



V. P. AND R. P. T. P. SCIENCE COLLEGE
VALLABH VIDYANAGAR

B. Sc. INTERNAL EXAMINATION- 2017 (Vth SEMESTER)

SUBJECT : ORGANIC CHEMISTRY COURSE CODE : US05CCHE01

DATE : 03-10-2017

DAY : TUESDAY

TIME : 11.00 a.m. to 12.30 p.m.

TOTAL MARKS : 25

Q. 1 CHOOSE THE CORRECT OPTION FOR THE FOLLOWING 3

- (i) The correct relative chemical shift order for ^{13}C of (i) Alkane (ii) Alkyne (iii) Alkene and (iv) Carbonyl compound is :
(a) $\text{iv} > \text{iii} > \text{ii} > \text{i}$ (b) $\text{iii} > \text{i} > \text{ii} > \text{iv}$ (c) $\text{i} > \text{ii} > \text{iii} > \text{iv}$ (d) $\text{iii} > \text{iv} > \text{i} > \text{ii}$.
- (ii) Which of the following is the monomeric unit of Duprene ?
(a) Isoprene (b) Methyl methacrylate (c) Adipic acid (d) Chloroprene.
- (iii) Which of the following insecticide is the derivative of carbamic acid ?
(a) Malathion (b) Baygon (c) Heptachlor (d) Ferbum.

Q. 2 ANSWER THE FOLLOWING (Any Two) 4

- (i) Why TMS use as a standard reference compound in NMR spectroscopy.
- (ii) What is vulcanization? Why rubber is vulcanized ?
- (ii) Give the comparison of soap and detergent.

Q. 3 Deduce the structure of compound having following spectral data. Label all kind of carbons/protons and give appropriate explanation for the structure. 6

- (i) Molecular formula : $\text{C}_4\text{H}_6\text{O}_2$
CMR (δ , ppm) : (a) 22.3, Triplet (b) 27.9, Triplet (c) 68.9, Triplet (d) 178.2, Singlet.
- (ii) Molecular formula : $\text{C}_9\text{H}_{10}\text{O}_2$
NMR (δ , ppm) : (a) 7.5, 4H, Quartet (b) 3.9, 3H, Singlet (c) 2.5, 3H, Singlet.
IR (Cm^{-1}) : 3000, 2900, 1670, 1600, 1500, 1375, 1258, 1021, 833.

OR

Q. 3 Deduce the structure of compound having following spectral data. Label all kind of carbons/protons and give appropriate explanation for the structure. 6

- (i) Molecular formula : C_9H_{10}
IR (Cm^{-1}) : 3100, 2950, 1650, 1600, 1500, 1450, 1375, 890, 760-770.
NMR (δ , ppm) : (a) 7.5, 5H, Complex (b) 5.35, 1H, Singlet
(c) 5.1, 1H, Singlet (d) 2.10, 3H, Singlet.
- (ii) Molecular formula : $\text{C}_6\text{H}_{13}\text{N}$
CMR (δ , ppm) : (a) 22.7, Quartet (b) 31.5, Doublet (c) 35.8, Triplet (d) 46.9, Triplet.

(P.T.O.)

Q. 4 ANSWER THE FOLLOWING

- (i) Explain the mechanism of coordination polymerization and discuss its advantages over free-radical polymerization in the preparation of polyethylene. 3
- (ii) What is sacrificial hyperconjugation?. Why propylene is 2.7 Kcal more stable than ethylene. 3

OR

Q. 4 ANSWER THE FOLLOWING

- (i) Discuss the addition of HBr to 1,3-butadiene at -80°C and at 40°C temperature with potential energy diagram. 3
- (ii) Draw the structure of following dienes and classify them into appropriate class. 3
- (i) 2,4-hexadiene (ii) 1,2-propadiene (iii) 1,5-hexadiene.

Q. 5 ANSWER THE FOLLOWING

- (i) Give the advantages of organophosphorous compound. 3
- (ii) Give the synthesis and applications of compound containing heterocyclic triazol moiety which used as whitening agent from **cheapest raw materials**. 3

OR

Q. 5 ANSWER THE FOLLOWING

- (i) Give the synthesis and applications of compound which occurs in the essential oils of bergamot .from **cheapest raw materials**. 3
- (ii) Give the classification of detergent based on ionization in water. 3

THE END



There is no short cut, except hard work with understanding to excel in examination.