

SEAT No. _____

No. of Printed Pages: 03

[39/A13]

SARDAR PATEL UNIVERSITY

B. Sc. Examination (Sixth Semester)

Wednesday, 28th March-2018

10.00 am to 1.00 pm

US06CCHE02 (Organic Chemistry)

Note: (i) All questions are to be attempted.
(ii) Figures to the right indicate marks.

Total Marks: 70

Q-1 Choose the correct option and rewrite the answer. [10]

- Insulin is a _____ protein.
(a) globular (b) fibrous (c) both "a" and "b" (d) none of these.
- Silk fibroin contains _____ amino acid residues.
(a) glycine, alanine and serine (b) glycine, valine and serine
(c) glycine, proline and serine (d) glycine, leucine and serine
- Which of the following is the main structural features of proteins.
(a) Ester linkage (b) Ether linkage (c) Peptide linkage (d) None of these
- Which alkaloid is present in Opium?
(a) Quinine (b) Papaverine (c) Adrenaline (d) None of these.
- In quinine, both nitrogen atoms are _____ in nature.
(a) 2^o (b) 1^o (c) 4^o (d) 3^o
- In purine, _____ rings are fused together.
(a) pyrimidine and pyrrole (b) pyrimidine and pyridine
(c) pyrimidine and imidazole (d) pyrimidine and indole
- Metahemipinic acid is a _____ acid.
mono carboxylic (b) tetra carboxylic (c) tricarboxylic (d) dicarboxylic
- Which alkaloid is used as a antimalarial drug?
(a) Adrenaline (b) Papavarine
(c) Nicotine (d) Quinine
- For any chemical transformation, a certain amount of energy, known _____ energy, must be supplied to molecules.
(a) kinetic (b) vibrational (c) activation (d) none of these.
- When a solution of benzophenone in 2-propanol is irradiated with a light of 345 nm produce _____.
(a) Benzpinacol (b) propane-2-one (c) both "a" and "b" (d) none of these.

(1)

(P.T.O.)

Q-2 Attempt any ten questions of following.

[20]

1. Explain the terms: (a) Denaturation (b) Electrophoresis.
2. Distinguish between : Pleated sheet and α -helix structure of protein.
3. Write the structure and name of essential heterocyclic amino acids.
4. Write the reaction of 2,6,8-trihydroxy purine when heated with POCl_3 .
5. Write the Murexide test of uric acid.
6. Give the physical properties of uric acid.
7. Give the method used for the determination of oxo ($\text{C}=\text{O}$) and methoxy ($-\text{OCH}_3$) group present in the structure of alkaloid.
8. How will you convert the veratric acid from p-hydroxy benzoic acid?
9. Write the Rabe et al synthesis for quininic acid.
10. Discuss the importance of energy transfer in photochemistry.
11. Explain photochemical cis -trans isomerization in stilbene.
12. How will you convert ethylacetoacetate to lactone ?

Q-3 Attempt the following.

[A] Write the synthesis for the following:

[06]

- (i) Valine using malonic ester.
- (ii) Lysine using phthalimido malonic ester synthesis.
- (iii) Gly-Phe-Ala using benzyloxy carbonyl method.

[B] What are proteins? Give the broad classification of proteins on the basis of their shape and discuss their properties. **[04]**

OR

Q-3 Attempt the following.

[A] What is chymotrypsin? Discuss the mechanism of enzyme action of chymotrypsin. **[06]**

[B] Discuss P. Edman method for N-terminal residue analysis. Also give its advantages and limitation. **[04]**

(2)

Q-4 How will you determine the presence of Alloxan and Allantoin moiety in the structure of Uric acid ? Discuss the structure of Theobromine. Also give the synthesis of Theobromine from uric acid using Fisher synthesis and Brederick synthesis. [10]

OR

Q-4 Distinguish between "Nucleoside and Nucleotide". Also discuss the primary structure of RNA and DNA and also secondary structure of DNA. [10]

Q-5 Attempt the following.

[A] Write the synthesis for the following: [06]

- (i) Ott's synthesis of Adrenaline.
- (ii) Bido and Wilkinson synthesis of papaverine.

[B] Discuss the importance of following method in the structure elucidation of an alkaloids. [04]

- (i) Hofmann exhaustive methylation.
- (ii) Herzig-Meyer's.

OR

Q-5 Attempt the following.

[A] (i) Discuss the nature of side chain in nicotine. [06]

- (ii) How will you establish the linkage between quininic acid and meroquinene in quinine?

[B] Discuss the extraction method for an alkaloid by using water immiscible solvents. Also give its disadvantages. [04]

Q-6 Attempt the following.

[A] Discuss the following: [06]

- (i) Norrish Type - I and -II reaction using suitable illustration.
- (ii) Write reaction mechanism of Photo -Fries rearrangement.

[B] Differentiate between the following: [04]

- (i) Fluorescence and Phosphorescence.
- (ii) Triplet and singlet excited state of ethylene molecule.

OR

Q-6 Attempt the following.

[A] Complete and suggest appropriate reaction mechanism involved in the following : [06]



[B] Discuss Paterno-Buchi reaction and its limitation. [04]

X
3

1001 100

1002 100

1003 100

1004 100

1005 100

1006 100

1007 100

1008 100

1009 100