2015

BIOCHEMISTRY

Paper – BCT – 205

(Metabolism II)

Full Marks – 25

The figures in the margin indicate full marks
Candidates are required to give their answers in their own words as far as practicable

Group – A

Answer ***any one*** question

1. (a) Why is excess deoxyadenosine toxic to mammalian cells ? $3\frac{1}{2}$

(b) "Normal cells die in a nutrient medium containing thymidine and methotrexate, that supports the growth of mutant cells defective in thymidylate synthase" — Explain. 4

(c) What are the overall reactions for the transformation of ADP to dADP ? 3

(d) What are the sources of nitrogen and carbon atoms of the Purine and Pyrimidine rings ? 2

2. (a) What is Purine nucleotide cycle ? Why individuals with an inherited deficiency in muscle AMP deaminase are easily fatigued ? 2+2

(b) "*E. coli* mutants devoid of both thioredoxin and glutaredoxin are non-viable" —

Justify the statement with proper explanation. $2\frac{1}{2}$

(c) Administration of allopurinol, an xanthine oxidase inhibitor, to a patient with gout and normal HGPRT level would lead to

(i) decreased de novo synthesis of IMP
and
(ii) decreased urate in the urine.

Justify with reason. 3+3

Group – B

3. Write short notes on : 3×2

(i) Role of N-acetylglutamate in regulation of urea cycle.
(ii) PKU disorder.
(iii) Therapeutic effects of branched chain amino acids.

Or

(a) Justify the following statements : 2×2

(i) Leucine is a ketogenic amino acid.

(ii) L-asparaginase is an effective chemotherapeutic agent.

(b) Write down the names of "nonstandard amino acids" involved in urea cycle. Why are they called so ? 2

4. (a) Write down the steps of following conversions : 3×2

(i) Tryptophan to Serotonin

(ii) L-DOPA to Epinephrine

(iii) Oxaloacetate to Asparagine.

(b) What is the amino acid involved in synthesis of Choline ? $\frac{1}{2}$

Or

(a) "The amino groups and the carbon skeleton take separate but interconnected pathways during amino acids metabolism" — Explain. $3\frac{1}{2}$

(b) How does transamination reaction defer from oxidative deamination reaction? 2

(c) Name the amino acids which are directly converted into NH_4^+. 1