

(vi) Metabolic shifts in fasting state (3×5=15)

4. Differentiate between the following :

(i) Glucogenic and ketogenic amino acids

(ii) Transamination and deamination

(iii) Primary and Alternate metabolic pathways

(iv) Catabolism and Anabolism

(v) Aerobic and anaerobic glycolysis (3×5=15)

5. (a) Calculate the number of ATP molecules produced when one molecule of 16C Palmitate is completely oxidized.

(b) Explain various steps of Urea cycle.

(c) Differentiate between the de novo and salvage pathways of nucleotide synthesis. Draw a purine ring showing the source of different carbon and nitrogen atoms. (5,5,5)

6. (a) Pyruvate has three metabolic fates. Explain.

(b) Briefly explain the irreversible reactions in TCA cycle with reactions.

(c) Comment on lipoprotein cycle. (6,6,3)

(200)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 4053

H

Unique Paper Code : 6792012401

Name of the Paper : Metabolism and Integration

Name of the Course : **B.Sc. (Hons) Biological Science (NEP)**

Semester : IV

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **any 4** questions.
3. Question no. **1** is compulsory.
4. **All** questions carry equal marks.

1. (a) Identify the following :

- (i) An inner mitochondrial membrane shuttle involved in transport of NADH from cytosol to mitochondria.

P.T.O.

- (ii) The committed enzyme in glycolytic pathway
- (iii) A hormone that decreases blood glucose
- (iv) The enzyme responsible for transamination reaction and decarboxylation.
- (v) This enzyme is absent in mammals and hence we cannot produce ethanol.

(b) Expand the following :

- (i) PEP
- (ii) PKU
- (iii) FMN
- (iv) NADH
- (v) MSUD
- (vi) ALT
- (vii) HMP
- (viii) DHAP

(c) Give an example each of a reaction requiring the following coenzyme/cofactor :

- (i) PLP
- (ii) N^5N^{10} methylene THF (5,8,2)

2. Justify the following statements :

- (i) Phosphorylation of glucose inside the cell is advantageous.
- (ii) TCA is an amphibolic pathway.
- (iii) Glucose-6-phosphate dehydrogenase deficiency can lead to haemolytic anaemia.
- (iv) Proton transport is coupled to ATP synthesis in mitochondria
- (v) ATP is a "high energy" molecule.
- (vi) A reaction will proceed spontaneously if it is associated with negative ΔG . (2.5×6=15)

3. Write short notes on the following (any five) :

- (i) Phosphoryl group transfer
- (ii) Alkaptonuria
- (iii) Futile cycles
- (iv) β (Beta) oxidation
- (v) Standard free energy change