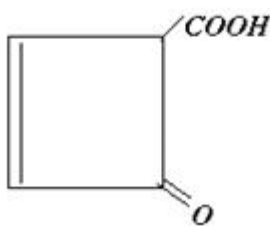# Sample Paper – 2013
Class – XII
Subject – Chemistry

GENERAL INSTRUCTIONS:

* Answer all the questions:
* Questions 1 to 8 carry one mark each. Answer them in one word or a sentence.
* Questions 9 to 18 carry 2 marks each. Answer them in 20 to 30 words.
* Questions 19 to 27 carry 3 marks each. Answer them in 40 to 50 words.
* Questions 28 to 30 carry 5 marks each. Answer them in 70 words.
* There is no overall choice. However there is internal choice in one question each of two mark and three marks questions. All 5 marks questions have internal choice.
* Calculator or any other electronic items are not allowed. However logarithm book may be used for calculations.

1. Give an example of heterogeneously catalysed reaction?   1

2. What is the oxidation number of Ni in $[Ni(CO)_4]$?   1

3. Give the IUPAC name of the following compound

                                                                                                        1

4. Account the following:
    o-nitrophenol has lower boiling point than p-nitrophenol.   1

5. Why are primary amines are higher boiling than tertiary amines?   1

6. Name the purines present in DNA.   1

7. Write formulae of the monomers of polythene and Teflon?   1

8. Why is bithional is added to the toilet soap?   1

9. An element having bcc structure with a cell edge of 288pm. If the density of the element is $7.2g/cm^3$,   what is atomic mass of the element?   2

10. Explain the following terms with suitable example:
    i) F-centres   ii) Schottky defect.   2

11. Molarity or molality, which is the best method to express concentration of a solution? Why?   2

12. How much electricity in terms of Faraday is required to produce,
    i) 20 g of Ca from molten $CaCl_2$?
    ii) 50 g of Al from Al_2O_3?   2

13. Which is more basic La(OH)$_3$ or Lu(OH)$_3$? Why?   2

14. a) Use valance bond theory predict the geometry and magnetic behaviour of $[Co(NH_3)_6]^{+3}$ ion .[At.No. of Co= 27]
     b) Write the IUPAC name of $[Pt(NH_3)_2Cl_2]$ 2

15. Define the following terms:
     a) Recemic mixture   b) Resolution   c) Enantiomers   2

16. What happens when: (Give chemical reactions)
     a) Cyclohexanol is treated with Thionyl chloride?
     b) p-Hydroxybenzyl alcohol is heated with HCl?   2

17. Distinguish between the terms homopolymer and co polymer and give an example of each. 2

18. What do you understand by broad spectrum antibiotics? Give one example.   2

19. At 300K, 36g of glucose ($C_6H_{12}O_6$) present per liter in its aqueous solution has an osmotic pressure of 4.98 bars. If the osmotic pressure of another solution of glucose is 1.52 bar at the same

     temperature, what would be its concentration?   3

20. Write the Nernst equation. Calculate e.m.f of the following cell at 25^0C:
Pt(s)/Br$_2$(l)/Br$^-$(0.010M)//H$^+$(0.030M)/H$_2$ (1 bar)/Pt(s) [Given: E^o Br$_2$/Br$^-$ = $^+$1.08 V]   3

21. a) Why is alum added to water for purification?
     b) Explain why deltas are formed where river and sea water meet.
     c) Describe the preparation of a colloidal solution of arserous sulphide in water.   3

22. Outline the principles of refining of metals by the following methods:
     i) Zone refining   ii) Electrolytic refining   iii) Vapour phase refining.   3

23. a) Assign reasons for the following observations:
     i) Hydrogen iodide is a stronger acid than hydrogen fluoride in aqueous solution.
     ii) The basic character among the hydrides of Group 15 elements decreases with increasing atomic numbers.
     iii) Draw the structural formula for XeOF$_4$.   3

24. Complete the following reaction equations:

     i) $Cr_2O_7^{-2} + Sn^{+2} + H^+ \rightarrow$

     ii) $MnO_4^- + Fe^{+2} + H^+ \rightarrow$

25. a) Give chemical test to distinguish between phenol and ethanol in seemingly similar conditions.

     b) Write the reaction equation for what happens when teritiory butyl alcohol is heated with reducedcopper at about 573K.   3

26. Write one chemical equation to exemplify the following reactions:

a) Carbylamine reaction

b) Hofmann bromamide reaction. 3

27. Define the following terms:
i) Co-enzymes
ii) Mutation in biomolecules
iii) Nucleotides. 3

28. a) Mention the factors that affect rate of a chemical reaction.

b) A first order reaction takes 69.3 minutes for 50% completion. Set up an equation for determining the time required for 80% completion of this solution.

c) Show that in a first order reaction, time required for completion of 99.9% is 10 times of half-life ($t_{1/2}$) of the reaction. 5

29. Account for the following:
a) PH_3 is a weaker base than NH_3.
b) SF_6 exists but SH_6 does not.
c) ClF_3 exists but FCl_3 does not.
d) H_3PO_3 is diprotic acid.
e) ICl more reactive than I_2. 5

30. a) An organic compound with the molecular formula $C_9H_{10}O$ forms 2,4-DNP derivative, reduces Tollen's reagent and undergoes Cannizaro reaction. On vigorous oxidation, it gives 1,2-benzene dicarboxylic acid. Identify the compound.
b) Write the steps and conditions involved in the following conversions:
i) Acetophenone to 2-phenyl-2-butanol.
ii) Propene to acetone.