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SURAT MUNICIPAL INSTITUTE OF MEDICAL EDUCATION AND RESEARCH
DEPARTMENT OF BIOCHEMISTRY
1ST MBBS BATCH 21 PRELIMINARY EXAMINATIONS, JUNE 2018
PAPER I

Date: 11/06/2018

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)

- 101-150
- Q. 1
- What are mucopolysaccharides? Name the functions and composition of any four mucopolysaccharides. Describe inborn error of metabolism related to mucopolysaccharides. (Disorder & deficient enzyme) (1+2+2)
 - Describe tricarboxylic acid cycle diagrammatically. Mention its energetics, regulation and significance. Explain how carbohydrates, lipids and amino acids enter this cycle. (1.5+2+0.5)
 - What are lipoproteins? Mention normal value of serum lipid profile parameters. Describe in detail Frederickson's classification of hyperlipoproteinemia. (1+1+2)

2) Describe in brief (4 out of 6)

(3x4=12)

- Q. 2 : 101-150
- Lysosomes: Metabolic functions & clinical significance. (1.5+1.5)
 - What is clearance? Name various clearance tests available for renal function. Describe inulin clearance test & its advantage. (0.5+1+1.5)
 - Describe Reverse cholesterol transport & HDL cycle. (2+1)
 - Describe important shuttle systems to transport extra mitochondrial reducing equivalents.
 - Rapaport Leubering cycle & its importance. (1.5+1.5)
 - What is ELISA? Mention its principle, types & any two uses. (1+1+1)

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

(1x5=05)

- What are epimers? Explain with suitable example.
- Name any two marker enzymes for Plasma membrane.
- What is P:O ratio & its importance ?
- What is substrate level phosphorylation? Give one example.
- What is Refsum's disease?
- What is compensated metabolic acidosis? Explain by an example.

SECTION-II

4) Read the following case and answer questions (5 questions)

(2x5=10)

A 32-year-old man reported in hospital emergency with complaints of persistent vomiting for one week. He had generalized muscular cramps. On examination he appeared dehydrated and had shallow respiration. Blood sample was analyzed with the following results:

Investigations	Patient's report	Reference range
[HCO ₃] ⁻	38 mmol/L	21–28 mmol/L
pH	8.45	7.35–7.45
pCO ₂	70 mm Hg	36–46 mm Hg
Serum urea	64 mg/dl	15–45 mg/dl
S. creatinine	1.8 mg/dl	0.6–1.4 mg/dl
Na ⁺	148 mmol/L	135–145 mmol/L
K ⁺	2.9 mmol/L	3.6–5.0 mmol/L

- 1) Identify the nature of acid base disturbance.
- 2) According to history what is the biochemical basis of this acid base disorder?
- 3) What are your comments on levels of other biochemical parameters?
- 4) What is the biochemical basis of muscle cramps observed in this patient?
- 5) What is anion gap? Give its normal value.

5) Write justification (5 out of 7)

(2x5=10)

- a) Oxidised LDL hastens the process of atherosclerosis.
- b) Ingestion of PUFAs decreases serum cholesterol levels.
- c) Hexokinase & glucokinase has different roles for different tissues.
- d) Iron deficiency anaemia is observed in copper deficiency.
- e) Selenium deficiency may lead to hypothyroidism.
- f) Most uncouplers interfere with proton gradient across the inner mitochondrial membrane.
- g) Excessive alcohol intake leads to fatty liver.

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

(1x5=05)

- a) What is classical galactosemia?
- b) Explain the term lipid rafts.
- c) Mention the importance of Benedict's test.
- d) What are liposomes? Mention its one use
- e) WHO criteria for diagnosis of Impaired Fasting Glucose & diabetes mellitus using FBS value.
- f) What are tumour markers? Name any 2 used clinically.
