KENDRIYA VIDYALAYA SANGATHAN, ERNAKULAM REGION

FIRST PREBOARD EXAMINATION-2012-13

CLASS:- XII **SUBJECT:- CHEMISTRY**

Maximum marks =70 Time allowed=3 Hrs.

General Instructions

1. All questions are compulsory except where internal choice is provided.
2. Question Nos. 1 to 8 are very short answer questions and carry 1 mark each.
3. Question Nos. 9 to 18 are short answer questions and carry 2 marks each.
4. Question Nos. 19 to 27 are also short answer questions and carry 3 marks each.
5. Question Nos. 28 to 30 are long answer questions and carry 5 marks each.
6. Use log tables if necessary. Use of calculators is not allowed.

1. A cubic solid is made of two elements X and Y. Atoms Y are at the corners of the cube and X at the body centre. What is the formula of the compound? (1)
2. Which is a better coagulant for a negatively charged sol- NaCl or $FeCl_3$? Why? (1)
3. Name a member of the lanthanoid series which is well known to exhibit +4 oxidation state. (1)
4. Noble gases have very low boiling points. Why? (1)
5. Write the IUPAC name of the following:

   $CH_3COCH_2CH=CHCOOH$ (1)
6. Name the substance which is used as an antiseptic as well as a disinfectant. (1)
7. Why is sucrose not a reducing sugar, though both of its contituentsare reducing? (1)
8. Give a test to differentiate phenol from benzoic acid. (1)
9. Define limiting molar conductivity.Explain why it is not possible to determine the limiting molar conductivity of weak electrolytes graphically. (2)
10. The decomposition of a hydrocarbon follows the equation at a temperature of T, $k= (4.5x10^{11}s^{-1})e^{-280000K/T}$ where k= rate constant and K = Kelvin
    Calculate the value of energy of activation of the reaction($R=8.314JK^{-1}mol^{-1}$) (2)
11. Arrange the following in the increasing order:
    a. Stability of hydrides of nitrogen family(NH_3, PH_3, AsH_3, SbH_3, BiH_3).
    b. Acidic character of hydrogen halides(HF, HCl, HBr, HI) (2)
12. Write the chemical equation for the reactions involved in the manufacture of potassium permanganate

    (OR)

    (a) What is the effect of increasing pH of a solution of potassium dichromate? Give the chemical equation for the change.
    (b) Why do zirconium and hafnium have similar properties? (2)

13. How would you account for the following:

(i) Of the d^4 species, Cr^{2+} is strongly reducing while Mn^{3+} is strongly oxidising.

(ii) Co^{2+} is stable in aqueous solution but in the presence of complexing reagents it is easily oxidised. (2)

14. What happens when

(a) Phenol is treated chloroform in presence of aqNaOH followed by acidification

(b) 2-Methoxy 2-methylpropane is heated with HI. (2)

15. Write a note on the following:

a. Coupling reaction b. Sulphonation of aniline (2)

16. Write the steps involved in the mechanism for the acid catalyzed dehydration of ethanol to ethene (2)

17. Complete the following and name the compounds A and B for the following:

$C_6H_5COOH \xrightarrow{NH_3 / Heat} A \xrightarrow{NaOBr} B$ (2)

18. (a)Name atleasttwo biomolecules that act as drug targets.

(b)What are artificial sweeteners? What is the disadvantage of aspartame? (2)

19. (a)Aluminium crystallizes in fcc lattice. Its metallic radius is 125pm.

(i)What is the edge length of the unit cell?

(ii)How many unit cells are there in 1cc of aluminium?

(b) Draw the alignment of magnetic moments of a ferromagnet. (3)

20. Conductivity of 0.00241M acetic acid is $7.896 \times 10^{-5} Scm^{-2}$. Calculate the molar conductivity of the acid solution. Also calculate its dissociation constant if its limiting molar conductivity is $390.5 Scm^{-2}mol^{-1}$ (3)

21. You see your friend struggling to burn a block of a chemical substance. What suggestions would you give him to enhance the rate of the process. What is the chemistry behind this? What moral values does this bear? (3)

22. Explain briefly the following:-

(i) Freundlich adsorption isotherm.

(ii) Associated colloids

(iii) Specificity of enzymes.

(OR)

(a)Why is physisorption less exothermic?

(b)What happens when an external electric field is applied to a sol?

(c)What is called shape selective catalysis? Give an example. (3)