

(b) How will you carry out the following transformations ? 4

(i) Cholesterol into Testosterone

(ii) Cholesterol into 5α -Cholanic acid.

(c) How will you establish the position of angular methyl group at C-10 ? 2

8. (a) Using Hydrochrysene approach how will you convert epiandrosterone to Androsterone ? 3

(b) Give a set of chemical reactions showing that ring C/D junction has transfusion in cholesterol. 3

(c) How will you prove that ring-D in cholesterol is a five membered ring ? 3

(d) How will you establish that cholesterol has a tetracyclic nucleus ? 3

Roll No.

Total Pages : 04

LMDQ/M-24

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ORGANIC CHEMISTRY SPECIAL-V

CHEM-403

(OBES/LOCF)

Time : Three Hours]

[Maximum Marks : 60

Note : Attempt *Five* questions in all, selecting at least *one* question from each Section. All questions carry equal marks.

Section A

1. (a) Derive the Michaelis-Menten's velocity equation for an enzyme action by rapid-equilibrium approach and modify it as Eadie-Scatchards' equation. 5

(b) Elaborate the following terms :

EC : 1.1.....; EC: 3.1 2

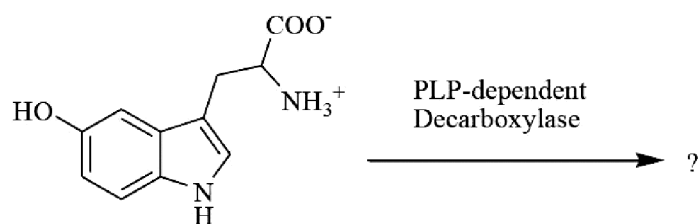
(c) Explain the rigid and flexible models of the enzyme action. 5

2. (a) Define the reversible non-competitive inhibition in enzymes. Derive a rate equation for it and how does it differ from the reversible competitive inhibition ? 5

- (b) How are the following helpful in the enzyme catalysis ? 4
- (i) Proximity and orientation
- (ii) Covalent catalysis.
- (c) Define the units in which the enzymic activity can be expressed and give their relationship. 3

Section B

3. (a) Choosing a suitable substrate give the mechanism of action of chymotrypsin. 4
- (b) Discuss the physiological roles of prostaglandins. 4
- (c) Write the structures of PGA_3 , PGH_2 , PGC_1 , PGG_1 . 4
4. (a) Giving the various reactions/reagents, convert the norbornadiene molecule into $\text{PGF}_{2\alpha}$. 5
- (b) The reduction of flavin nucleus in FMN and FAD can be one- and two-electron processes. Explain. 3
- (c) Complete the following reactions along with its plausible mechanisms : 4



Section C

5. (a) How will you establish the structure of camphoronic acid ? Also confirm its structure by giving its synthesis. 3
- (b) Give the synthesis of squalene starting from geranyl acetone. How will you isolate the so formed *trans*-squalene so from its *cis*-isomer ? 3
- (c) What are essential oils ? How are they isolated from the plants ? 4
- (d) How will you prove that Geraniol is an acyclic terpenoid and contain alcoholic group ? 2
6. (a) Give the synthesis of Terebic acid and Terpenylic acid. 4
- (b) Discuss the biosynthesis of isopentenyl pyrophosphate and its isomer starting from acetate. Give the three evidences suggesting that isopentenyl pyrophosphate is biosynthesized through MVA pathway. 8

Section D

7. (a) How will you establish the nature of side chain in cholesterol and its point of attachment to cholesterol nucleus ? 6