MSc. part-II Sem-III June-2018.

organic chemistry.

QP Code : 26665

[2½ Hours] [Total Marks : 60

N.B : 1. **All** questions are **compulsory.**
2. **Figures** to the **right** indicate **full** marks.

1. (a) Answer **any two** of the following :— 8
   (i) Explain Drug elimination with respect to pharmacokinetics.
   (ii) Explain the terms :
   Drug Assay and Bioavailability
   (iii) How are 'Leads' obtained in medicinal chemistry ?
   (iv) Discuss bioisoterism in detail.

   (b) Answer **any one** of the following :— 4
   (i) Explain how penicillin was discovered without a lead. Give the structure of penicillin.
   (ii) Explain physical and chemical parameters like solubility and ionization in drug distribution and drug receptor binding.

2. (a) Answer **any two** of the following :— 8
   (i) Give the synthesis of oligonucleotides by phosphodiester method.
   (ii) Discuss the chemical and enzymatic hydrolysis of proteins to peptides.
   (iii) Explain the role of DNA with respect to the genetic code.
   (iv) Explain the process of replication of DNA.

   (b) Attempt **any one** of the following :— 4
   (i) Give the H-phosphonate method for the synthesis of oligonucleotides.
   (ii) Discuss ternary and quaternery structure of proteins.

3. (a) Answer **any two** of the following :— 8
   (i) Discuss the specificity of enzymes.
   (ii) What is the limitation of Fisher's 'lock and key' hypothesis ? Explain 'induced fit' hypothesis.
   (iii) Explain the following factors affecting the enzyme kinetics :
   Substrate concentration and pH.
   (iv) Discuss the important features of the mechanism of chymotrypsin catalysed hydrolysis of a peptide bond.

   (b) Answer **any one** of the following :— 4
   (i) Match the following :

(I)	Oxidoreductases	(A)	Lipases
(II)	Transferases	(B)	Phosphorylase
(III)	Hydrolases	(C)	Pyruvate decarboxylase
(IV)	Lyases	(D)	Lactate dehydrogenase

   (ii) Discuss the characteristics of an active site in the enzyme.

[TURN OVER

4. (a) Answer **any two** of the following :— 8

(i) Outline the mevalonate pathway.

(ii) Explain the acetate hypothesis for the biosynthesis of 6-methylsalicylic acid.

(iii) Give the biosynthesis of ephedrine starting from trans-cinnamyl coenzyme A.

(iv) Explain the general principles in the biosynthesis of alkaloids.

(b) Answer **any one** of the following :— 4

(i) Give the biosynthesis of L-Tryptophan starting from anthranilate.

(ii) Show how lanosterol is biosynthesised from squalene.

5. Answer **any four** of the following :— 12

(a) Explain the effect of chain branching on the potency of the drug.

(b) Discuss the importance of partition coefficient in drug distribution.

(c) Give the structure and importance of c-AMP.

(d) Discuss the secondary structure of RNA.

(e) State whether the following statements are true/false:

(i) An irreversible enzyme inhibitor is also called an enzyme inactivator

(ii) Competitive inhibition of an enzyme is generally irrversible inhibition.

(iii) Smaller the $K_{inhibitor}$ value, more potent it is.

(f) Explain covalent catalysis with reference to the mechanism of enzyme action.

(g) Explain the following terms :

Biogenesis and Primary metabolites.

(h) Give the general principles involved in the biosynthesis of amino acids.
