

MBBS First Year Biochemistry Paper-II Important Question Bank**Essay Questions:**

1. Write in detail about the absorption, transport, daily requirement and deficiency Manifestation of Iron.
2. Write in details about the initiation, elongation and termination of transcription. Give an account of post transcriptional processing.
3. Describe the role of plasma and renal buffers in maintaining acid base homeostasis
4. What is cloning? Mention the various types of cloning. Describe in detail the steps involved in recombinant DNA technology.
5. Enumerate the liver function tests and how Vanden Bergh test distinguishes different types of jaundice.
6. Describe the metabolism of tyrosine. Name the inborn errors associated with this pathway
7. What are the functions of sodium in the body? What is the reference range for levels of serum sodium? Describe the working of the renin-angiotensin-aldosterone system to maintain optimal amounts of sodium in the body. Briefly discuss disorders associated with derangements in sodium homeostasis.
8. With the help of a figure, describe the process by which DNA replication takes place in a cell.
9. Describe the role of the kidney to maintain the pH of blood. What are the compensatory mechanisms the kidney will adopt to maintain pH in the presence of metabolic acidosis?
10. List the parameters that are commonly used in clinical practice as indicators to assess the functions of the liver. Explain the basis of the use of these parameters in assessment of liver function. Briefly discuss medical conditions in which these parameters become abnormal.

11. What is the normal pH of blood. Describe the various mechanisms which maintain it? Mention the acid base disorders.
12. Describe the catabolism of Heme in the body. Explain the different types of jaundice. How do you investigate a case of jaundice?
13. Explain Protein synthesis in detail. Add a note on drugs that inhibit protein synthesis
14. Name the Aromatic Aminoacids. Add a note on physiologically important derivatives of tyrosine.
15. Discuss in detail the replication of DNA. Mention the inhibitors of replication.
16. Describe recombinant DNA technology. Explain the different techniques with its application.
17. What is the reference range for serum uric acid? What is the source of uric acid in the body? What is its ultimate fate? Discuss causes of abnormalities in levels of serum uric acid.
18. Describe in detail about the Synthesis of Tyrosine and its metabolic endproducts.

www.FirstRanker.com

19. Describe in detail about the formation and transport of ammonia in our body. Add a note on Urea cycle
20. What is a Buffer? Describe in detail about the Renal Regulation of Blood pH.
21. What is polymerase chain reaction? Write a note on the steps involved in PCR and its applications.
22. Name the important buffer systems in the body. Describe in detail the role of lungs and kidneys in maintenance of acid base balance.
23. Brief about the conversion of phenylalanine to tyrosine. Describe in detail about phenylketonurias.
24. Write briefly the mechanisms by which the pH of the body fluids is regulated. Add a note on acid base disturbances with examples.
25. Write in detail about ammonia production, transport and disposal. Add a note on disorders of urea cycle.
26. Describe the primary, secondary, tertiary and quaternary structure of proteins.
27. Explain the biochemical basis of clinical features of porphyrias.
28. Name the Plasma Proteins. Explain the role of Albumin and other Transport Proteins.
29. Write in details about the Importance, Applications and Steps of Polymerase Chain Reaction.
30. What is the normal pH of blood? Discuss how the pH of blood is maintained.
31. Discuss the metabolism of Phenylalanine. Write a note on the inborn error associated with Phenylalanine.

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

www.FirstRanker.com

14. Alcohol metabolism
15. Fredrickson's classification of hyperlipoproteinemias
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. Zymogen
38. Name two zinc containing enzymes
39. Ferritin
40. Define Km
41. Functions of selenium
42. What are cytochromes?
43. Brown adipose tissue
44. Lactose intolerance
45. Define respiratory quotient
46. Functions of Vita K
47. Role of Niacin as Coenzyme
48. Classification of hyperlipidemias and their clinical importance

- 49. Sphingolipidoses
- 50. Biochemical role of Vita C
- 51. Cori's cycle and Glucose Alanine cycle
- 52. High Density Lipoprotein cycle
- 53. Glycogenolysis
- 54. Isomerism in carbohydrates
- 55. Balanced Diet

www.FirstRanker.com

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

- 89. Importance of HbAc testing
- 90. Wernicke-Karsakoff syndrome
- 91. What is the effect of non-competitive inhibition of K_m and V_{max} ?
- 92. Schematic representation of the electron transport chain
- 93. Carnitine transport
- 94. Vita K cycle
- 95. Metabolic basis of role of aspirin as an anti-platelet agent
- 96. Importance of HbAc testing
- 97. Wernicke-Karsakoff syndrome

www.FirstRanker.com

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

- 132. Rapoport Luebering shunt
- 133. Glycated hemoglobin
- 134. Essential fatty acids
- 135. Reactions catalyzed by biotin
- 136. Anti-oxidant vitamins and minerals
- 137. Wilson's disease
- 138. What is the effect of non-competitive inhibition of K_m and V_{max} ?
- 139. Schematic representation of the electron transport chain

