

## **MBBS First Year Biochemistry – I Important Question Bank**

### **Essay Questions MBBS 1<sup>st</sup> Year:**

1. Write in detail about metabolism and regulation of ketone bodies. Add a note on diabetic ketoacidosis.
2. Explain the site, steps and energetics of  $\beta$  oxidation of even chain fatty acids. Add a note on its regulation.
3. 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.
4. Explain the glycogen metabolism and its regulation. Add a note on associated disorders.
5. Iron – Dietary sources, factors affecting dietary iron absorption, transport and storage, causes and clinical features of Iron deficiency anemia.
- 6.

### **Write Short Note Questions MBBS 1<sup>st</sup> Year:**

1. Significance of hexose mono phosphate shunt
2. Galactosemia
3. Dietary fiber
4. Reverse cholesterol transport
5. Iron absorption
6. Biochemical functions of Vitamin B
7. Functions of calcium
8. Glucose transporters
9. Von Gierke disease
10. Metabolism in adipose tissue during starvation
11. Classify membrane transport mechanisms Add a note on active transport
12. Fatty liver
13. Types of enzyme inhibition with suitable examples

14. Functions of vitamin B and its deficiency manifestations
15. Biochemical changes in Atherosclerosis
16. Lactic acidosis
17. Explain why B deficiency causes macrocytic anemia
18. How are dietary lipids distributed after digestion and absorption?
19. Phospholipids
20. Types, functions, tissue specificity and physiological relevance of glucose
21. transporters relevant to insulin secretion and action
22. Diagnostic criteria for diabetes mellitus and laboratory investigation in diabetes
23. mellitus
24. Functions of prostaglandins
25. Absorption of lipids
26. Mucopolysaccharides with examples
27. Metabolism of LDL with clinical importance
28. Functions of Vitamin C
29. Digestion and absorption of lipids
30. Hemoglobin S
31. Isoenzymes
32. Structure of cell membrane
33. Define BMR What are the factors that can affect BMR?
34. Define oxidative phosphorylation Explain chemiosmotic theory
35. Galactosemia
36. Ketogenesis
37. Glucose tolerance Test
38. Write a note an chemiosmotic theory
39. Active transport
40. Uronic acid pathway
41. Insulin
42. Wald's visual cycle
43. Collagen
44. Glycosaminoglycons (GAGS)
45. Chromatography
46. Levels of organization of proteins
47. Calcium Homeostasis
48. Classify RNA and explain the functions
49. Hyper uricemia
50. Renal glycosuria
51. Cardiac troponin
52. Structure of cholesterol and its importance in the body

53. Beri Beri
54. Enzyme poisons
55. Flurosis
56. What is protein energy malnutrition (PEM)? What are the types of PEM?
57. Write the importance features
58. Functions of vitamin C
59. Nutritional importance of proteins
60. Describe the requirement, sources, metabolic functions and deficiency
61. manifestations of folic acid
62. Explain with a neat labeled diagram of fluid mosaic model of biological membrane
63. Total parenteral nutrition and its importance
64. t – RNA
65. Explain the metabolism and functions of HDL
66. What are glycoproteins? Give three examples and its importance
67. Chemiosmotic theory
68. Rapaport leubering shunt pathway and its significance
69. What are Nucleotides?
70. Name any three biologically important nucleotides and their importance
71. Inhibitors of Electron Transport Chain
72. Transport of Bilirubin
73. Vitamin E
74. Substrate level Phosphorelation
75. Gluconeogenesis
76. Regulation of enzyme activity
77. Abnormal hemoglobins
78. Digestion and absorption of Triacylglycerols
79. Biomedical importance of derivatives of Cholesterol
80. Significance and disorders of Pentose Phosphate pathway
81. Active form of Vitamin D and its biochemical role
82. Catabolism of Hemoglobin
83. Protein energy malnutrition
84. Ketogenesis
85. Fatty acid synthase complex
86. Glycogen Metabolism
87. Enzyme inhibition
88. Glycosylated hemoglobin
89. Oxidation phosphorylation
90. Regulation of blood glucose
91. Role of Niacin as Coenzyme

