

- (b) Explain the regulation of biosynthesis of deoxyribonucleotides.
- (c) Write a short note on activated methyl cycle.
(5,5,5)
5. (a) Explain the regulation of Glutamine synthetase by covalent modification.
- (b) Write the role of pyridoxal phosphate in amino acid metabolism.
- (c) Explain urea cycle and discuss its physiological significance.
(5,5,5)
6. (a) Explain Glucose-Alanine cycle. What is its significance in cellular metabolism?
- (b) Write the steps to accomplish the following conversion :
- (i) dUMP to dTTP
- (ii) Phenylalanine to Homogentisate
- (iii) Tryptophan to NAD
- (iv) Arginine to creatine
- (c) Explain Purine nucleotide cycle and its significance.
(4,8,3)

(200)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 4052

H

Unique Paper Code : 2492012401

Name of the Paper : Metabolism of Amino Acids and Nucleotides

Name of the Course : B.Sc. (Hons.) Biochemistry

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. There are **six** questions.
3. Attempt any **four** questions.
4. **All** questions carry equal marks.
5. Question no. 1 is compulsory.

1. (a) Explain the following :

(i) Cysteine and arginine are essential in children but not in adults.

P.T.O.

- (ii) L-asparaginase is an effective chemotherapeutic agent.
 - (iii) S-adenosyl methionine (SAM) has a higher methyl group transfer potential than N⁵-methyl tetra hydro folate.
 - (iv) Branch chain amino acid metabolism is affected by Vitamin 12 deficiency.
 - (v) dATP is toxic to mammalian cells.
- (b) Write the mode of action of the following inhibitors **(Any three)** :
- (i) 6-Mercaptopurine
 - (ii) 5-fluorouracil
 - (iii) Methotrexate
 - (iv) Allopurinol
- (c) Give one significant contribution of the following scientists **(Any two)** :
- (i) John Buchanan
 - (ii) P. Reichard
 - (iii) A. Foiling (10,3,2)
2. (a) Explain the mechanism of transamination reaction with the help of one example.

- (b) Draw Gamma-glutamyl cycle and explain its physiological significance.
 - (c) Explain the biochemical basis and symptoms of the following metabolic disorders **(any three)** :
 - (i) Maple syrup urine disease
 - (ii) Orotic aciduria
 - (iii) Homocystinuria
 - (iv) SCID (4,5,6)
3. (a) Differentiate between the following :
- (i) Transamination and oxidative deamination
 - (ii) Carbamoyl phosphate synthetase I and II
- (b) What are the different pathways for the break down and synthesis of glycine? Describe the function of each protein of glycine cleavage system.
- (c) What is FIGLU test? How is it performed? (6,6,3)
4. (a) How is nitrogen from the biosphere assimilated into biomolecules?