

1129

B.A./B.Sc. (General) Third Semester

Biochemistry

Paper - B: Protein and Nucleic Acid Metabolism

Time allowed: 3 Hours

Max. Marks: 45

**NOTE:** Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit.

x-x-x

I. Name the following:-

- a) Enzyme and cofactor required for the conversion of phenylalanine to tyrosine (2)
- b) Enzyme that converts orotidylic acid to UMP. (1)
- c) Metabolite excreted in alkaptonuria (1)
- d) Amino acids that contribute the nitrogen atoms of the purine nucleus (2)
- e) Compounds that contain porphyrin (2)
- f) Precursor for synthesis of aspartate. (1)

**UNIT - I**

- II. a) Elaborate the digestion of proteins in stomach. Discuss the absorption of amino acids from the intestine.
- b) Discuss the mechanism of transamination reaction. (6,3)
- III. a) How uricotelic organisms differ from ureotelic and ammoniotelic organisms?
- b) Write the reactions of urea cycle that take place in mitochondria. How urea cycle is integrated to TCA cycle. (3,6)

**UNIT - II**

- IV. a) Discuss the catabolism of histidine to  $\alpha$ -ketoglutarate.
- b) Write a note on synthesis of selenocysteine. (5,4)
- V. a) Write down the reactions involved in:-
  - i) Formation of glycine from choline
  - ii) Conversion of 3 Phosphoglycerate to serine.
- b) Discuss the synthesis and fate of proline. (4,5)

(2)

**UNIT – III**

- VI. a) Describe the biosynthetic pathway of any two essential amino acids.  
b) How melanin is biosynthesized from tyrosine? (6,3)
- VII. a) Write down the reactions involved in glutamate-glutamine and aspartate-asparagine conversions.  
b) Write down the steps involved in the synthesis of different polyamines. (4,5)

**UNIT – IV**

- VIII. a) Give the reactions for conversion of:-  
i) Guanylic acid to inosinic acid  
ii) Uridine triphosphate to Cytidine 5'-triphosphate.  
b) Enlist the biological functions performed by nucleotides. (6,3)
- IX. a) Write a note on different types of porphyrias.  
b) How deoxyribonucleotides are synthesized in the body? (6,3)

x-x-x