Roll Number				SET B

INDIAN SCHOOL MUSCAT
FINAL TERM EXAMINATION
CHEMISTRY

CLASS: XII   Sub. Code: 043   Time Allotted: 3 Hrs

11.11.2018   Max. Marks: 70

General Instructions:
   a) *All questions are compulsory.*
   b) *Section A: Q.no. 1 to 5 are very short answer questions and carry 1 mark each.*
   c) *Section B: Q.no. 6 to 12 are short answer questions and carry 2 marks each.*
   d) *Section C: Q.no. 13 to 24 are also short answer questions and carry 3 marks each.*
   e) *Section D: Q.no. 25 to 27 are long answer questions and carry 5 marks each.*
   f) *There is no overall choice. However an internal choice has been provided in two questions of one mark, two questions of two marks, four questions of three marks and all the three questions of five marks weightage. You have to attempt only one of the choices in such questions.*
   g) *Use of log tables if necessary, use of calculators is not allowed.*

Section -A

1.   Write the structure of the amide which gives propanamine by Hoffmann bromamide reaction.   1

2.   Define the term agonists.   1

3.   The dissolution of ammonium chloride in water is an exothermic process, but still it dissolves in water readily. Why?   1
                                        OR
     Addition of mercuric iodide to an aqueous solution of KI shows increase in vapour pressure. Why?

4.   How much charge in Faradays is required for the reduction of 1 mol of Al^{3+} to Al.   1
                                        OR
     The products of electrolysis of aqueous NaCl at the respective electrodes are :
     Cathode : H_2 ,Anode : Cl_2 and not O_2. Explain.

5.   Which compound in each of the following pair will react faster in S_N1 reaction?   1
     $CH_3CH=CHCl$ or $CH_2=CHCH_2Cl$

Section -B
6.   a)   Write the IUPAC name of the following   2
                  $CH_3CH(CHO)CH_2CH=CH_2$

            b)   Draw the structure of   4-methoxy,N,N,dimethylaniline.

7. How do we separate two sulphide ores by froth floatation process? Explain with an example.   2

8. Explain the following   2
   a) Peptide linkage
   b) Pyranose structure of α- D (+)glucose

9. a) The specific rate of a reaction is $6.2 \times 10^{-3} mol L^{-1} s^{-1}$.what is the order of the reaction.   2
   b) For a reaction 2A→products, change in pressure of A is 4.8 bar in 20 minutes. What will be the average rate of this reaction.

10. a) Give a chemical test to distinguish aniline and N-methyl aniline.   2
    b) Arrange the following in decreasing order of pK_b values :
       $C_2H_5NH_2$, $C_6H_5NHCH_3$, $(C_2H_5)_2NH$ and $C_6H_5NH_2$

OR

Write the structures of main products when benzene diazonium chloride reacts with the following reagents
a) $H_3PO_2 + H_2O$
b) CuCN/KCN

11. Write short note on   2
    a)   Zaitsev rule
    b)   Racemisation

OR

Explain the following with example
a)   Wurtz Fittig reaction
b)   Freons

12. What is the difference between Homopolymers and Copolymers. Give one example of each type   2

Section - C

13. The density of lead is 11.35 g/cm^3 and the metal crystallizes with fcc unit cell. Estimate the radius of lead atom.   3

   Atomic mass of lead =207g/mol)

14. a) Give the significance of lattice points.   3
    b) Explain why
       (i) Amorphous solids are isotropic.
       (ii) Ferrimagnetic substances show better magnetism than antiferromagnetic substances.

15. The freezing point of a solution containing 0.3 g of acetic acid in 30 g benzene is lowered by 0.45^0C. Calculate Van't Hoff factor .(K_f for benzene = 5.12 K kg mol^{-1})   3

OR

The vapour pressures of pure liquids A and B are 450 and 750 mm of Hg at 350 K respectively. Find out the composition of the liquid mixture if total vapour pressure is 600 mm of Hg. Also find the composition of the vapours of these liquids in vapour phase.

16. Explain the role of   3
    a) Lime stone in the extraction of iron
    b) CO in the purification of nickel
    c) SiO_2 in the extraction of copper

17. a) What are azeotropes?   3
    b) What type of deviation is shown by a mixture of ethanol and acetone? Give reason
    c) Gas (A) is more soluble than gas (B)at the same temperature.Which of the two gases will have
       higher value of K_H and why?

18. a) Pick out the odd one from the following on the basis of their medicinal properties mentioning   3
       the reason:
       Luminal, Seconal, Phenacetin, Equanil.
    b) Give an example of a substance that can act as a disinfectant as well as antiseptic depending
       upon its concentration. (Specify concentration)
    c) Name any two macromolecules chosen as drug targets.

