

SURAT MUNICIPAL INSTITUTE OF MEDICAL EDUCATION AND RESEARCH
DEPARTMENT OF BIOCHEMISTRY
IST MBBS BATCH 22 PRELIMINARY EXAMINATIONS, JUNE 2019
PAPER I

Date: 13/06/2019

Time: 10:00 am to 12:30 pm

Total Marks: 50

Instructions: 1. Answer should be legible & to the point.

2. Write each answer from a separate newpage.

3. Use diagrams & flow-charts as & when needed.

4. Figures to the extreme right indicate full marks.

SECTION-I

- 1) Write short notes (2 out of 3) (4x2= 08)**
- a) Describe reactions of Dickens-Horecker pathway. Mention significance of this pathway. Add a note on clinical implication of the pathway. (1.5+1.5+1)
 - b) Iron- source, metabolism, RDA and clinical significance. (0.5+2+0.5+1)
 - c) What are lipoproteins? Describe in detail metabolism of HDL Cholesterol. Add a note on clinical significance of HDL cholesterol. (0.5+2+1.5)
- 2) Describe in brief (4 out of 6) (3x4=12)**
- a) Glucose transporters
 - b) Nitrogen Balance
 - c) Fatty liver
 - d) Enumerate various parameters (at least 9) carried out for liver function tests and its reference ranges with appropriate units.
 - e) Fluid mosaic model of plasma membrane
 - f) Describe chemiosmotic theory. Enumerate any 2 inhibitors of complex V
- 3) Answer in one or two lines (5 out of 6) (1x5=05)**
- a) Mention acceptable fluoride levels in drinking water.
 - b) Name marker enzyme for the organelles: i) Lysosome ii) Golgi complex.
 - c) Name any 2 non nucleotide high energy compounds.
 - d) Mention names of any 2 non HMP shunt enzymatic reactions generating NADPH within cell.
 - e) Enumerate the tests to check the purity of fat & oil.
 - f) Define Anion gap. Mention normal range for plasma anion gap.

SECTION-II

- 4) Read the following case and answer questions (5 questions) (2x5=10)**

A 25-year-old healthy pregnant lady was registered in the antenatal clinic. Following evidence of fetal distress at 32nd week of gestation, caesarean section was performed and a male baby was delivered. At birth, the baby presented with tachypnoea (respiratory rate >70 per minute), expiratory grunting, flaring of alae-nasi, retraction of ribs and sternum, and cyanosis. Radiological examination showed prominence of bronchial air shadows and a generalized opacity (ground glass appearance). Biochemical

analysis of blood sample did not show any abnormal results. The baby was shifted to the neonatology unit for respiratory distress syndrome for further management.

- 1) State the underlying biochemical abnormality with this condition.
- 2) What is surfactant? Mention the composition & function of lung surfactant.
- 3) What is L/S ratio? Mention its significance in diagnosis of this condition.
- 4) Why this condition is observed in premature neonates?
- 5) Mention any two phospholipids and its specific function other than lecithin or its derivative.

5) Write justification (5 out of 7)

(2x5=10)

- a) Ironically, being a fatty acid, odd chain fatty acids are glucogenic.
- b) Hyperventilation may worsen Tetany.
- c) Fructose 2, 6 bisphosphate is an important metabolic intermediate.
- d) Creatinine clearance is not an ideal method to measure renal function.
- e) Bile acid sequestrants are used in treatment of hypercholesterolemia.
- f) Brown adipose tissue is important metabolically.
- g) Biochemically custom of eating dal (pulses) with rice (cereal) is beneficial.

6) Answer in one or two lines (5 out of 6)

(1x5=05)

- a) Mention anabolic product of glycolytic pathway
- b) Explain biochemical abnormality in Wilson's disease.
- c) Mention reference range with appropriate unit
 - i) Blood pH ii) Plasma osmolality
- d) Enumerate metabolic pathways operating exclusively in mitochondria
- e) Explain the terms i) Glycation ii) Glycosylation.
- f) What is total parenteral nutrition?