www.FirstRanker.com

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

- 174. Functions of Magnesium
- 175. Dietary fibres
- 176. Cytochrome P Functions of Phospholipids
- 177. Suicide Inhibition
- 178. Causes for Abnormal GTT Curves
- 179. Biologically important peptides
- 180. Biological value of proteins
- 181. Competitive enzyme inhibition

www.FirstRanker.com

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

- 217. Deficiency manifestations of vita D
- 218. Biochemical functions of Iron
- 219. What is the function of mitochondria in a cell?
- 220. What is the mechanism of action of statins? What is the therapeutic use of this group of
- 221. drugs?
- 222. List dietary sources and biochemical functions of vita C in the body
- 223. Explain the mechanism of action of cyanide as a poison

www.FirstRanker.com

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

Body

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

- 250. Explain the role of , bisphosphoglycerate in supply of oxygen to tissue
- 251. List differences between foetal and adult forms of haemoglobin
- 252. Why do patients with cholelithiasis often pass clay-coloured stools?
- 253. What is meant by the metabolic syndrome? What is the significance of this condition?
- 254. Write two functions & RDA of pyridoxine
- 255. List differences between marasmus and kwashiorkor?
- 256. Give two examples of substrate level phosphorylation
- 257. Thyroid function Tests
- 258. Recombinant DNA Technology
- 259. Structure of DNA
- 260. Post transcriptional modifications
- 261. Functions of albumin
- 262. Electrophoresis and its applications
- 263. Causes for respiratory acidosis

www.FirstRanker.com

- 264. Renal mechanism of maintaining Acid Base Balance
- 265. Purine Salvage pathway
- 266. Lac Operon concept

- 267. Enzyme defect in aPhenylketonuria b Alkaptonuria
- 268. DNA polymerase enzyme
- 269. Types of mutations
- 270. Reverse Transcriptase
- 271. Inhibitors of RNA synthesis
- 272. Features of Genetic Code
- 273. Gout
- 274. Name Renal Function Tests
- 275. Denaturation of proteins
- 276. Name enzymes that are increase in hepatic jaundice
- 277. Transamination reaction and its significance
- 278. Homocystinuria
- 279. Bicarbonate buffer system
- 280. Hyperkalemia
- 281. Define electrophoresis and mention its applications
- 282. Renal tubular function tests
- 283. Urinary findings in jaundice
- 284. Methemoglobin
- 285. Structure of immunoglobulin
- 286. Regulation of heme synthesis
- 287. Operon concept
- 288. Define PCR and mention its four applications
- 289. Essential amino acids
- 290. Structure of tRNA
- 291. Restriction endonucleases
- 292. Post-translational modifications of proteins
- 293. What is creatine clearance? Write the normal value of it
- 294. Sources of ammonia in the body and its metabolism
- 295. Functions of glycine in the body
- 296. Heavy metal poisonings

- 297. Disorders associated with potassium homeostasis
- 298. Functions of nucleotides
- 299. List applications of electrophoresis in medicine
- 300. List the different types of immunoglobulins
- 301. Outline the reaction by which deoxynucleotides are formed in a cell from
- 302. ribonucleotides

www.FirstRanker.com

303. Explain the anti-neoplastic effect of methotrexate
304. List the biochemical abnormalities seen in phenylketonuria
305. What are the compensatory changes that occur in response to respiratory acidosis?
306. Outline the mechanism of action of glucagon
307. What is reference range of sodium Write causes of hyponatremia
308. What is the function of cytochrome P in the body?
309. Structure of mRNA
310. Liver function tests
311. ELISA
312. Isoelectric pH of proteins
313. Wilson's Disease
314. Laboratory diagnosis of Phenylketonuria
315. Chloride shift
316. DNA repair mechanism
317. Plasma buffers
318. Gene Therapy
319. Functions of Albumin
320. Orotic Aciduria
321. Laboratory investigations in different types of Jaundice
322. Structure of DNA
323. Paper Chromatography
324. Transmethylation Reactions
325. Pancreatic function Tests
326. Alkaptonuria
327. Acute Intermittent Porphyria
328. Sickle cell Disease
329. Bile salts
330. Renal Glomerular function tests
331. Anion Gap
332. Okazaki fragments
333. Laboratory investigations in different types of Jaundice
334. Structure of DNA
335. Paper Chromatography
336. Transmethylation Reactions

