Roll Number		

SET C

INDIAN SCHOOL MUSCAT
HALF YEARLY EXAMINATION
SUBJECT : CHEMISTRY

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

16.09.2019 Max.Marks:70

- **General Instructions:** All questions are compulsory.
- Marks for each question are indicated against it.
- Question numbers 1 to 20 are very short answer questions and carry 1 mark each.
- Question numbers 21 to 27 are short answer questions and carry 2 marks each.
- Question numbers 28 to 34 are also short answer questions and carry 3 marks each
- Question numbers 35 to 37 are long answer questions and carry 5 marks each.
- Use log tables if necessary, use of calculators is not allowed.

Pick out the correct option:

1 The weakest intermolecular force is present in 1
   a) Thermoplastics
   b) Fibers
   c) Elastomers
   d) Thermosetting plastics

2 Among the following, which is classified as neurologically active drugs? 1
   a) Antiseptic
   b) Analgesic
   c) Antifertility
   d) Antacids

3 The molal depression constant depends on 1
   a) Nature of solvent
   b) Nature of solute
   c) Vapour pressure of solution
   d) Number of particles formed in the solution

4 Which of the following solutions behave ideally? 1
   a) Benzene and toluene
   b) Ethanol and acetone
   c) Carbon dis sulphide and acetone
   d) Phenol and aniline

5 Artificial sweetener that has its use limited to cold food is 1
   a) Saccharin
   b) Sucralose
   c) Alitame
   d) Aspartame

6 To a Daniel cell, if an external voltage of 1.1V is applied 1
   a) Electrons flow from zinc to copper and current flows from copper to zinc
   b) Electrons flow from copper to zinc and current flows from zinc to copper

c) No flow of electrons or current
d) Zinc dissolves at anode and copper deposits at cathode

7 Phosgene is 1
a) Chloroform
b) Carbonyl chloride
c) Iodoform
d) Methylene chloride

8 Which of the following metals is obtained by leaching the ore with dilute cyanide solution? 1
a) Silver
b) Titanium
c) Nickel
d) Aluminium

9 The following cannot be used to prevent corrosion 1
a) Bisphenol
b) Tin
c) Zinc
d) Carbon steel

10 In an electrochemical cell 1
a) Potential energy is converted to chemical energy
b) Chemical energy is converted to potential energy
c) Chemical energy is converted into electric energy
d) Electrical energy is used to carry out a chemical reaction in the cell.

Fill in the blanks:

11 Carbon attached to four different atoms/groups is called…… 1

12 ------detergent has germicidal properties. 1

13 Purest form of iron is…… 1

14 ------is added to raw rubber (to form crosslinks) along with other appropriate additives to form vulcanized rubber. 1

15 Constant boiling mixtures are termed as…….. 1

Answer the following questions:

16 Arrange the following in order of increasing reactivity in nucleophilic substitution reaction: 1
CH_3F, CH_3I, CH_3Br, CH_3Cl

17 Give one advantage of H_2-O_2 fuel cell. 1

18 Draw the structure of 4-methoxy acetophenone. 1

19 How is K_H of a gas in a liquid related to its solubility? 1

20 What are the main constituents of Dettol? 1

21 Write the reaction taking place at the anode and cathode of lead storage battery. 2

OR

a) What is the role of salt bridge?
b) Predict the product of electrolysis of aqueous solution of silver nitrate using silver

electrodes.

22 What are biodegradable polymers? Name the monomers of a biodegradable polyamide. 2

23 What is the role of 2
a) Sodium cyanide in the froth floatation process
b) Calcium oxide in the extraction of iron from its ore?

24 Give reason 2
a) Vinyl halides are inert to nucleophilic substitution reaction
b) (dl)-butan-2-ol is optically inactive

25 Convert 2
a) Benzene to biphenyl
b) 2-Bromopropane to 1-Bromopropane

26 a) Give a chemical test to distinguish between 2
2-Methylpropanol and 2-Methyl propan-2-ol.
b) Write the IUPAC name of o-cresol.

