Mock Test (2014-2015)
Subject : chemistry
Class : XII

Time: 3 Hrs. **M.M. 70**

General Instructions :

(i) All the questions are compulsory.
(ii) Question numbers 1 to 5 are very short answer questions carrying 1 mark each.
(iii) Question numbers 6 to 10 are short answer question carrying 2 marks each.
(iv) Question numbers 11 to 22 are also short answer questions carrying 3 marks each
(v) Question number 23 is a value based questions carrying 4 marks.
(vi) Question numbers 24 to 26 are long answer questions carrying 5 marks each.
(vii) Use long tables, if necessary. Use of calculator is not allowed.

---

1. Measurement of which colligative property is preferred for determination of molar mass of bio-molecules? 1
2. Name the temperature above which the formation of micelles takes place. 1
3. Why do noble gases have very low boiling points ? 1
4. Which will react faster in S_N^2 reaction, 1-bromopentane or 2- bromopentane and why? 1
5. Name the main constituents of Dettol. 1
6. Explain the following terms with one suitable example of each
   a) Ferrimagnetism
   b) 12-16 Compounds.
7. A first-order reaction takes 100 minutes for completion of 60% of reaction. Find the time required for 90% completion of the reaction.
8. Account for the following:
   a) Many of the transition elements and their compounds can act as good catalyst.
   b) Metallic radii of the thirds (5d) series of transition elements are virtually the same as those of corresponding members of the second series. 2
9. Name the following coordination compounds according to IUPAC system of nomenclature. 2
   a) $[Co(NH_{3})_4(H_2O)Cl]Cl_2$
   b) $[Cr(en)_2\ Cl_2]Cl$

   OR

   Draw the structure of following :
   (a) Cis-dichloridotetracyanochromate (III)
   (b) Pentaamminenitrito-N-Cobalt (III)
10. Give simple chemical tests to disginguish between the following pairs of compounds : 2
    a) Benzaldehyde and benzoic acid

b) Propanal and Propanone

11. An element occurs in bcc structures. It has a cell edge length of 250 pm. Calculate of molar mass if its density is 8.0 g cm^{-3}. Also calculate the radius of an atom of this element. 3
12. boiling point elevation of 0.30 g CH_3COOH in 100.0g benzene is 0.0633 K. Calculate the molar mass of acetic from this data. What conclusion can you draw about the molecular state of the solute in the solution ? [Given K_b for benzene =2053 K kg mo^{-1}] 3
13. The rate of particular reaction triples when temperature changes from 50C to 100 C. Calculate the activation energy of the reaction.
[Given, log 3=0.4771, R=8.314 $JK^{-1}mol^{-1}$] 3
14. State what is observed when :
    a) The electrodes connected to a battery are dipped into sol?
    b) NaCl is added to hydrated ferric oxide sol?
    c) A beam of light is passed through a sol?
15. State the principles of the following methods of refining crude metals :
    a) Zone refining
    b) Van Arkel methos
    c) Chromatographic method
16. Describe the preparation of potassium dichromate from chromite ore with chemical equations involved. What is the effect of increasing pH on a solution of potassium dichromate ? 3

OR

Complete the following chemical equations :

(a) $Cr_2O_7^{2-} + 6Fe^{2+} + 14H^+ \rightarrow$

(b) $2MnO_4^- + 5C_2O_4^{2-} + 16H^+ \rightarrow$

(c) $Cr_2\ O_7^{2-} + 3H_2S + 8H^+ \rightarrow$

17. Write the type of isomerism exhibited by the following complexes:
    a) $[Co(NH_3)_5Cl]SO_4$
    b) $[Co(en)_3]^{3+}$
    c) $[Co(NH_3)_6][Cr(CN)_6]$
18. How will you bring the following conversion? 3
    a) Toluene to benzyl alcohol
    b) Benzene to biphenyl
    c) Chlorobenzene to p-nitrophenol
19. Draw the structure and name of product formed if the following alcohols are oxidized by alkaline $KMnO_4, i.e., MnO_4^- / OH^-$ is used :
    a) $CH_3CH_2CH_2CH_2OH$
    b) Butan-2-ol
    c) 2-Methylpropanol

