001/24

The West Bengal University of Health Sciences
MBBS 1st Professional Examination (New Regulation), August 2024

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

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

1. a) A middle aged woman rushed to emergency with pain abdomen and nausea. On asking patient confirmed dark urine and grey stool. After managing the emergency situation blood samples were tested for liver function. Results of the same as follows total bilirubin – 6.2mg/dl, Direct Bilirubin – 5.8mg/dl, Total protein 7.2 gm/dl, Albumin – 3.8 gm/dl, AST – 26 U/L, ALT – 32 U/L, Alkaline phosphatase – 387 U/L, GGT – 35 U/L.
   i) As an attending medical officer what would be your provisional diagnosis?
   ii) What all other tests would you suggest to justify your diagnosis?
   iii) How would you exclude acute pancreatitis or alcoholic?
   iv) What are the different causes of Conjugated hyperbilirubinemia? 3+4+4+4

   b) A patient with chronic renal failure is admitted in comatosed state in hospital. On clinical examination features of encephalopathy are seen. Blood investigation shows creatinine level of 6.5 mg/dl and urea level of 425 mg/dl..
   i) Describe the metabolic derangement responsible for this condition.
   ii) Explain the biochemical basis of ammonia toxicity in the brain.
   iii) Describe how the alpha amino group in most of the amino acids are converted into ammonia. 4+7+4

2. a) Name the rate limiting enzyme of fatty acid synthesis. Describe the regulation of it. Discuss how this enzyme's activity influences beta-oxidation of fatty acid. Name the cell organelle where the fatty acids can be desaturated and elongated. 1+5+3+1
   b) Describe the process used to separate cell organelles and list the marker enzymes of cell membrane and sub-cellular organelles. 6+4
   c) A 55 year old female is complaining of joint pain. Her autoantibody profile is within normal limit. 2+6+2
   i) Which biochemical investigation should you advice for the patient? Write the physiological reference range of that parameter.
   ii) Describe the metabolism of that compound.
   iii) Give a short note on management of this patient.

3. Write short notes on the following: 2x5
   a) Attitude of doctors to patient and patient parties.
   b) Transamination reaction.

4. Explain the following statements: 5x4
   a) Histidine has an important role in buffering action of proteins.
   b) Justify the clinical significance of creatinine clearance rate in renal function.
   c) LDL cholesterol is atherogenic.
   d) Defects in G protein mediated pathways may lead to diseases like cholera.
   e) Kernicterus may occur in type I Crigler Najjar Syndrome.

P.T.O

10x1

5. Choose the correct option for each of the following:

i) Methotrexate, a widely used anticancer drug acts by inhibiting:
a) Xanthine oxidase. b) Thymidylate synthase.
c) Dihydrofolate reductase. d) Phosphoribosyl pyrophosphate synthetase.

ii) A one year old child was brought to the pediatric OPD. Mother complained that the child had a mousy odour in the urine. On examination it was seen that child had many delayed milestones and hypopigmentation of hair and skin. Ferric chloride test and Guthrie test was positive. Which enzyme deficiency can lead to this disorder?
a) Tyrosine Hydroxylase. b) Homogentisate Oxidase.
c) Phenylalanine hydroxylase. d) Tyrosinase.

iii) Enzymes of glycogen metabolism are under allosteric regulation. Identify from below which of the following is not an allosteric regutor of the same?
a) Insulin. b) Glucose 6 phosphate. c) ATP. d) AMP.

iv) End products of one cycle of beta oxidation of odd chain fatty acids are:
a) Acetyl Co-A+ Propionyl Co-A. b) Acetyl Co-A+ Acetyl Co-A.
c) Acyl Co-A+ Propionyl Co-A. d) Propionyl Co-A+ Propionyl Co-A.

v) Which of the following has pseudouridine in its structure?
a) rRNA. b) tRNA.
c) mRNA. d) snRNA.

vi) In hospital, used Ryle's tube should be discarded in:
a) Yellow bag. b) Red bag. c) White container. d) Blue container.

vii) The precursors for the synthesis of polyamines are:
a) Methionine and arginine. b) Ornithine and SAM.
c) Galactokinase. d) Aldolase B.

viii) The enzyme associated with reverse cholesterol transport is:
a) LCAT. b) ACAT.
c) HMG Co-A reduetase. d) Cholesterol ester hydrolase.

ix) After being synthesized in the reticuloendothelial cells, bilirubin is transported to the liver through which of the following transporters in blood?
a) Globulin. b) Albumin.
c) Pre-albumin. d) Glucoronic acid.

x) A 2 year old child presented with liver enlargement. On investigation, following features were found:
a) Von Gierke's disease. b) Galactosemia. c) Fructose deficiency. d) G6PD deficiency.