OR

Classify the following drugs and give their functions
    a) Terfenadine
    b) Iproniazid
    c) Ofloxacin

19. Suggest a mechanism for the dehydration of ethanol using conc.H_2SO_4 at 413K.   3

OR

Give reason for the following observations
    a) Phenol is less acidic than 2-Fluoro phenol
    b) Tert-butanol is more volatile than n-butanol
    c) Di-tert-butyl ether cannot be prepared by Wiliamsons synthesis

20. Account for the following :   3
    a) Aromatic amines are less basic than aliphatic amines
    b) Acetylation of aniline reduces its activation effect
    c) Nitration of aniline gives substantial amount of m-nitro aniline

21. Write Short note on   3
    a) Glycosidic linkage
    b) Anomers
    c) Oligosaccharides

22. Write the name and structures of the monomers of   3

    a) Buna N
    b) Teflon
    c) Dacron

a) What is meant by biodegradable polymers?
b) A biodegradable polymer is used in speciality packaging, orthopaedic devices and in controlled release of drugs. Identify the polymer and give its structure

23. Write equations for the following name reactions: 3
    a) Gattermann - Koch reaction.
    b) Stephen reaction.
    c) Hell Volhard Zelinsky reaction

24. What happens when   3
    a) Chlorobenzene is subjected to hydrolysis
    b) Propene is treated with Cl_2 in the presence of U.V. light / heated.
    c) Alkyl chlorides when treated with NaI in dry acetone

Section - D

25. a) Define   5
          (i) Collision frequency
          (ii) Rate constant
    b) The reaction , SO_2Cl_2 (g) $\rightarrow SO_2$ (g) + Cl_2 (g) is a first order reaction with
    $k=2.2 \times 10^{-5}$ s^{-1} at 320^0C.Calculate the percentage of SO_2Cl_2 that would be decomposed on heating at 320^0C for 90 minutes.

OR

a) Define
    (i) pseudo first order reaction
    (ii) Molecularity
b) The decomposition of $A \rightarrow B+C$ has the following rate law, rate=k [A].
The rate constant at 273 K is $7.87 \times 10^{-7}s^{-1}$ and the activation energy is 103 KJ/mole. Calculate the rate constant at 293 K.   (R=8.314 J/k mol)
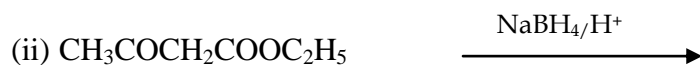
26. a) Convert   5
          (i) Ethanal to But-2-enal
          (ii) Benzoic acid to benzaldehyde
    b) A), (B) and (C) are three non-cyclic functional isomers of carbonyl compound with molecular formula C_4H_8O.Isomers (A) and (C) give positive Tollens' test whereas isomer (B) does not give Tollens' Test but gives positive Iodoform test. Isomers (A) and (B) on reduction with Zn(Hg)/con.HCl give the same product (D).
          (i) Write the structures of (A), (B), (C) and (D)
          (ii) Out of (A), (B) and (C) isomers, which one is least reactive towards addition of HCN?

OR

a) Which one of the following will undergo Cannizzaro reaction and why?
     ((i) $(CH_3)_3CCHO$ (ii)$(CH_3)_2CHCHO$
b) Predict the products of the following reactions

                    $NaOH/I_2$
     (i) $C_6H_5COCH_3$ $\xrightarrow{\hspace{2cm}}$

(ii) $CH_3COCH_2COOC_2H_5$ $\xrightarrow{\quad NaBH_{4/}H^+ \quad}$

c) Account for the following :
   (i) $Cl - CH_2COOH$ is a stronger acid than CH_3COOH.
   (ii) Sodium bisulphite is used for the purification of aldehydes and ketones

27. a) What is a primary cell?   5
    b) Write the chemistry of recharging the lead storage battery.
    c) The Conductivity of 2.5×10^{-4} M methanoic acid is $5.25 \times 10^{-5} Scm^{-1}$. Calculate its molar conductivity and degree of dissociation.
       Given $\lambda^o (H^+)$=394.5S $cm^2 mol^{-1}$ and $\lambda^o(HCOO^-)$=50.5 $Scm^2 mol^{-1}$

OR

a) State Faraday's first law of electrolysis.
b) Write any two factors which affect the formation of products during electrolysis.
c) The cell in which the following reaction occurs
   $2Fe^{3+}$ (aq) + $2I^-$ (aq) $\rightarrow$ $2Fe^{2+}$ (aq) + I_2 (s)   has E^0_{cell} = 0.236 V at 298 K. Calculate standard Gibbs energy and   equilibrium constant of the cell reaction

End of the Question Paper