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001/24

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

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

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

1. a) Classify different metabolic disorders of inborn according to major biomolecules (mention two diseases from each group). Name the different biochemical tests to identify these errors both qualitatively and quantitatively. Describe in brief about Maple syrup urine disease. 5+5+5

b) A 45 year old female was admitted in hospital suffering from right upper abdomen pain. On examination, it was found that she was suffering from jaundice. USG revealed dilated CBD and a stone in the CBD. Blood examination showed the following findings- Hb-10.4 g/100ml, TLC-14,500/cmn, bilirubin(total) – 10.4 mg/100ml, bilirubin (direct) – 9.4 mg/100ml, ALT (SGPT) – 70 IU/L, AST (SGOT) – 65 IU/L, alkaline phosphatise – 450 IU/L, total protein – 7.2 g/100ml, albumin – 4.4g/100ml, glucose (random) – 140 mg/100ml, creatinine – 0.9 mg/100ml.
i) Explain the findings of blood report is this patient.
ii) Classify jaundice with example.
iii) Comment on the possibility of steatorrhea and vitamin K deficiency in case of obstructive jaundice. 3+2+ (6+4)

2. a) Classify phospholipids with examples. What is respiratory distress syndrome (RDS) in newborn? Discuss the cause of this condition. Describe the strategy for prevention of this condition. 3+2+3+2
b) Define hyperphenylalaninemia (phenylketonuria). Name different types of hyperphenylalaninemia. Name the different tests used for diagnosis of this condition. Discuss the principles for management of this condition. 2+2+4+2
c) Define gluconeogenesis. Enumerate the non-carbohydrate substances which are used for gluconeogenesis. Describe the regulation of gluconeogenesis. Explain, with proper reason, whether it is anabolic pathway or catabolic pathway. 1+2+4+3

3. Write short notes on the following: 2x5
   a) Dynamics of doctor-patient communication.
   b) Respiratory acidosis.

4. Explain the following statements: 5x4
   a) Fiber diet reduces the risk of coronary heart diseases (CHD).
   b) Flippase pattern of LDH in blood (in disease).
   c) HDL is known as good cholesterol.
   d) Pyruvate kinase deficiency causes anaemia.
   e) Hyperuricemia is seen in Lesch Nyhan syndrome.

5. Choose the correct option for each of the following: 10x1

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i) A patient's ABG report shows these findings: pH 7.35, bicarbonate 26 mmol/L, partial pressure of CO2 is 55 mm Hg. Which statement is true?
a) It is a case of respiratory acidosis with renal compensation.
b) It is a case of metabolic acidosis with renal compensation.
c) It is a case of metabolic acidosis without renal compensation.
d) It is a case of respiratory acidosis without renal compensation.

ii) For diagnosis of diabetes mellitus, blood HbA1c level should be:
a) >/=6.3%.
b) >/=6.4%.
c) >/=6.5%.
d) >/=6.6%.

iii) Tryptophan pyrrolase is an example of:
a) Oxidase.
b) Dehydrogenase.
c) Monooxygenase.
d) Dioxygenase.

iv) Which one is most accurate for Phosphatidyl inositol:
a) Absent in cell membrane.
b) Consists of glycerol and phosphatidic acid.
c) Has antigenic property.
d) Act as 2nd Messenger for hormones.

v) Main cause of Primary familial hypercholesterolemia is:
a) Excess production of apo B.
b) Overproduction of VLDL.
c) LDL receptor defect.
d) Lipoprotein lipase deficiency.

vi) The tissue which cannot utilize the ketone bodies as fuel is:
a) Cardiac muscle.
b) Liver.
c) Brain.
d) Skeletal muscle.

vii) Glucose 6 phosphatase serves as the marker enzyme for:
a) Mitochondria.
b) Peroxisome.
c) Golgi apparatus.
d) Lysosome.

viii) Which of the following pathway is active in insulin glucagon ratio?
a) Lipolysis.
b) Glycogenolysis.
c) Pyruvate dehydrogenase.
d) Gluconeogenesis.

ix) Which one of the following is false about the fate of Hb?
a) 300 billion erythrocytes are destroyed per day.
b) A 70 kg man turns over about 6 gm of Hb per day.
c) 1 gm of Hb yield 35 mg of bilirubin.
d) Daily bilirubin formation in human adult is 250 – 350 mg.

x) Which of the following enzymes is example of inducible enzyme?
a) Glucokinase.
b) Hexokinase.
c) Aldolase.
d) Enolase.

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