- 337. Pancreatic function Tests
- 338. Alkaptonuria
- 339. Acute Intermittent Porphyrria
- 340. Sickle cell Disease
- 341. Bile salts
- 342. Renal Glomerular function tests
- 343. Anion Gap
- 344. Okazaki fragments

www.FirstRanker.com

- 345. Write about post transcriptional processing Mention about post transcriptional
- 346. inhibitors
- 347. Describe about the various patterns of diseases in protein electrophoresis
- 348.
- 349. Carcinoid syndrome
- 350. Write about urea cycle disorders
- 351. Write about acute phase and negative acute phase protein
- 352. What are the derivatives of aromatic amino acids? Write about serotonin
- 353. High anion gap metabolic acidosis
- 354. Write about alpha I antitrypsin and diseases associated with it
- 355. Important functions of serine
- 356. Types of DNA repair mechanism Write in detail about any one repair mechanism
- 357. OXPHOS Oxidative phosphorylation diseases
- 358. Hybridoma technology & its application
- 359. DNA repair mechanism
- 360. Glutathione
- 361. Tests to assess renal tubular function
- 362. Polymerase chain reaction
- 363. Metabolic acidosis
- 364. Applications of electrophoresis
- 365. Lesch–Nyhan's syndrome
- 366. Products formed from glycine
- 367. Maple syrup urine disease
- 368. Inhibitors of transcription
- 369. Histamine
- 370. Gamma amino butyric acid
- 371. Phase II reaction of xenobiotics
- 372. Functions of parathormone
- 373. Nitric oxide
- 374. Post translational modifications with examples
- 375. Blotting techniques

- 376. Classify jaundice based on liver function tests
- 377. Structure of collagen
- 378. Classes of Immunoglobulins
- 379. Structure of tRNA
- 380. Lead poisoning
- 381. Secondary hyperuricemias
- 382. Draw normal protein electrophoretic pattern
- 383. Secondary structure of proteins
- 384. Classification of aminoacids based on metabolic fate
- 385. Hartnup's disease
- 386. Microalbuminuria and its importance

www.FirstRanker.com

- 387. Reactive oxygen species
- 388. DNA fingerprinting
- 389. Tests done to assess synthetic functions of liver
- 390. Properties of genetic code
- 391. Respiratory acidosis
- 392. Importance and applications of recombinant DNA technology
- 393. Proteinuria
- 394. Importance of transamination reaction
- 395. Causes of secondary gout
- 396. Enzymes as tumour markers
- 397. Point mutation
- 398. Denaturation reactions of proteins
- 399. Cystinosis
- 400. Melatonin
- 401. Normal value of plasma osmolality and urine osmolality
- 402. Orotic aciduria
- 403. Cell cycle
- 404. Renal function tests
- 405. Metabolism of catecholamines
- 406. Metabolic alterations induced by alcohol metabolism
- 407. Functions of proteins and enzymes involved in DNA replication
- 408. Tests done to assess biosynthetic functions of liver
- 409. Cystinuria
- 410. Transamination
- 411. Principle of electrophoresis technique
- 412. Four synthetic analogues of purine and pyrimidine bases used as therapeutic agent
- 413. agent
- 414. DNA finger printing
- 415. Oxygen dissociation curve of hemoglobin
- 416. Markers of cholestasis
- 417. Henderson - Hasselbalch equation
- 418. Laboratory diagnosis of multiple myeloma
- 419. Mechanism of action of allopurinol
- 420. Mutation

- 421. Types, properties and functions of different classes of immunoglobulins
- 422. Congenital jaundice
- 423. Genomic library
- 424. Products formed from tryptophan
- 425. Name one disease related to point Mutations
- 426. Name enzymes of Pancreatic injury
- 427. Uric Acid levels in a Male b Female
- 428. Write formula to calculate Anion gap

www.FirstRanker.com

- 429. BMI value in a Normal Individual b Obesity
- 430. Restriction Endo nuclear sticky – Meaning
- 431. Name the defect Dubin – Johnson syndrome
- 432. Name the Amino Acids involved in Polyamines
- 433. Name Anti Oxidant Vitamins, Anti Oxidant Mineral
- 434. Role of poly 'A' Tail
- 435. DNA Repair Mechanisms
- 436. Balanced Diet and Glycemic Index
- 437. Proteinuria –Types and Characteristic Protein present in urine in each type Gene

Therapy

- 438. Name lab test to detect sickle cell disease
- 439. Name differences of B form and A form DNA
- 440. Name lab test to detect sickle cell disease
- 441. Name differences of B form and A form DNA
- 442. Collagen
- 443. ABG and Interpretation of Results
- 444. Genetic Code
- 445. Compounds derived from Glycine and their functions
- 446. Hyperammonemias
- 447. Copper metabolism and its applied aspects
- 448. Telomerase and its application
- 449. Lesch-Nyhan syndrome
- 450. Inhibitors of Purine nucleotide biosynthesis
- 451. Metabolic Acidosis
- 452. Absorption of dietary Iron
- 453. Biochemical features of Cancer cells
- 454. Conjugation reactions in Xenobiotics