92. Classification of hyperlipidemias and their clinical importance
93. Sphingolipidoses
94. Biochemical role of Vitamin C
95. Cori's cycle and Glucose Alanine cycle
96. High Density Lipoprotein cycle
97. Glycogenolysis
98. Isomerism in carbohydrates
99. Balanced Diet
100. Fructose intolerance
101. Balanced diet
102. Causes of hypoglycaemia
103. Allosteric inhibition
104. Obesity
105. Alkaptonuria
106. Functions of mitochondria
107. Glycosylated haemoglobin
108. Neo glucogenesis
109. Thalessemias
110. Puring salvage path way
111. Fatty liver & lipotropic factors
112. Digestion and absorption, transport of iron
113. Isoenzymes and their diagnostic importance
114. Define Biological Oxidation & mechanism of ATP synthesis
115. The principles of balances diet
116. Transport mechanism-across cell membrane
117. Cytochrome P
118. Galactosemia
119. Prostaglandins and their importance
120. Ketosis
121. Mechanism of synthesis of ATP in ETC
122. Explain 'Methyl Folate trap'
123. Carnitine shuttle
124. What are dietary fibres and explain their importance in human nutrition with
125. respect to the prevention of diseases
126. Write briefly about the significance of HMP shunt pathway
127. Sources, RDA & Biological role of Vitamin C
128. Describe the energetics of complete oxidation of mole of glucose to CO & HO
129. under aerobic conditions

130. Bile salts – Synthesis & biological role
131. Write briefly about calcium homeostasis
132. Role of carnitine in beta-oxidation of fatty acids
133. Covalent modification of enzymes in regulation of enzyme activities
134. Lactose intolerance
135. What is the importance of the pentose phosphate pathway in the body?
136. Role of vitamin D in the body
137. Causes of iron deficiency and manifestations of such deficiency ( + )
138. Isoenzymes, with reference to definition, examples and clinical importance
139. Gluconeogenesis, with reference to definition, substrates, sites and importance in the Body
140. Glycated haemoglobin, with reference to its formation, reference value in blood and its clinical importance
141. Thiamine, with reference to its functions in the body, dietary sources and deficiency manifestations
142. Explain how the activity of an enzyme is affected by the pH of the medium
143. What are the functions of calcium in the body?
144. Describe the functions and deficiency manifestations of vitamin A
145. What are good dietary sources of iron? Explain how iron is absorbed from the gastrointestinal tract
146. Name enzymes, serum levels of which are increased in disease conditions, along with the corresponding disease condition where such changes are seen
147. Briefly explain the chemiosmotic hypothesis of Mitchell
148. What is meant by dietary fibre? Explain its importance in one's diet
149. Explain the folate trap hypothesis
150. What is surfactant? Explain its importance in the body in health and disease
151. Explain, with a diagram, the fluid mosaic model of cell membranes
152. Coenzymic role of Pyridoxine
153. Factors regulating blood calcium
154. Write about the biological actions & clinical applications of Prostaglandins
155. Write in detail about compounds which affects Electron Transport Chain & Oxidative Phosphorylation
156. Apolipoproteins

157. Metabolism of Adipose tissue in fasting condition
158. Glycolysis in RBC
159. Shuttle pathways across mitochondrial membranes
160. Competitive enzyme inhibition
161. Carnitine
162. Metabolism of LDL
163. Mode of action of enzymes
164. Write about Glycated haemoglobin, fructosamine, advanced glycation end products
165. Pyruvate dehydrogenase complex

**Write Short Answer Questions MBBS 1<sup>st</sup> Year:**

1. Markers of nucleus and mitochondria
2. Name tumour markers
3. Functions of phospho lipids
4. Name the essential fatty acids
5. Active forms of Thiamine and Riboflavin
6. Name the ketone bodies
7. Significance of rapaport – leubering cycle
8. Name two glycogen storage diseases
9. Significance of HMP shunt
10. Name the derivatives of cholesterol
11. Name the urea cycle disorder
12. Causes of increased blood urea level
13. Name the derivatives of tryptophan
14. Fluorosis
15. Parameter for the assessment of nutritive value of proteins
16. Markers for lysosomes and mitochondria
17. Fluorosis
18. Role of Apo CII
19. Define metalloenzymes with examples
20. Pulmonary surfactant – Structure and clinical importance
21. Iodine number and its importance
22. What is the function of Lipoprotein lipase?
23. Structure of lecithin
24. Net Protein Utilization
25. Chondroitin sulphate - Structure
26. Double Reciprocal plot
27. Alkaline phosphatase as a diagnostic tool

