for an adult
165. Name the defect in Menke's disease
166. Name the enzyme defect in Von-gierke's disease
167. Name one Role of Phospholipase A
168. Name three vitas involved in PDH complex
169. Fatty Liver-Causes including role of Lipotrophic Factors
170. Vita C-Sources, RDA, Functions and Deficiency Manifestations
171. PDH
172. Dyslipidemias
173. Apolipoproteins
174. Metabolism of Adipose tissue in fasting condition
175. Fate of Oxaloacetate

176. Liver Enzymes
177. Functions of Magnesium
178. Dietary fibres
179. Cytochrome P Functions of Phospholipids
180. Suicide Inhibition
181. Causes for Abnormal GTT Curves
182. Biologically important peptides
183. Biological value of proteins

184. Competitive enzyme inhibition
185. Carnitine
186. Fatty liver
187. Inhibitors of Citric acid Cycle
188. Cholesterol lowering action of FIBRATES
189. One Carbon compound
190. Functions of Copper
191. Biochemical alteration in PEM Protein Energy Malnutrition
192. Conjugations
193. Stereoisomerism
194. Actions of Insulin
195. Hyperglycemic Hormones
196. Glycolysis in RBC
197. Shuttle pathways across mitochondrial membranes
198. Ocular changes in vita A deficiency
199. Amphipathic lipids
200. Kwashiorkor
201. Enzymes in diagnosis of Myocardial infarction
202. Biochemical functions of zinc
203. Hormones that regulate blood calcium level
204. Mechanism of cyanide poisoning
205. Metabolism of glucose--phosphate
206. Lipoprotein lipase
207. Cori cycle
208. Bile salts – Synthesis & biological role
209. Write briefly about calcium homeostasis
210. Coenzymic role of Pyridoxine
211. Factors regulating blood calcium
212. Wilson's disease
213. Define isoenzymes and give two examples
214. Specific dynamic action
215. Chemiosmotic theory
216. Von Gierke's disease
217. Pyruvate dehydrogenase complex
218. Ionophores

219. Oral glucose tolerance test
220. Deficiency manifestations of vita D
221. Biochemical functions of Iron
222. What is the function of mitochondria in a cell?
223. What is the mechanism of action of statins? What is the therapeutic use of this group of
224. drugs?
225. List dietary sources and biochemical functions of vita C in the body

226. Explain the mechanism of action of cyanide as a poison
227. List good dietary sources of iodine What is the function of this eral in the body?
228. Enzyme defect and commonest clinical feature in von Gierke's disease?
229. What is meant by glycaemic index of food?
230. List differences between marasmus and kwashiorkor?
231. Role of carnitine in beta-oxidation of fatty acids
232. Covalent modification of enzymes in regulation of enzyme activities
233. Lactose intolerance
234. What is the importance of the pentose phosphate pathway in the body?
235. Gluconeogenesis, with reference to definition, substrates, sites and importance in the

Body

236. Role of vita D in the body
237. Causes of iron deficiency and manifestations of such deficiency
238. Isoenzymes, with reference to definition, examples and clinical importance
239. Passive Transport Mechanisms
240. Briefly explain the chemiosmotic hypothesis of Mitchell
241. What is meant by dietary fibre? Explain its importance in one's diet
242. Explain the folate trap hypothesis
243. What is surfactant? Explain its importance in the body in health and disease
244. Explain, with a diagram, the fluid mosaic model of cell membranes
245. What are good dietary sources of iron?
246. Explain how iron is absorbed from the gastrointestinal tract
247. Explain how the activity of an enzyme is affected by the pH of the medium
248. What are the functions of calcium in the body?
249. Describe the functions and deficiency manifestations of vita A
250. Explain the mechanism of action of cyanide as a poison
251. List differences between hexokinase and glucokinase

252. Give examples of drugs that act as inhibitors of enzyme and name the enzyme that each one inhibits
253. Explain the role of bisphosphoglycerate in supply of oxygen to tissue
254. List differences between foetal and adult forms of haemoglobin
255. Why do patients with cholelithiasis often pass clay-coloured stools?
256. What is meant by the metabolic syndrome? What is the significance of this condition?
257. Write two functions & RDA of pyridoxine
258. List differences between marasmus and kwashiorkor?
259. Give two examples of substrate level phosphorylation.