

Chemistry 12th Public Exam Question Paper 2010

JUNE – 2010  
CHEMISTRY

PART - I

30 x 1 = 30

Note: Answer ALL the questions.  
Choose and write the correct answer:

- Which of the following has the maximum number of unpaired electrons?  
(a)  $Mn^{2+}$  (b)  $Ti^{3+}$  (c)  $V^{3+}$  (d)  $Fe^{2+}$
- Alloys of lanthanides are called  
(a) Mish metals (b) Metalloids (c) Plate metals (d) Actinides
- The isotope of which element is used in nuclear fission reaction?  
(a) Barium (b) Lead (c) Uranium (d) Caesium
- An example of a bidentate ligand is  
(a)  $Cl^-$  (b) en (c)  $NO_2^-$  (d)  $I^-$
- Radioactivity is due to  
(a) stable electronic configuration (b) stable nucleus  
(c) unstable nucleus (d) unstable electronic configuration

[www.usefuldesk.com](http://www.usefuldesk.com)

- An emulsion is a colloidal solution of  
(a) two solids (b) two liquids  
(c) two gases (d) one solid and one liquid
- The autocatalyst in the oxidation of oxalic acid by acidified  $KMnO_4$  is  
(a)  $K_2SO_4$  (b)  $MnSO_4$  (c)  $KMnO_4$  (d)  $CO_2$
- The sky looks blue due to  
(a) adsorption (b) dispersion (c) reflection (d) scattering of light
- The pH of a solution containing 0.1 N NaOH solution is  
(a) 1 (b)  $10^{-1}$  (c) 13 (d)  $10^{-13}$
- The number of secondary alcoholic group(s) in glycerol is  
(a) 1 (b) 2 (c) 0 (d) 3
- Eletrophile used in the nitration of benzene is  
(a) hydronium ion (b) sulphonic acid (c) nitronium ion (d) bromide ion
- Primary amine acts as  
(a) electrophile (b) Lewis base (c) Lewis acid (d) free radical
- The amino acid without chiral carbon is  
(a) Glycine (b) Alanine (c) Proline (d) Tyrosine
- Important constituent of cell wall is  
(a) lipid (b) cellulose (c) proteins (d) vitamins
- Which one of the following is a state function?  
(a) q (b)  $\Delta q$  (c) w (d)  $\Delta s$

Website: [www.usefuldesk.com](http://www.usefuldesk.com)

Google+: <https://plus.google.com/+Usefuldesk4u>

Facebook: [www.facebook.com/usefuldesk](http://www.facebook.com/usefuldesk) Twitter: [www.twitter.com/usefuldesk](http://www.twitter.com/usefuldesk) E-mail: [info@usefuldesk.com](mailto:info@usefuldesk.com)

Chemistry 12th Public Exam Question Paper 2010

16. Dual character of an electron was explained by  
(a) Bohr (b) Heisenberg (c) de Broglie (d) Pauli
17. The intramolecular hydrogen bonding is present in  
(a) o-nitrophenol (b) m-nitrophenol  
(c) p-nitrophenol (d) p-hydroxy benzaldehyde
18. The electron affinity of an atom is  
(a) directly proportional to its size (b) inversely proportional to its size  
(c) independent of its size (d) none of these

[www.usefuldesk.com](http://www.usefuldesk.com)

19. The compound with garlic odour is  
(a)  $P_2O_3$  (b)  $P_2O_5$  (c)  $H_3PO_3$  (d)  $H_3PO_4$
20. The outermost electronic configuration of chromium is  
(a)  $3d^6 4s^0$  (b)  $3d^5 4s^1$  (c)  $3d^4 4s^2$  (d)  $3d^3 4s^2 4p^1$
21. Total number of atoms per unit cell in bcc is  
(a) 1 (b) 2 (c) 3 (d) 4
22. Standard free energies of formation of elements are taken as  
(a) positive (b) negative (c) zero (d) all of these
23. State of chemical equilibrium is  
(a) dynamic (b) stationary (c) none of these (d) both (a) and (b)
24. In an equilibrium reaction, if  $\Delta n(g)$  is positive then  
(a)  $K_c = K_p$  (b)  $K_c < K_p$  (c)  $K_c > K_p$  (d)  $K_c = 0$
25. The excess energy which a molecule must possess to become active is known as  
(a) kinetic energy (b) threshold energy (c) potential energy (d) activation energy
26. Ether is formed when alkyl halide is treated with sodium alkoxide. This method is known as  
(a) Hoffmann reaction (b) Williamson's synthesis  
(c) Wurtz reaction (d) Kolbe's reaction
27. Ethers should never be evaporated to dryness because  
(a) they form explosive peroxide (b) they are insoluble in water  
(c) they are inert (d) they are lighter than water
28. Schiff's reagent gives pink colour with  
(a) acetone (b) acetaldehyde (c) ethyl alcohol (d) methyl acetate
29. The acid which reduces Tollen's reagent is  
(a) acetic acid (b) benzoic acid (c) formic acid (d) oxalic acid

Chemistry 12th Public Exam Question Paper 2010

30. Chloropicrin is used as  
(a) explosive (b) dye  
(c) anaesthetic (d) soil sterilizing agent

PART – II

15 x 3 = 45

Note: i) Answer any FIFTEEN questions.  
ii) Each answer should be in one or two sentences.

