Date: 28-11-2023
1123E356
First Year MBBS Examination
I MBBS Biochemistry Paper 1
Time: 3 hours
Max Marks: 100

1. Answer to the points.
2. Figure to the right indicates marks.
3. Use separate answer books for each section.
4. Draw diagrams wherever necessary.
5. Write legibly.

Section 1

1.Answer any one (10)

a) Describe the reactions of hexose monophosphate pathway. Mention the significance of this pathway. Add anote on clinical implication of this pathway.

b) Desribe the structure of

hemoglobin. Explain the sigmoidal oxygen dissociation curve of hemoglobin. What are the various factors that affect the oxygen binding to hemoglobin

2.Answer any two(case based scenario/applied short notes) (12)

a) A new born baby was bought with yellowish discoloration of skin and conjunctiva 3 days after birth. Lab reports revealed serum total birubin=18mg/dl, serum unconjugated bilirubin-16mg/dl,. He was advised phototherapy by the neonatologist (a) What is your diagnosis?(b) What is normal serum total, unconjugated and conjugated bilirubin level?(c) Why phototherapy was advised to the baby? (1+3+2=6)

b) Why do serum cholesterol levels depend upon the LDL receptor activity? Explain the role of cholesterol in atherosclerosis. Describe the mechanism of action of hypocholesteromic drugs.

c) A 67 years old male with the history of diabetes mellitus since 10 years was admitted with complaints of disorientation and fruity sodour breath. Blood glucose was 420mg/dl and Rothera's test was positive. ABG analysis showed- pH:Result 7.1 (Reference range 7.35-7.45), pCO2:Result 28mmHg (Reference range 35-45mmHg), p02:Result 95mmHg (Reference range 75-100mmHg), pCO3: Result 9mmol/L (Reference range 22-26mmol/L), Anion gap : Result 33mmol/L

(Reference range 10-14mmol/L) (1+2+1+2=6). a) What is the probable diagnosis. b) Explain the biochemical basis of this disorder c) What is anion gap? Give causes of increased anion gap. d) What is the compensatory mechanism for this diorder.

3.Write short notes (answer any three) (18)

a) Mucopolysaccharides and their biomedical importance

b) Complexes and inhibitors of electron transport chain.

c) Polyol pathway and its significance in diabetes mellitus

d) What are the qualities of a good doctor

4.Answer in 2-3 lines (give biochemical justification) five out of six (10)

a) What is substrate level of phosphorylation? Give examples

b) Define creatine clearence

c) Enumerate inhibitors of Na+K+ pump

d) Enumerate the glycogen storage disorders

e) What are Bense Jone's proteins?

f) Give the molecular abnormality in sickle cell anemia

Section 2

5.Answer any one (10)

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a) Describe the various factors

a) Describe the various factors affecting enzyme activity. Compare and contrast competitive and non competitive enzyme inhibition with examples.

b) Descibe beta oxidation of one molecule of palmitic acid. Mention the bioenergetics of the pathway. Add anote on its regulation

6.Answer any two (case based scenario/applied short notes) (12)

a) Define isoenzyme with examples. Add anote on their clinical significance.

b) Distinguish between passive, facilitated and active transport systems.

c) Describe charecteristics, structural

features and functions of different imminoglobulins

7.Write short notes (answer any three) (18)

a) Classify phospholipids. Mention their composition & biological significance.

b) What are proto oncogens? Mention various mechanisms by which they are activated to oncogens

c) Phase II reactions of detoxification

d) Explain the role of various hormones in the water balance.

8.Answer in 2-3 lines (give biochemical justification) five out of six (10)

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a) Define coenzyme? Enumerate

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b) What are lipotropic factores? Give examples

c) Enumerate causes of respiratory alkalosis

d) Define essential fatty acids. Give examples.

e) Define tumor markers. Give examples.

f) Enumerate applications of electrophoresis