190013

D.Voc. Industrial Electronics
Subject: Applied Chemistry
Subject Code: ZDSC102
Semester: 2nd
Batch: 2018-21
Theory (External): 35
Time: 03 hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. **Section A** comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. **Section B** comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number

SECTION –A (OBJECTIVE TYPE QUESTIONS)

(10x1=10 Marks)

Q1 Any two electrons in an orbital can be distinguish by

a) Azimuthal quantum number
b) Spin quantum number
c) Magnetic quantum number
d) Principal quantum number

Q2 SI unit of Pressure is

a) Newton
b) Newton per metre
c) atmosphere
d) Pascal

Q3 Using s, p, d, f notations, describe the orbital with following quantum number n = 3, l = 2, m = +2

a) $4d_z^2$
b) $3d_{x^2-y^2}$
c) $3d_{xz}$
d) $3d_z^2$

Q4 The formula of sulphite ion is

a) SO_4^{2-}
b) S^{2-}
c) SO_3^{2-}
d) $S_2O_3^{2-}$

Q5 Which pair of atomic number represents s-block elements?

a) 7, 15
b) 9,17
c) 6, 12
d) 3,12

Q6 Which element has following electronic configuration:

$1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$

a) Cr
b) Cu
c) Mn
d) Fe

Q7 Which part of an electrochemical cell formed by two metals, suffer corrosion

a) Cathode
b) Both cathode and anode
c) Anode
d) Central part of cell

Q8 Unit of hardness is

a) mg/L
c) ppm
b) both a and b
d) mol/L

Q9 Polyester is a type of

a) Condensation polymer
c) Addition polymer
b) Coordination polymer
d) Both a and b

Q10 $CaCO_3$ equivalents of 83mg of $Mg(HCO_3)_2$ is

(Atomic mass of Ca and Mg are 40 and 24 respectively)

a) 83mg
c) 146mg
b) 68.6mg
d) 56.8mg

SECTION –B (ESSAY TYPE QUESTIONS)

(5x5=25 Marks)

Q1 a) What are Homogeneous and heterogeneous mixture. Give one example of each of homogeneous mixture in solid, liquid and gaseous phase. 3

b) Give the chemical formulae for Ammonium sulphide and Washing Soda. 2

Q2 What was the drawback of Rutherford's model of atom. Describe Bohr's model of atom and explain its usefulness over Rutherford's model. 5

Q3 a) What are sigma and pi bond. Which one of them is strong and why? 2

b) Write a short note on different types of quantum number. 3

Q4 Explain the following:

a) Ionization enthalpy of Nitrogen is more than that of Oxygen. 2.5

b) Mg^{2+} ion is smaller than O^{2-} ion although both have same electronic configuration. 2.5

Q5 a) A water sample is not alkaline to phenolphthalein. However, 100mL of water sample on titration with N/50 HCl, required 16.9mL to obtain the end point using methyl orange as indicator. What are the types and the amount of alkalinity present in the sample. 4

b) What is the cause of hardness in water? 1

Q6 a) What is the principle of lubrication? 2

b) Explain the following

i) Biodegradable lubricants 1.5

ii) Additives in lubricant 1.5

Q7 a) Explain the difference between Chemical corrosion and Electrochemical corrosion? 3

b) Explain why impure metals corrode faster than pure metal under identical condition? 2

Q8 a) Give definition of Corrosion. 1

b) What are the monomers used for each of the following polymers:

i) Bakelite 1

ii) Teflon 1

iii) Nylon 6,6 1

c) Define degree of polymerization. 1

*******END OF PAPER*******