31. What is the significance of negative electronic energy?  
32. Neon has more ionisation energy than fluorine. Why?  
33. P<sub>2</sub>O<sub>5</sub> is a dehydrating agent. Why?  
34. Give any two uses of Neon.  
35. d-block elements form complex compounds. Why?  
36. What is spitting of silver?

[www.usefuldesk.com](http://www.usefuldesk.com)

37. The half-life period of U<sup>238</sup> is 140 days. Calculate the average life time.  
38. Write any two uses of superconductors.  
39. For a chemical reaction the values of  $\Delta H$  and  $\Delta S$  at 300 K are  $-10 \text{ k.cal.mol}^{-1}$  and  $20 \text{ cal.deg}^{-1} \text{ mol}^{-1}$  respectively. What is the value of  $\Delta G$  of the reaction? Predict the nature of the reaction.  
40. What is reaction quotient?  
41. What is pseudo first order reaction? Give an example.  
42. What are promoters? Give an example.  
43. What is electrophoresis?  
44. What do you understand by buffer solution?  
45. Distinguish between racemic and meso-forms.  
46. Phenols are soluble in alcohols. Why?  
47. How is Terylene prepared from ethylene glycol?  
48. Write briefly on Clemmensen's reduction.  
49. Mention the uses of Benzoic acid.  
50. What is Gabriel's pthalimide synthesis?  
51. Give a note on antibiotics.

Chemistry 12th Public Exam Question Paper 2010

PART – III

7 x 5 = 35

Note: i) Answer any seven questions choosing at least two question from each Section.

Section - A

52. Explain the formation of nitrogen molecule by molecular orbital theory.
53. How is gold extracted from its ore?
54. List the similarities and difference between Lanthanides and Actinides (any five)
55. Give the postulates of Werner's theory.

Section - B

56. State the various statements of second law of Thermodynamics.
57. Apply Le Chatelier's principle for the manufacture of ammonia by Haber's process.
58. Give the characteristics of order of a reaction.
59. The e.m.f. of the half cell  $\text{Cu}^{2+}(\text{aq}) \mid \text{Cu}(\text{s})$  containing 0.01 M  $\text{Cu}^{2+}$  solution is + 0.301 V. Calculate the standard e.m.f. of the half cell.

[www.usefuldesk.com](http://www.usefuldesk.com)

Section - C

60. Differentiate anisole from diethyl ether.
61. Explain the mechanism of crossed aldol condensation.
62. What happens when lactic acid is
  - i) treated with dilute  $\text{H}_2\text{SO}_4$
  - ii) oxidised with Fenton's reagent
  - iii) added to  $\text{PCl}_5$
63. Write notes on rocket propellants.

PART – IV

4 x 10 = 40

Note: i) Answer any four questions.  
ii) Question No. 70 is compulsory and answer any three from the remaining questions.

64. (a) Explain Pauling method to determine ionic radii.  
(b) How does fluorine differ from other halogens?
65. (a)  $[\text{Ni}(\text{CN})_4]^{2-}$  is diamagnetic whereas  $[\text{Ni}(\text{NH}_3)_4]^{2+}$  is paramagnetic. Explain  
(b) Discuss Radiocarbon dating.

Chemistry 12th Public Exam Question Paper 2010

66. (a) Explain Schottky defect and Frenkel defect.  
(b) Write briefly about the preparation of colloids by chemical methods.
67. (a) Explain the postulates of Arrhenius theory of electrolytic dissociation.  
(b) Derive Nernst equation.
68. (a) Discuss the optical activity in Tartaric acid.  
(b) How are the following conversions carried out?  
i) Salicylic acid  $\rightarrow$  Aspirin ii) Salicylic acid  $\rightarrow$  Methyl salicylate iii) Lactic acid  $\rightarrow$  Lactide.

[www.usefuldesk.com](http://www.usefuldesk.com)

69. (a) Explain the reduction of nitrobenzene (i) in alkaline medium (ii) by catalytic reduction.  
(b) Discuss the structure of Glucose.
70. a) An organic compound  $C_2H_6O$  (A) reacts with  $Al_2O_3$  at 620 K and gives (B) of molecular formula  $C_2H_4$ . (B) reacts with cold alkaline  $KMnO_4$  (Baeyer's reagent) to give (C) of molecular formula  $C_2H_6O_2$ . Identify (A), (B) and (C) and explain the reaction.
- b) An element (A) occupying group number 11 and belonging to the 4th period, is reddish brown in colour. (A) is extracted from its mixed sulphide ore (B). (A) reacts with dilute  $H_2SO_4$  in the presence of air to form (C). On treatment with conc. nitric acid (A) gives compound (D). Identify (A), (B), (C) and (D). Give the reaction also. (OR)
- c) Compound (A) of molecular formula  $C_7H_8$  when treated with air in presence of  $V_2O_5$  at 773 K gives a compound (B) of molecular formula  $C_7H_6O$ , which has the smell of bitter almonds. Alkaline  $KMnO_4$  oxidises compound (B) to (C) of molecular formula  $C_7H_6O_2$ . Compound (B) on treatment with  $N_2H_4$  and  $KOH$  gives back compound (A).
- d) What is the pH of solution containing 0.5 M propionic acid and 0.5 M sodium propionate? The  $K_a$  of propionic acid is  $1.34 \times 10^{-5}$ .