

[4]

category of secosteroid. What is the natural source of this vitamin ? Schematically write down how it is getting converted to its active form, “Calcitriol” ? Show the numbering system of the ring indicating the position of alcohol units. 1+1+3+1

6. Name and draw the structure of a vitamin which contains a sugar alcohol unit. Name and draw the structure of both of its co-enzymes. Schematically describe its biochemical function in human body. $\frac{1}{2} + 1 + 1 \frac{1}{2} + 1 \frac{1}{2} + 2$
- _____

Ex/P-XVI-O/2019

M. SC. CHEMISTRY EXAMINATION, 2019

(4th Semester)

ORGANIC CHEMISTRY SPECIAL

PAPER - XVI-O

Time : Two hours

Full Marks : 50

(25 marks for each Unit)

Use a separate answerscript for each unit.

UNIT – O-4161

1. a) What is packing parameter ? How does it help in designing a membrane mimetic compound ? 1+1
- b) Comment on the molecular architecture of a membrane lipid and its role in the self-assembly. 1+2
- c) Write down a plausible route for the synthesis of a DPPE-mimic with (i) diether and (ii) 1-ether, 2-ester linker functionality. 2×2
2. a) What is a peptoid ? Give a synthetic protocol of a peptoid-based mimic of a dipeptide Ac-Phe-Ser-OMe. 1+2
- b) Give a synthetic route of a β -turn mimic and justify its molecular architecture as a mimic. 2+1
- c) Explain the different steps in peptidomimetic designing and their importance. $1 \frac{1}{2} \times 2$

[Turn over

[2]

3. a) PNA is a DNA-mimic – Justify. 2
- b) Write down the plausible synthetic scheme of α , β and γ -PNA monomer with, A, T & G bases respectively. 3
- c) A PNA can form a triple-helix with a double helix DNA backbone – Justify. 2

UNIT – O-4162

[3]

4. Answer question no. 4(a) and *any three* from the rest : 4
- a) Briefly discuss about different routes of drug administration. Mention the advantages and disadvantages of oral route of drug administration. 2+1 $\frac{1}{2}$
- b) What is bacteriostatic drug ? Give one example with detailed mechanism of action. 3
- c) Explain why Penicillin is a bactericidal drug. 3
- d) Why is Penicillin-V not suitable for oral administration ? 3
- e) What is a drug ? Give one example of each of natural, semisynthetic and synthetic drug. 3
- f) Point out the influences of physical properties and plasma protein binding of a drug on adsorption. 3
5. Answer *any one* of the following questions : 4
- a) Draw the structure of Vitamin-A with its scientific name. What is the parent compound of Vitamin-A and how is Vitamin-A obtained from its parent compound ? Describe with mechanism its biochemical function towards night blindness. 1+1+1+3
- b) Write down the structure of a vitamin which falls in the [Turn over