

This question paper contains 5 printed pages]

AO—39—2018

FACULTY OF SCIENCE

B.Sc. (First Year) (First Semester) EXAMINATION

MARCH/APRIL, 2018

(CBCS/CGPA)

CHEMISTRY

Paper I

(Organic and Inorganic Chemistry)

(MCQ & Theory)

(Wednesday, 21-3-2018)

Time : 10.00 a.m. to 12.00 noon

Time—2 Hours

Maximum Marks—40

N.B. :— (i) Attempt All questions.

(ii) All questions carry equal marks.

(iii) Use OMR Sheet for Question No. 1.

(iv) Calculator is allowed.

(v) Only one answer sheet should be used for Section A and Section B.

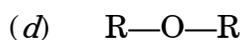
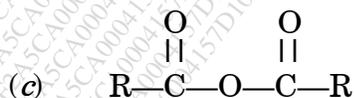
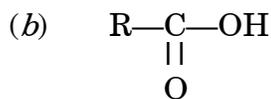
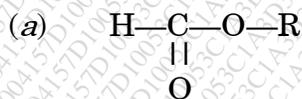
MCQ

1. Select the correct answer for each of the following Multiple Choice

Questions :

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(i) Which of the following is ester ?



P.T.O.

- (ii) The principal functional group in $\text{CH}_3-\overset{\text{OH}}{\underset{|}{\text{C}}}-\overset{\text{O}}{\parallel}{\text{C}}-\overset{\text{CN}}{\underset{|}{\text{C}}}-\text{CHO}$ is :
- (a) —OH (b) —CO—
 (c) —CN (d) —CHO
- (iii) Product of heterolytic fission is/are :
- (a) Carbocation (b) Carbanion
 (c) Both (a) and (b) (d) Free radical
- (iv) Least stable cycloalkane among the following is :
- (a) Cyclobutane (b) Cyclopropane
 (c) Cyclopentane (d) Cyclohexane
- (v) But-2-ene is obtained from butan-1-ol by the action of :
- (a) KOH (b) KMnO_4
 (c) LiAlH_4 (d) Conc. H_2SO_4
- (vi) Glycerol is alcohol.
- (a) Monohydric (b) Dihydric
 (c) Trihydric (d) Tetrahydric
- (vii) is an example of conjugated diene.
- (a) 1, 3-butadiene (b) 1, 2-propadiene
 (c) 1, 2-butadiene (d) 1, 4-pentadiene
- (viii) Electron affinity is a process.
- (a) Endothermic (b) Exothermic
 (c) Both (a) and (b) (d) None of these
- (ix) Generally elements in the same group of periodic table have
- (a) Same atomic number
 (b) Same number of isotopes
 (c) Same number of electrons in valence shell
 (d) Same number of electrons

- (x) Composition of water and noble gas in water clathrate is
- (a) $4\text{H}_2\text{O} : 1$ Noble gas (b) $6\text{H}_2\text{O} : 1$ Noble gas
- (c) $7\text{H}_2\text{O} : 1$ Noble gas (d) $3\text{H}_2\text{O} : 1$ Noble gas

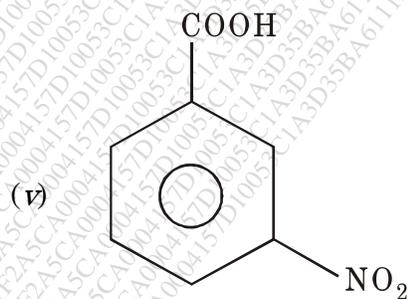
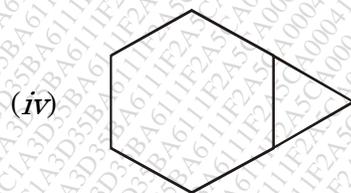
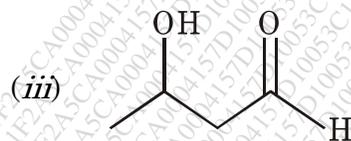
Theory

Section A

(Organic Chemistry)

2. Answer any *two* of the following :

- (a) Write IUPAC name of the following :

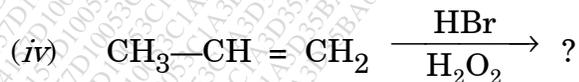
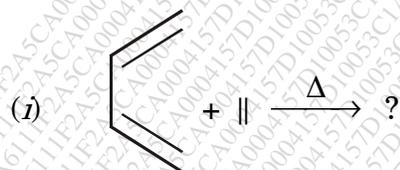


P.T.O.

- (b) Explain mesomerism in aniline and hyperconjugation in toluene.
- (c) What are dienes ? Give its classification with suitable example.
- (d) How will you prepare the following ?
- Cyclohexane from benzene
 - Methane from methyl magnesium bromide
 - Ethane from dimethyl lithium cuprate
 - n*-propyl iodide from cyclopropane
 - Benzene from *n*-hexane.

3. Answer any *two* of the following :

- (a) What are alkanes ? Write a note on Baeyer-Strain theory.
- (b) Predict the product of the following :



- (c) What are carbocations ? Discuss formation, structure and stability of carbocations.

- (d) What happens, when :
- (i) Glycol reacts with lead tetra-acetate.
 - (ii) Glycol reacts with P_2O_5 .
 - (iii) Glycerol reacts with acetyl chloride.
 - (iv) Ethylene oxide reacts with methyl magnesium iodide.
 - (v) Glycerol reacts with nitric acid.

Section B

(Inorganic Chemistry)

4. Answer any *two* of the following :
- (a) Define atomic and ionic radius. Explain why size of a cation is smaller than an atom.
 - (b) Define electron affinity. Give its periodic trends. Explain why EA values of halogens are so high.
 - (c)
 - (i) Explain why second ionisation potential is always high than first ionisation potential.
 - (ii) Write a note on clathrates of noble gases.
 - (d) Give any *one* method of preparation and any *two* properties of XeF_4 . Explain why XeF_4 is square planar ?