

This question paper contains 4 printed pages]

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S. No. of Question Paper : 5689

Unique Paper Code : 3183012004

Name of the Paper : Medical Biochemistry

Name of the Course : B.Sc. (H) Biomedical Sciences

Semester : IV (NEP)

Duration : 3 Hours

Maximum Marks : 90

(Write your Roll No. on the top immediately on receipt of this question paper.)

Question No. 1 is compulsory.

Attempt *five* questions in all.

Subparts of the questions should be attempted together.

Draw illustrations or diagrams wherever necessary.

1. (a) Define :

2×4=8

(i) Thermogenin

(ii) Lipoproteins

(iii) Vitamin

(iv) Isoenzymes.

P.T.O.

(b) Differentiate between :

3×4=12

(i) LCAT and ACAT

(ii) Brown Adipose Tissue and White Adipose Tissue

(iii) LDL uptake and HDL uptake

(iv) Ghrelin and PYY₃₋₃₆

(c) State true or false and justify :

2.5×4=10

(i) Hemolytic anemia may occur in premature and low birthweight infants.

(ii) Obesity is always due to insufficient leptin production.

(iii) Chylomicrons have cholesterol esters as well as free cholesterol.

(iv) ALT is a more liver specific enzyme.

2. Write short notes on :

(a) Lectins

(b) Folate Trap

(c) Prostaglandins.

5,5,5

3. (a) Name the enzyme that catalyses/takes part in the following reactions :

(i) carboxylation of glutamate residues in proteins that bind Ca^{2+}

(ii) transamination reactions

- (iii) activity of proto-collagen hydroxylase
 - (iv) activity of methyl malonyl CoA mutase
 - (v) redox reactions in various metabolic pathways.
- (b) Give the reaction catalysed by SGOT or SGPT. What role does pyridoxal phosphate play in this reaction ?
- (c) How is cholesterol synthesis regulated at the transcriptional level ?
- 5,3,7
4. (a) Discuss the clinical significance and biochemical metabolic reactions catalysed by creatin kinase. Why do muscle builders take creatine supplements ?
- (b) Mice lacking leptin and leptin receptor are obese. Why is it so ? How does leptin regulate body mass ?
- (c) Give *one* word for :
- (i) Precursor lipid of the prostaglandins and leukotrienes.
 - (ii) Enzyme inhibited by the statins.
 - (iii) Molecule that regulates hunger between the meals of the day.
 - (iv) Target organ of leptin.
 - (v) Enzyme that is of diagnostic significance in myocardial infarction.
- 5,5,5

5. (a) Why is HDL called good cholesterol ? Illustrate and discuss the process of reverse cholesterol transport ?
- (b) Discuss the source, target organ and mechanism of action of leptin. 8,7
6. (a) Give the complete biochemical reaction catalysed by LDH. Which are different isoforms ? Discuss the diagnostic significance of the enzyme.
- (b) Dietary fiber is an important component of our diet. Comment. What role does it play in regulating cholesterol levels in the body ?
- (c) Discuss the metabolism of Vitamin D in the body. What is its target organ ?

5,5,5