ND-2006000101030001 Seat No. _____

First Year M. B. B. S. Examination

December - 2021

Biochemistry : Paper - I

(New CBME Pattern)

Time : Hours] [Total Marks : 80

Instruction :

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :
☛ First Year M. B. B. S.

Name of the Subject :
☛ Biochemistry : Paper - I

☛ Section No. (1, 2,.....) : **Nil**

☛ Subject Code No. :
2 0 0 6 0 0 0 1 0 1 0 3 0 0 0 1

Seat No. :

Student's Signature

Section B: **40 Marks**

Instructions for section B & C:

1. *Use blue/black ball point pen only.*
2. *The numbers to the right indicates full marks.*
3. *Draw diagrams wherever necessary*

2: Long Answer Questions (ANY TWO) **(2 x 10 = 20)**

A. Describe the pathway of glycogenolysis along with its regulation. Add a note on glycogen storage disorders. (6+4=10)

B. Enumerate ketone bodies. Describe formation and fate of ketone bodies. Add a note on other fates of acetyl coA (1+6+3=10).

C. What are blood buffers? Describe in detail role of plasma buffers & renal mechanism in maintenance of acid-base balance. Add a short note on Metabolic Acidosis. **(1+3+4+2)**

3: Write Brief Answer / Justifications/ Biochemical basis **(10 x 2 = 20)**
(ANY TEN)

a) Iron is double edged sword, justify.

b) HDL-Cholesterol has preventive role in atherosclerosis, justify.

c) Why Fluoride is used as blood preservative for glucose estimation?

d) Importance of glycemic index.

e) Muscle glycogen doesn't contribute in maintaining plasma glucose level.

f) Rancidity of fatty acid increase risk of atherosclerosis.

g) Diarrhea causes normal anion gap acidosis.

h) Factors affecting fluidity of cell membrane.

i) Persons with Sickle cell trait are resistant to Malaria caused by Plasmodium falciparum

j) Role of carnitine in beta oxidation.

k) Oral rehydration solution contains glucose and sodium.

Section C: 40 Marks

4: Short answer questions (ANY FOUR) (4 x 5 = 20)

a) Prostaglandins: synthesis, examples, functions, clinical significance.

b) Glycosaminoglycans.

c) Metabolic changes and complications of Diabetes mellitus.

d) Outline doctor patient communication. Add a short answer on components of communication in medical encounters.

e) Electron transport chain with its inhibitors.

5: Clinical Cases (ALL COMPULSORY) (2 x 10 = 20)

Case 1:

45 year old female with Body Mass Index (BMI) of 35 kg/m^2 and diagnosis of Diabetes mellitus (DM) for 7 years came to Medicine OPD for increased frequency of micturation, tingling and numbness in bilateral palm and soles, diarrhea and history of not taking any treatment for DM for last 3 months.

Biochemical laboratory test results were as below:

random plasma glucose =332 mg/dl, Serum Na+ =127 mmol/L, K+ was 2.88 mmol/L. Ketone bodies were found elevated.

1) Explain BMI. What is its relation with diabetes mellitus?

2) What is difference among random, fasting and post-prandial plasma glucose (give the normal range).

3) What is biochemical basis of elevated serum ketone bodies in diabetes mellitus?
4) What is biochemical explanation of tingling and numbness in this patient of diabetes mellitus?
5) What is glycated hemoglobin? Give the normal range and its clinical significance.

CASE-2:

A 3 year old female child was reported to pediatric OPD with complaints of growth retardation, loss of appetite, discoloration of skin & hair. Child also had frequent respiratory infections & diarrhea. Child was exclusively on breast feed up to 2 years of age and was now receiving diluted buffalo milk and rice. On examination child was edematous with hepatomegaly & distended abdomen, skin was rough and hairs was flaky. Biochemical investigations are as follows:

Investigations	Results	Reference Range
Hemoglobin	9.5 gm/dl	13 to 15 gm/dl
S. Total Protein	5.7 gm/dl	6.4 to 8.2 gm/dl
S. Albumin	2.0 gm/dl	3.4 to 5.0 gm/dl
S. Cortisol	0.4 µg/dl	0.5 to 1.5 µg/dl

1) Differentiate Kwashiorkor with Marasmus.
2) Give the reference range of total proteins, albumin and AG ratio in serum.
3) What is the biochemical basis for edema & hepatomegaly in this case?
4) Write the causes & treatment for such case.
5) Functions of albumin (any four)?