28. What are the different forms of calcium in blood?
29. RDA and functions of Iodine
30. Why Arachidonic acid is not considered 'purely' an essential fatty acid?
31. Zymogen
32. Name two zinc containing enzymes
33. Ferritin
34. Define  $K_m$
35. Functions of selenium
36. What are cytochromes?
37. Brown adipose tissue
38. Lactose intolerance
39. Define respiratory quotient
40. Functions of Vitamin K
41. Mutarotation
42. Subcellular organelles
43. Free radicals
44. Basal metabolic rate
45. Essential amino acids
46. Causes of fatty liver
47. Renal glycosuria
48. Role of HDL as scavenger of Cholesterol
49. FIGLU
50. Dietary fibers
51. Why sucrose is called a non reducing disaccharide?
52. Name the essential fatty acids
53. Name any four biologically important compounds derived from cholesterol
54. What are phospholipids? Give two examples
55. Name the essential aminoacids
56. Mention any two biological functions of albumin
57. Name the aminoacids required for purine biosynthesis
58. Sick cell hemoglobin
59. Specific dynamic action
60. Write the principle and significance of biuret test
61. Effect of temperature on enzyme activity
62. Define epimer Name two epimers
63. Phosphatidyl inositol importance
64. Biochemical functions of selenium
65. Benedicts test
66. Ribose and deoxy ribose

67. Lysosomes
68. Bence Jones proteins
69. Bile salts
70. Cori cycle
71. t : RNA
72. Vitamin K
73. Limiting amino acid
74. Isoenzymes
75. Key enzymes of glycolysis
76. Fatty liver
77. Lipid peroxidation
78. Zymogens
79. BMR
80. Name the Essential fatty acids
81. Significance of HMP shunt pathway
82. Benedicts test
83. Inhibitors of citric Acid cycle
84. Chloride shift
85. Functions of calcium
86. Lipotropic factors
87. Normal blood levels of (a) Cholesterol (b) Bilirubin (c) Sodium (d) Pottasium
88. Phospholipids
89. Flurosis
- 90.
- 91.
92. Biochemical manifestations in protein energy malnutrition
93. Steatorrhea
94. Ionophores – types with example
95. Therapeutic uses of enzymes
96. Lactose intolerance – cause and treatment
97. Classes of enzymes with one example each
98. Formation of Vitamin D and the formation of its active form
99. Lung surfactants and their significance
100. Name two lipid storage diseases (spingolipidoses) and their enzyme defect
101. Role of brown adipose tissue in heat generation
102. Importance of HbAc testing
103. Wernicke-Karsakoff syndrome
104. What is the effect of non-competitive inhibition of Km and Vmax?

105. Schematic representation of the electron transport chain
106. Carnitine transport
107. Vitamin K cycle
108. Metabolic basis of role of aspirin as an anti-platelet agent
109. How will you interpret following conditions? a) Elevated Alkaline phosphatase b) Elevated Acid phosphatase
110. Proteasome
111. How do enzymes reduce the activation energy of a reaction?
112. What are metalloenzymes? Give two examples
113. What is glycemic index? Mention two examples of high glycemic index food
114. Limiting aminoacids with examples
115. Mechanism of action of methotrexate and dicoumarol
116. Fluorosis
117. Hemochromatosis
118. Serum lipid profile
119. Refsum's disease
120. Essential pentosuria
121. Lecithin sphingomyelin ratio
122. Functions of endoplasmic reticulum
123. Dietary fiber
124. Physiological importance of glycogenolysis
125. Define BMR Give its value
126. Antiatherogenic role of high density lipoprotein cholesterol
127. IUBMB classification of enzymes
128. Cori cycle
129. Suicide inhibition of enzymes
130. Importance of brown fat
131. Importance of sphingomyelin
132. Uncouplers of electron transport chain
133. Beriberi
134. Niemann-Pick disease
135. Any two mucopolysaccharides –location and its functions
136. Rapoport Luebering shunt
137. Glycated hemoglobin
138. Essential fatty acids
139. Reactions catalyzed by biotin
140. Anti-oxidant vitamins and minerals
141. Wilson's disease
142. Functions of pyridoxal phosphate

