BS

I PUC ANNUAL EXAMINATION - 2016

I

Time : 3.15 Hours | CHEMISTRY - 34 | Max. Marks : 70

Instructions:

i) The question paper has four parts A, B, C and D. All the parts are compulsory.
ii) Write balanced chemical equations and draw labelled diagrams wherever necessary.
iii) Use log tables and simple calculator if necessary.

PART - A

I Answer ALL questions 10×1=10

1) What is a mole?
2) Write Ideal gas equation for 'n' moles of gas.
3) Give the relationship between K_P and K_C.
4) Bohrium has atomic number 107. Write its IUPAC name.
5) What is the Oxidation number of the element in free state?
6) How many valence electron are present in Alkali metal?
7) Mention the elements act as both metal and non-metal in the Periodic Table.
8) Why BF_3 is electron deficient molecule?
9) Indicate sigma and Pi bonds of the molecule $CH_2 = C = CH_2$.
10) In which reaction Lindlar's catalyst is used.

PART - B

II Answer any FIVE of the following questions carrying Two marks. 5×2 = 10

11) What is density? Write its SI unit.
12) State and explain Avogadro Law.
13) Write Leur's dot structure of carbon dioxide and Nitrogen molecule.
14) Name the alkalimetal has maximum hydration energy. And why?
15) Give the molecular formula of Borax and Bauxite.
16) Explain wrutz reaction with an example.
17) Draw cis and trans isomers of the following compounds.
    (i) CHcl = CHcl, (ii) $C_2H_5\ CH_3C = CCH_3C_2H_5$
18) Mention any two gasecous air pollutants.

PART - C

III Answer any FIVE of the following questions carrying Three marks. 5×3=15

19) What are transitional and Inner Transitional elements? Give an example of each.
20) Define dipole moment? Write the mathematical expression in terms of coulomb.
21) Name any 3 examples of electro philes and nucleophile.
22) Write the energy level diagram for molecular orbital of oxygen molecule and Bond order and magnetic property.
23) Explain the Redox reaction of $2cu_2o_{(s)} + cu_2S \rightarrow 6cu(s) + SO_2(g)$ and write their oxidation number.
24) What are isotopes? Write the isotopes of hydrogen. Among these which one is radio active isotope?
25) Mention any three biological importance of sodium metal.
26) How diborane is prepared in the Laboratory. Write the molecular formula of Inorganic benzene.

(P.T.O.)

PART-D

IV Answer any FIVE of the following questions carrying 5 marks. **5×5=25**

27) A Compound contains 4.07% of Hydrogen 24.27% of carbon and 71.65% of chlorine. Its molar mass is 98.96g. What are its empirical and molecular formula?

28) (a) Calculate the energy of one mole of photons of radiation whose frequency is 5×10^{14} H_z. 3
(b) In which region Lymann and paschen series are appeared. 2

29) (a) How many total number of orbital and electrons are associated with principle quantum number n=3. 2
(b) Give the shapes of s.p.d. and f-orbitals and write the electronic configuration of Cu^{+1}. 3

30) (a) What is the mathematical expression for compressibility factor? How it varies with pressure. 2
(b) Calculate gas constant (R) value in SI-system. 3

31) (a) State and Illustrate Hess law of heat of summation. 3
(b) What are Thermochemical equations? Write thermochemical equation for combustion of Ethyl alcohol. 2

32) (a) Explain standard enthalpy of combustion with an example. 2
(b) Define entropy. What is the entropy change when gas is connected in to liquid. Give an example of intensive property.

33) (a) Calculate K_c for the reaction
$N_{2(g)} + O_{2(g)} \rightleftharpoons 2NO_g$. At equilibrium the $[N_2]=3.0\times10^{-3}M$; $[O_2]=4.2\times10^{-3}M$
and $[NO]=2.8\times10^{-3}M$ in a sealed vessel at 800k. 2
(b) State Lechatelier's principle. Write K_c for the reaction $Fe^{3+}(aq)+SCN^{-}(aq) \rightleftharpoons Fe(SCN^{2-})(aq)$ 3

34) (a) Calculate ionisation constant K_b and pK_b Give that, the P^H of 0.004m hydrazene. Solution is 9.7. 4
(b) What is the Geometry of Hydronium ion. 1

V Answer any TWO of the following questions carrying 5 marks. **2×5=10**

35) (a) Explain functional group Isomerim with an example. 2
(b) How C and H are detected by copper (II) oxide method. 2
(c) Mention the elements are detected by Lassigne's Reagent. 1

36) How Nitrogen is estimated by Kjeldahl's method. 5

37) (a) Explain the mechanism of Hydrogen bromide added to propane. 3
(b) How methane is obtained from decarboxylation reaction. 2