

- (b) How will you carry out the following transformations ? **4**
- (i) Cholesterol into Testosterone
- (ii) Cholesterol into  $5\alpha$ -Cholanic acid.
- (c) How will you establish the position of angular methyl group at C-10 ? **2**
8. (a) Using Hydrochrysen 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****7526**

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.

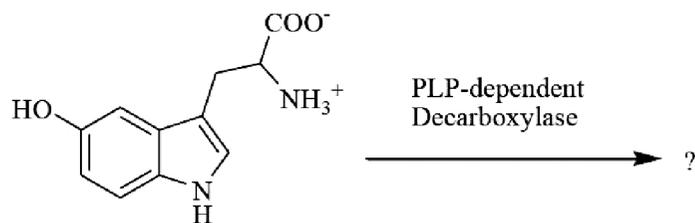
**Section A**

1. (a) Derive the Michaelis-Menten's velocity equation for an enzyme action by rapid-equilibrium approach and modify it as Eadie-Scatchard's 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  $\text{PGA}_3$ ,  $\text{PGH}_2$ ,  $\text{PGC}_1$ ,  $\text{PGG}_1$ . **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**