This question paper contains **4** printed pages]

Roll No. | | | | | | | | | | |

S. No. of Question Paper : **2059**

Unique Paper Code : **2532011202**

Name of the Paper : **Biochemistry of Nucleic Acids and Proteins**

Name of the Course : **B.Sc. (Hons.) Microbiology**

Semester : **II Part I (NEP-UGCF)**

Duration : **3 Hours** Maximum Marks : **90**

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

Attempt any *five* questions.

All questions carry equal marks.

1. (*a*) State whether the following statements are True or False giving reasons (any *three*) : 3×5=15

(*i*) The rate curve of an enzyme catalyzed reaction is a straight line.

(*ii*) All amino acids essentially form a blue purple color complex with ninhydrin reagent.

(*iii*) DNA is more prone to alkaline hydrolysis compared to RNA.

(*iv*) Oxygen binding curve of hemoglobin is a hyperbola.

P.T.O.

(*b*) Define activation energy and explain its role in enzyme catalysis.

Or

Write an example of an allosteric enzyme with its positive and negative modulators. 3

2. (*a*) Draw the structure of Uridylate and link it with Guanylate. 8

(*b*) How are enzymes classified ? Name the different classes along with their enzyme commission numbers, citing an example of each. 1+3+3=7

Or

Describe Michaelis-Menten kinetics of an enzymatic reaction. 7

(*c*) Write an example of an non-protein amino acid and draw its structure. 1+2=3

3. Write short notes on the following (any *three*) : 3×6=18

(*a*) Multienzyme complex

(*b*) *t*-RNA

(*c*) Collagen

(*d*) Theories of enzyme action

4. (*a*) With the help of diagram trace the formation of different ionic species of Alanine that form upon its titration with NaOH. 6

(*b*) Briefly write about the contributions of the following scientists (any *two*) : 2×2=4

(*i*) Alexander Rich

(*ii*) Pauling and Corey

(*iii*) Dorothy Hodgkin

(*c*) What are the salient features of Watson and Crick model of DNA ? 4

(*d*) What are essential amino acids ? Cite an example and draw its biochemical structure. 1+1+2=4

Or

Describe the structure and function of Glutathione. 4

5. Differentiate between the following pairs (any *three*) : 3×6=18

(*a*) Competitive and non-competitive enzyme inhibition

(*b*) A and Z DNA

(*c*) Secondary and tertiary level of protein structures

(*d*) Prosthetic group and co-enzyme.

6. (*a*) Explain the following giving suitable example or diagram (any *four*) : 4×4=16

(*i*) Hyperchromic effect

(*ii*) Isozymes

(*iii*) pI

(*iv*) Active site

(*v*) Peptide hormone

(*b*) Define the term enzyme unit. 2