20. for the following:
    a) Primary amines (R-NH_2) have higher boiling point than isomeric tertiary amines (R_3N).
    b) Aniline does not undergo Friedel-Crafts reaction.
    c) $(CH_3)_2NH$ is more basic than $(CH_3)_3N$. In an aqueons solution. 3

21.
    a) Deficiency of which vitamin causes rickets? 3
    b) Give an examples for each of fibrous and globular proteins.
    c) Write the product formed on reaction of D-glucose with Br_2 water.

22.
    a) Name the sweetening agent used in the preparation of sweets for a diabetic patients.
    b) What are antibiotics? Give an example.
    c) Why is bithional added to soap? 3

23. After the ban on plastic bags in Delhi, students of one Sarvodaya Vidyalaya decided to make the people aware of the harmful effects of plastic bags on environment and Yamuna River. All students pledged not to use polythene bags and suggested the use of paper bags to vegetable vendors and shopkeepers .
    a) Is polythene a condensation or an addition polymer?
    b) Mention the major difference between LDP and HDP.
    c) What values are shown by the students?
    d) What are biodegradable polymers?

24.
    a) State the explain Kohlrausch`s law of independent migration of ions. Write an expression for the molar conductivity of acetic at infinite dilution according to Kohlrausch law.
    b) Calculate the emf of the following cell at 298 K;
    $Fe_{(s)} \mid Fe^{2+}(0.001M) \mid H_2(g, 1bar), pt$
    [Given $E^{\theta}_{cell} = 0.44V$]

OR

    a) Formulate the galvanic cell in which the following reaction takes place. $Zn(s) + 2A.g^{+}(aq) \rightarrow Zn^{2+}(aq) + 2Ag(s)$
        (i) Which one of its electrode is negatively charged?
        (ii) The reaction taking place at each of its electrode.
        (iii) The carries of current within this cell.
    b) State two advantages of $H_2 - O_2$ fuel cell over ordinary cell.

25.
    a) Complete the following chemical equation :
    (i) $P_4(s) + NaOH(aq) + H_2O(l) \rightarrow$
    (ii) $I_2 + HNO_3(conc.) \rightarrow$
    (iii) $XeF_4 + H_2O \rightarrow$
    b) Draw the structure of following compounds :

(i) $XeOF_4$

(ii) $HClO_4$

OR

a) Account for the following

(i) H_2PO_2 Is a monoprotic acid.

(ii) XeF_2 has a straight linear structure and not a bent angular structure.

(iii) While phosphorus is more reactive than red phosphorus.

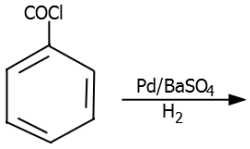
b) How is sulphur dioxide prepared in

(i) Laboratory and,

(ii) industrially?

26. Write the structures of products of the following reactions:

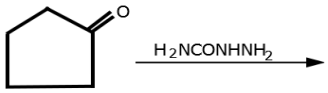
a)



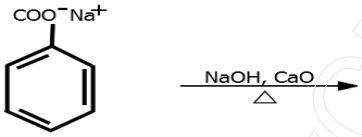
b) $CH_3-\underset{\underset{O}{\|}}{C}-H \xrightarrow{HCN}$

c) $2HCHO \xrightarrow{conc.\ KOH}$

d)



e)



OR

a) An organic compound A (C_3H_8O) on treatment with copper at 573 K gives B. B does not reduce Fehling's reagent but gives a yellow ppt. of compound C with $I_2|NaOH$. Deduce the structure of A, B and C.

b) Describe the following chemical reactions:

(i) Hell – Volhard – Zelinsky reaction

(ii) Aldol condensation reaction