QP CODE : 1024

Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase — I (CBME) Degree Examination - 05-May-2022

Time: Three Hours **Max. Marks: 100 Marks**

BIOCHEMISTRY — PAPER I (RS-4)
QP Code: 1024
(QP contains three pages)

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. A 10-year-old boy with poor nutritional intake was brought to the ophthalmology OPD with history of difficulty in vision in dim light. Incidentally, on examination, he had few lesions on skin. A provisional diagnosis of vitamin deficiency was made.
   (a) Name the fat-soluble vitamin deficiency associated with the above case.
   (b) Write the recommended dietary allowance (RDA) for above vitamin.
   (c) Explain Wald's visual cycle.
   (d) Write any two other functions of this vitamin.

2. Write the steps in beta-oxidation of palmitic acid. Explain the energetics of the pathway.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. A known diabetic patient on regular insulin treatment was brought to the casualty in a semi-comatose state. He had history of vomiting and diarrhea for the past two days and his food intake was reduced. His random blood sugar (RBS) on admission was 45mg/dl.
   (a) Interpret the glucose value in the above case.
   (b) Explain hormonal regulation of blood glucose level.

4. An elderly patient with history of chronic smoking presented to medicine OPD with history of difficulty in breathing. Following respiratory system examination, physician made a diagnosis of chronic obstructive airway disease and his arterial blood was sent for arterial blood gas (ABG) analysis.
   (a) Write the probable acid-base disorder in the above condition.
   (b) Mention the compensatory mechanisms for the above acid-base disorder.
   (c) Write the biological reference interval for:
   (i) Blood pH (ii) Blood pCO_2 (iii) Plasma bicarbonate

5. Classify enzymes and give one example to each class.

6. Explain the components of electron transport chain.

7. Mention the significance of gluconeogenesis. Write the reactions catalyzed by the key enzymes of gluconeogenesis.

8. Mention the biological reference interval for serum sodium. Write any three biochemical functions of sodium. List two causes for hyponatremia.

9. Explain five factors affecting basal metabolic rate (BMR).

10. Explain the regulation of serum calcium level.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Define respiratory quotient (RQ). Mention the RQ for carbohydrate. Name one condition responsible for decrease in RQ,
12. Explain uniport, symport and antiport transport system with one example for each.
13. Name any three mucopolysaccharides and write their biological importance.
14. Name three therapeutic enzymes and write their uses.
15. Name essential fatty acids. Mention two functions of essential fatty acids.
16. Mention the metabolic pathways in Liver that are activated during starvation.
17. Write the biochemical functions of iodine. Mention the disorder associated with iodine deficiency.
18. What is anion gap? Write two conditions associated with high anion gap acidosis.
19. Name three enzyme profile in liver diseases and mention their diagnostic significance.
20. What is leptin? Mention its biological importance.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Which one of the following enzymes is present in lysosomes?

A. Phospholipase
B. Aldolase
C. Acetyl CoA carboxylase
D. HMG CoA reductase

21 ii) Which one of the following is a noncompetitive inhibitor?

A. Allopurinol
B. Iodoacetate
C. Methotrexate
D. Lovastatin

21 iii) Which one of the following is a dietary fibre?

A. Starch
B. Heparin
C. Pectin
D. Dextrin

21 iv) Which one of the following is involved in the formation of liposomes?

A. Lipoproteins
B. Triglyceride
C. Free cholesterol
D. Phospholipids

C. AMP
D. Citrate

22 i) Lipoprotein lipase is activated by

A. Apo A-I
B. Apo B 100
C. Apo E
D. Apo C - II

22 ii) Which one of the following is a feature of Ehlers-Danlos syndrome?

A. Loose skin
B. Poor wound healing
C. Ectopia lentis
D. Brittle bones

22 iii) The daily requirement of vitamin D in adult males is

A. 10 microgram
B. 20 microgram
C. 30 microgram
D. 40 microgram

22 iv) Which one of the following mineral is present in Vitamin B12?

A. Calcium
B. Cobalt
C. Chromium
D. Copper

22 v) An example for cardiac glycoside is

A. Digitalis
B. Sorbitol
C. Glucuronic acid
D. Mannosamine