

NOTE: 1. All questions are compulsory.

2. Figures to right indicate marks.

3. Draw labeled diagrams wherever necessary.

Q I) A. Answer the following :(any 4)

[8]

- 1) What do you mean by prosthetic group.
- 2) Define active site.
- 3) What do you mean by holoenzyme?
- 4) How does substrate concentration affect enzyme reaction rate?
- 5) Define Michaelis- Menten constant.
- 6) What do you mean by prosthetic group?
- 7) Give name and type of reaction catalysed by enzyme having 1st E.C no 2 and 5.
- 8) Explain the term $K_{cat} = V_{max}/[E]_t$

B. Explain the following : (any 2)

[6]

- 1) Give a note on double reciprocal plot.
- 2) Write a note on specific activity of enzyme.
- 3) Derive K_m from Michaelis-Menten equation.
- 4) Explain irreversible inhibition, with example.

C. Answer in brief :(any 1)

[6]

- 1) Derive the Michaelis-Menten equation.
- 2) Explain enzyme specificity. Mention drawback of Michaelis-Menten equation.

Q II) A. Answer the following (any 4)

[8]

- 1) What is exocrine gland; give e.g?
- 2) Define peptide hormones, give e.g.
- 3) State the location of hypothalamus gland?
- 4) Write down the chemical structure of cytokinin.
- 5) Write down the function of GnRH.
- 6) What is parthenocarpy?
- 7) Write down a brief note on fat soluble hormone receptor.
- 8) Shortly describe about ACTH.

B. Explain the following (any 2)

[6]

- 1) Explain upto cyclic AMP production in G protein coupled receptor.
- 2) Write down the structure of vasopressin and state its function.
- 3) Write down the structure of auxin and state its any three functions.
- 4) State the incidence occurs during ovulatory phase of ovarian cycle.

C. Answer in brief (any 1)

[6]

- 1) State briefly about production of thyroxine.
- 2) How does gibberellins help in horticulture.

[8]

Q. III] A. Answer the following : (any four)

- 1) What is Titration curve ?
- 2) What is monoprotic acid ? Give one example.
- 3) What is pH scale
- 4) Define physiological buffer.
- 5) Define Henderson Hasselbalch equation
- 6) What is pKa
- 7) Give pK values of lysine
- 8) Define isoelectric pH.

[6]

B. Explain the following : (Any two)

- 1) Explain the ionization of Valine
- 2) Explain hemoglobin as a physiological buffer
- 3) 'Water has neutral pH', justify the statement with suitable derivation

[6]

C. Answer in brief : (any one)

- 1) Explain the titration of Aspartic acid with suitable graphical representation.
- 2) Calculate the pH of a buffer composed of 0.1M acetic acid (CH_3COOH) and 0.6M acetate (CH_3COO^-) knowing that the acid dissociation constant K_a is 1.8×10^{-5} .

Q. IV] 1.(A) Answer the following (any one)

[2]

- 1). Define katal
- 2). Define ribozyme

1. (B) Fill up the blanks: (any three)

[3]

- 1) $1\text{U} = \underline{\hspace{2cm}}$ nanokatal. (16.67/18.67/16.89)
- 2) According to E.C number 2 denotes group of enzyme. (Hydrolase/Transferase/Isomerase)
- 3) $\text{Fe}^{+2}, \text{Zn}^{+2}$ are . (Ionic group/Prosthetic group/Cofactor)
- 4) give the name of vitalism (Edward Buchner/James Sumner/Louis Pasteur)
- 5) binds to enzyme at binding site. (Substrate/Inhibitor/cofactor)
- 6) Oxidation reduction type of reaction catalysed by enzyme. (transferases/oxidoreductase/ligase)

Q IV] 2.(A.) Answer in following .(any one)**[2]**

- 1). State function of ethylene .
- 2). State function of progesteron

2.(B.) Fill up the blanks : (any three)**[3]**

- 1) Other name of ADH is _____. (Anti diuretic hormone/anti diluting hormone/ A diuretic hormone)
- 2) Progesteron secrets from the _____ cells of overy. (graffian follicle/Corpus luteum/Corpus albicans)
- 3) Fruit produced by without fertilization is called _____. (Seedless fruit/parthenocarpic fruit/prototype fruit)
- 4) Hyperthyroidism cause _____. (Goiter/Myxidema/Thyroid).
- 5) Dopamine is derivative of _____ (Thyroxine/Tryptophan/Tyrosine).
- 6) CyclicAMP is a _____ (second messenger/ first messenger/ tertiary messenger).

Q IV] 3.(A.) Answer the following : (any one)**[2]**

- 1) Give one example of acidic amino acid with structure.
- 2) Give pI value of Glycine.

3.(B.) Fill up the blanks :(any three)**[3]**

- 1) Miochondria Ammonium hydroxide – ammonium chloride is the example of _____ buffer. (Basic / Acidic / Neutral)
- 2) pK_R value of lysine is _____ (2.2 / 9.1 / 10.5)
- 3) _____ is the simplest amino acid (Proline / lysine / Glycine)
- 4) If the pH of Tris buffer is 12 then the H^+ ion concentration of buffer is a _____ (10^{-12} / 10^{-9} / 9)
- 5) The molecule A has neutral charge at pH 4, so its pK has to be _____ (8 / 10 / 4)
- 6) Conjugate base of CH_3COOH is _____ (NH_4Cl / $NaOH$ / CH_3COONa).