



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 :

1. Fill up 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
 Subject Code No. :
 2 0 0 6 0 0 0 1 0 1 0 3 0 0 0 1
 Section No. (1, 2,) : Nil
 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 (ANY TEN) (10 x 2 = 20)

- a) Iron is double edged sword, justify.

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- 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 micturition, 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).

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- 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)?