

This question paper contains 3 printed pages]

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S. No. of Question Paper : 1801

Unique Paper Code : 2492012401

Name of the Paper : Metabolism of Amino Acid and Nucleotides

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

Semester : IV

Duration : 2 Hours

Maximum Marks : 60

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

There are six questions in all.

All questions carry equal marks.

Attempt four questions in all.

Question No. 1 is compulsory.

1. (A) Explain the following :
 - (a) Serine can be synthesized from glycolytic intermediates.
 - (b) The only methyl group transfer that does not involve SAM is the synthesis of Methionine itself.
 - (c) Isoleucine and valine metabolism is affected by Vitamin B12 deficiency.
 - (d) Urinary N-formiminoglutamate is increased in folate deficiency.

P.T.O.

- (e) Ingestion of food rich in tryptophan leads to sleepiness.
- (f) Aspartate aminotransferase has the highest activity of all the mammalian liver aminotransferases.

(B) Give *one* significant contribution of the following scientists :

- (a) P. Reicherd
- (b) Archibald Garrod
- (c) John Buchanan.

12,3

2. (A) Outline the de-novo pathway of purine biosynthesis.

(B) Why do nitrogen fixing bacteria use a large amount of ATP to fix nitrogen ? Elaborate on the mechanism of nitrogen fixation.

(C) Explain the Gamma glutamyl cycle.

5,6,4

3. (A) Write the reaction for the following conversions :

- (a) dUMP to dTTP
- (b) Methionine to cysteine
- (c) Arginine to creatine
- (d) Phenylalanine to Homogentisate.

(B) Regulation of glutamine synthetase is the primary point in bacterial nitrogen metabolism. Elaborate.

10,5

4. (A) Describe the mechanism of action of the following drugs :

- (a) N-acetyl glutamate

- (b) Trimethoprim
- (c) Benzoate
- (d) 5-fluorouracil.
- (B) Explain the pathway for the catabolism of purine nucleotides into uric acid.
- (C) Discuss the regulation of urea cycle. 8,4,3
- 5. (A) Write any *two* reactions of amino acid metabolism where PLP is involved as a coenzyme.
- (B) Describe the biochemical basis and symptoms of the following disorders :
 - (a) Alkaptonuria
 - (b) Maple syrup urine disease
 - (c) Gout
 - (d) Lesch-Nyhan syndrome. 3,12
- 6. (A) Describe the following in brief :
 - (i) Kreb's Bicycle
 - (ii) Glycine cleavage system.
- (B) How is Ribonucleotide reductase regulated ?
- (C) Differentiate between the Carbamoyl phosphate synthetase I and II. 6,5,4

