001/26

The West Bengal University of Health Sciences
MBBS 1st Professional Examination (New Regulation),
February – March 2026

Subject: Biochemistry **Full Marks: 100**
Paper: I **Time: 3 hours**

*Attempt **all** questions. The figures in the margin indicate full marks.*

1. Define Lipid. Classify the Lipid with examples. Describe the classification of Lipoprotein. Describe the synthesis and catabolism of VLDL. 1+4+4+6

2. **Explain the following statements:** 5x3

i) Sodium Fluoride is added in Oxalate vial for collection of blood for glucose estimation.
ii) Presence of Phospholipase A2 in snake venom gives rise to hemolysis in victims of viper bite.
iii) Hemolytic anemia gives rise to unconjugated hyperbilirubinemia.
iv) Uncontrolled Diabetes Mellitus, Type 1, gives rise to metabolic acidosis.
v) Uncompensated liver failure leads to hyperammonemia.

3. **Short questions (Applied aspect):** 4×5

i) Explain why oral rehydration solution (ORS) administered in diarrhoea patients contain glucose.
ii) Atorvastatin is used in treatment of hypercholesterolemia.
iii) Alkaptonuria: Clinical features, abnormal urinary constituents and metabolic defect.
iv) Ketosis in starvation.

4. **Short notes:** 3×6

i) Heteropolysaccharides.
ii) Structural organization of Myoglobin and haemoglobin.
iii) Irreversible enzyme inhibition.

5. **Write short notes on the following:** 4×5

i) Synthetic nucleotides as chemotherapeutic agent.
ii) Cori's cycle and its significance.
iii) Role of physician in health care system.
iv) Transdeamination.

6. **Choose the correct option among each of the following:** 12x1

i. A patient with congestive cardiac failure was put on digoxin. The drug acts by inhibiting Na+K+ATPase. What is the function of this active transport?
   a) 2 Na+ out, 3 K+ in
   b) 2 Na+ in, 3 K+ out
   c) 3 Na+ out, 2 K+ in
   d) 3 Na+ in, 2 K+ out

ii. One of the following enzymes is associated with the salvage pathways of purine nucleotide synthesis:
   a) PRPP synthetase b) Cyclohydrolase c) Ribonucleotide reductase d) HGPRT

iii. A 6 month old boy presents with hepatomegaly, severe fasting hypoglycaemia, hyperuricemia, lactic acidosis. Blood glucose remains low after Glucagon administration. What is the enzyme defect?
a) Pyruvate dehydrogenase
b) Fructose 1 –phosphate aldolase
c) Galactose 1 phosphate uridyl transferase
d) Glucose 6 phosphatase

iv. A patient was diagnosed with acute pancreatitis and under treatment. Which of the following enzyme would be a marker to assess the prognosis of the condition?
a) Gamma glutamyltransferase
b) Lipase
c) Lactate dehydrogenase
d) Aspartate transaminase

v. A patient with pernicious anemia presented with features of tingling and numbness in both legs and showed megaloblasts in the peripheral blood picture. Which of the following glycolipid synthesis likely to get affected in this case?
a) Phosphatidylinositol b) Glucocerebroside c) Plasmalogens d) Sphingomyelin

vi. A 20-year-old male presented with acute abdominal pain, vomiting with no history of photosensitivity. These symptoms were increased with drugs like barbiturates. Urine examination showed increase in Porphobilinogen. Identify the condition.

a) Hereditary porphyria
b) Porphyria cutanea tarda
c) Acute intermittent porphyria
d) Porphyria variegate

vii. In a patient with chronic kidney disease, which of the following analytes is least likely to be altered?
a) Hemoglobin concentration
b) Serum Calcium
c) Serum direct bilirubin
d) Serum LDL cholesterol

viii. A patient treated with INH develops peripheral neuropathy due to pyridoxal deficiency. This is due to:
a) Non competitive inhibition
b) Competitive inhibition
c) Suicide inhibition
d) Repression

ix. The M band is present in the electrophoresis of plasma proteins in disease is:
a) Acute bacterial infection
b) Cirrhosis of the liver
c) Multiple Myeloma
d) Nephrotic Syndrome

x. The enzyme marker for chronic alcoholism is:
a) 5' nucleotidase b) AST c) ALP d) GGT

xi. The enzyme ALA dehydratase is inhibited by:
a) Arsenic b)Mercury c)Lead d) Iron

xii. What could be the possible diagnosis for a patient who exhibited tendon xanthomas with his lipid profile indicating serum cholesterol levels of 283mg/dl and serum LDL levels of 202 mg/dl and subsequently initiated on lovastatin treatment?
a) Familial hypercholesterolemia
b) Tangier's disease
c) Lipoprotein lipase deficiency
d) Familial hyperchylomicronemia