Sanjay Ghodawat University, Kolhapur

2017-18

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FY B.Sc.-I	School of Science	Semester I
CHS 101	Chemistry-I	Max Marks: 100
30 Nov 2017	End Semester Examination (ESE)	Time: 3 Hrs

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Q.1 Multiple choice questions (each one mark) **10 Marks** **CO**

i)Electron revolve around the nucleus in a circular path is called _____. **CO1**

a) Orbit
b) Orbital
c) Sub shell
d) Model

ii) Plum pudding and watermelon model explained by _____. **CO1**

a) J.J. Thomson
b) Bohr
c) Rutherford
d) Heisenberg

iii) The mole is based on _____ . **CO1**

a) Speed of light
b) Planck's constant
c) Pi
d) Avagadro number

iv) A primary standard is a substance_____ . **CO1**

a)Does not undergo change in composition on storage or when exposed to air.
b) Change in specific gravity
c) Change in composition on storage or exposed to air.
d) Used to calculate concentration of a solution for titration.

v) The molality of a solution is defined as the number of moles of solute per _____ of solvent. **CO1**

a) 1000 mL
b) 1000 g
c) 100 mL
d) 100 g

1/6

vi) The bond which is formed by transfer of electron from one atom to other is _____. CO2

a) Covalent
b) Ionic
c) Hydrogen
d) Co-ordinate

vii) Geometry of SF_6 is _____. CO2

a) Octahedral
b) Tetrahedral
c) Trigonal Planar
d) Pentagonal bipyramidal

CO2

viii) In PCl_5 type of hybridization is _____.

a) sp^3
b) sp^3d
c) sp^3d^2
d) sp^3d^3

ix) Which one of the following is oxidizing agent? CO2

a) Water
b) $KMnO_4$
c) HCl
d) Zinc dust

x) Born-Haber Cycle is used to calculate _____. CO2

a) Lattice energy
b) Electron Affinity
c) Heat of formation
d) All of the above

Q.2 a) Solve any one of the following (Eight mark each) **20 Marks**

i) Explain in detail Valence Bond Theory. CO2
ii) What are the main postulates and limitations of Bohr's model? CO1

b) Solve the following (Six marks each)

i) Compute the de-Broglie wavelength associated with an electron moving with a velocity of 10^8 cm /second? ($m_e = 9.1 \times 10^{-31}$kg) CO1 CO2
ii) Explain Born-Haber Cycle for NaCl.

Q.3 Write short notes on any 4 the following (Five marks each) **20 Marks**

i) sp^3 hybridization CO2
ii) s- s overlap CO2
iii) Fajan's rule CO2
iv) What is the molal concentration of a solution containing 80.3 g of CO1

2/6

thylene glycol dissolving 166 gm of water (Mol. Wt.- 62.08). CO1

) Explain ion electron method for balancing redox reaction. CO1

i) Find out the normality of i) 0.1M H_2SO_4, ii) 0.05M H_3PO_4.

Multiple choice questions (each one mark) **10 Marks** CO3

i) Which of the following is an aromatic compound?

a. 

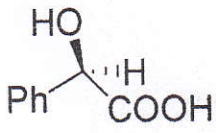
b. 

c. 

d. 

ii) Lindlar catalyst is..... CO4

a. H_2 / Pt
b. Zn-Hg / HCl
c. Na-Hg / H_2O
d. H_2 /Pd, $BaSO_4$

iii) 

is a ____ formula. CO3

a . Wedge
b. Fisher projection
c. Sawhorse projection
d. Newman projection

iv) Aqueous medium cannot be used for the preparation of Grignard reagent _____ . CO4

a. G.R. is hydrolyzed to alkane.
b. G.R. gets reduced by water
c. G.R. gets oxidized by water
d. None of these.

3/6

v) The geometry in carbanion is _____ .

a. Planer

b. Pyramidal

c. Tetrahedral

d. Square planer

vi) Which one of the following carbocation is most stable?

a. Tertiary

b. Secondary

c. Primary

d. None of these

vii) Wurtz reaction is related with____ .

a. Synthesis of alkanes

b. Synthesis of alkenes

c. Synthesis of alkynes

d. Synthesis of alkyl halides

viii) The number of non-cyclic isomers of C_5H_{12} are _____.

a. 4

b. 3

c. 5

d. 6

ix) Which of the following compound shows resonance phenomenon?

a) Benzene

b) Aniline

c) Both a and b

d) Cyclohexane

4/6

x) Homolytic fission of bond leads to the formation of_____. **CO3**

a. Free radical
b. Carbocation
c. Carbanion
d. All of these

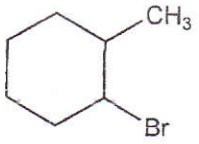
Q.5 **a) Solve any one of the following (Eight mark each)** **20 Marks**

i) Discuss conformational analysis of Butane. **CO3**

ii) Explain laboratory methods for preparation of alkanes. **CO4**

b) Solve the following (Six marks each)

i) Identify product **A** and **B** (2 marks each) **CO4**

A) 

Alc. KOH → A + (i) O_3 (ii) Zn /H_2O

B) 
H_2 / Ni → A + Cl_2, 25^oC

C) 
B_2H_6, THF → A + H_2O_2, NaOH

ii) Discuss in brief generation of carbocation's. **CO3**

Q.6 **Write short notes on any 4 the following (Five marks each)** **20 Marks**

i) What are **alkynes**? How will you convert **Propyne** into, **CO4**

A) Propane

B) Acetone

ii) Markonikoff's rule **CO4**

iii) Ozonolysis of alkene **CO4**

iv) Hyperconjugation effect **CO3**

5/6

CHS101

v) Homolytic and hetrolytic bond fission **CO3**

vi) D,L Nomenclature with example. **CO3**

6/6