143. Factors affecting BMR (Basal Metabolic Rate)
144.  $K_m$  value
145. Write about amino sugar with example and its importance
146. Lactose intolerance
147. Diagnostic uses of enzymes
148. Cahill and Cori cycle
149. Vitamin K cycle
150. Functions of copper
151. Chylomicrons
152. Inhibition of ATP synthesis
153. Wald's visual cycle
154. Biochemical functions of vitamin C
155. Functions of phosphorus
156. Calcitonin
157. Define BMR and mention the factors affecting it
158. Consequences of diabetic ketosis
159. Membrane proteins
160. Coenzyme activity of biotin
161. Lecithin cholesterol acyltransferase (LCAT)
162. Fatty liver
163. Inhibitors of Citric acid Cycle
164. Cholesterol lowering action of FIBRATES
165. One Carbon compound
166. Functions of Copper
167. Biochemical alteration in PEM (Protein Energy Malnutrition)
168. Conjugations
169. Stereoisomerism
170. Actions of Insulin
171. Hyperglycemic Hormones
172. Ocular changes in vitamin A deficiency
173. Amphipathic lipids
174. Kwashiorkor
175. Enzymes in diagnosis of Myocardial infarction
176. Biochemical functions of zinc
177. Hormones that regulate blood calcium level
178. Mechanism of cyanide poisoning
179. Metabolism of glucose--phosphate
180. Lipoprotein lipase
181. Cori cycle
182. Fate of Oxaloacetate

183. Liver Enzymes
184. Functions of Magnesium
185. Dietary fibres
186. Cytochrome P
187. Functions of Phospholipids
188. Suicide Inhibition
189. Causes for Abnormal GTT Curves
190. Biologically important peptides
191. Biological value of proteins
192. Therapeutic uses of Enzymes
193. Types of Lipases
194. Lipotrophic Factors
195. Metabolism of Propionyl CoA
196. Prevention of Atherosclerosis
197. Allosteric regulation
198. Significance of multi-enzyme complexes with example
199. Vitamin -D deficiency
200. Functions of Phosphate
201. What is Saponification and Iodine Number? Write its importance
202. Wilson's disease
203. Define isoenzymes and give two examples
204. Specific dynamic action
205. Chemiosmotic theory
206. Von Gierke's disease
207. Pyruvate dehydrogenase complex
208. Ionophores
209. Oral glucose tolerance test
210. Deficiency manifestations of vitamin D
211. Biochemical functions of Iron
212. Explain the mechanism of action of cyanide as a poison
213. List differences between hexokinase and glucokinase
214. Give examples of drugs that act as inhibitors of enzyme and name the enzyme that each one inhibits
215. Explain the role of , bisphosphoglycerate in supply of oxygen to tissue
216. List differences between foetal and adult forms of haemoglobin
217. Why do patients with cholelithiasis often pass clay-coloured stools?
218. What is meant by the metabolic syndrome? What is the significance of this condition?
219. Write two functions & RDA of pyridoxine

220. List differences between marasmus and kwashiorkor?
221. Give two examples of substrate level phosphorylation
222. List the vitamins that are required for the functioning of the citric acid cycle
223. Give examples of drugs that act as inhibitors of enzyme and name the enzyme that each one inhibits
224. What is the function of mitochondria in a cell?
225. What is the mechanism of action of statins? What is the therapeutic use of this group of drugs?
226. List dietary sources and biochemical functions of vitamin C in the body
227. Explain the mechanism of action of cyanide as a poison
228. List good dietary sources of iodine What is the function of this mineral in the body?
229. Enzyme defect and commonest clinical feature in von Gierke's disease?
230. What is meant by glycaemic index of food?
231. List differences between marasmus and kwashiorkor?
232. What are zymogens Give an example
233. Mention two inhibitors of ETC with their site of action
234. What is specific dynamic action and importance in calculating caloric requirements of an individual
235. What are trace mineral Give RDA of any of them
236. What is Steatorrhoea?
237. What is Suicide inhibition? Give an example
238. Laboratory Criteria for diagnosis of Diabetes Mellitus
239. Name the insulin dependent glucose transporters and their tissue distribution
240. What is pulmonary surfactant and its clinical importance?
241. What is the biochemical basis of development of cataract in Diabetes Mellitus
242. Key enzyme of cholesterol synthesis and its regulation
243. FIGLU
244. Refsum's disease
245. Comparison between prokaryotic and eukaryotic cells
246. Glycosides
247. Metal cofactors of enzymes
248. Beri Beri
249. Lipid Profile
250. Limiting aminoacids

251.      Glucose Phosphopate dehydrogenase enzyme

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