27 A solution was formed by mixing chloroform with acetone. 2
a) Identify the type of deviation shown by this solution? Give reason for your choice.
b) Give one characteristic of this type of solution.

OR

i) Define reverse osmosis.
ii) What happens when red blood cells are placed in 0.5% sodium chloride solution?

28 Write the structure of repeating monomeric unit of 3
a) Terylene
b) Neoprene
c) Teflon

29 a) What are enantiomers? 3
Draw the structures of the possible enantiomers of 3-Methylpent-1-ene.
b) State Saytzeff rule.

30 Write the mechanism of dehydration of ethanol at 443K. 3

31 Mention the action of the following on human body in bringing relief from a disease 3
a) Brompheniramine
b) Aspirin
c) Equanil

OR

Explain the following with an example
i. Antacids
ii. Disinfectant
iii. Narrow spectrum antibiotics

32 Explain 3
a) Mond's process
b) Zone refining
c) Column chromatography for purification of rare elements.

33 How many mL of 0.1M HCl is required to react completely with 1g mixture of sodium carbonate and sodium hydrogen carbonate containing equimolar amounts of the two? 3

OR

Calculate the mass of a non-volatile solute (molar mass 40g/mol) which should be dissolved in 114g octane (molar mass 114 g/mol) to reduce the vapour pressure to 80%.

34 Determine the value of equilibrium constant and Gibb's energy for the following reaction 3
$Ni_{(s)} + 2Ag^{+}_{(aq)} \rightarrow Ni^{2+}_{(aq)} + 2Ag_{(s)}$
E^0=1.05V, 1F=96500C/mol.

OR

In a copper-silver cell, the concentration of copper ions is 0.10M and the concentration of silver ions is not known. The cell potential when measured was 0.422V. Determine the concentration of silver ions in the cell. [Given $E^0_{Ag^+/Ag}$=+0.80V, $E^0_{Cu^{2+}/Cu}$=+0.34V]

35 i. Why a person suffering from high blood pressure is advised to take minimum quantity of common salt? 5

ii. Define the term Colligative properties

iii. A solution of glycerol [molar mass 92] in water was prepared by dissolving some glycerol in 500g of water. This solution has a boiling point of 100.42^0C. What mass of glycerol was dissolved to make the solution? [Given: Boiling point of pure water= 100^0C, K_b for water=0.512K kg/mol]

OR

a) Why do scuba divers carry oxygen cylinders diluted with helium?

b) Will the value of Van't Hoff factor be >1 or <1, when a solute undergoes dissociation?

c) An aqueous solution containing 12.48g of $BaCl_2$ in 1kg of water boils at 373.08K.Calculate the degree of dissociation of $BaCl_2$.[molar mass of $BaCl_2$=208.34g/mol, K_b of water=0.52 K kg/mol]

36 i. State Kohlrausch's law of independent migration of ions. 5

ii. Mention one application of Kohlrausch's law.

iii. The electrical resistance of a column of 0.05M NaOH solution of 1cm diameter and length 50cm is $5.55x10^3$ ohm. Calculate its resistivity, conductivity and molar conductivity.

OR

a) Why does conductivity of solution decrease with dilution?

b) State Faraday's first law of electrolysis.

c) A voltaic cell is set up at 25^0C with the following half cells, Al^{3+} [0.001M] and Ni^{2+}[0.10M].Write an equation for the reaction that occurs when cell generates an electric current and determine the cell potential. [Given: E^0 Ni^{2+}/Ni =-0.25V, E^0Al^{3+}/Al=-1.66V]

37 a) Illustrate 5

i) Williamsons synthesis

ii) Reimer Tiemann reaction

b) What happens when phenol is treated with- [write chemical equations]

i) Bromine water

ii) acidified sodium dichromate

iii) Zinc dust

OR

An organic compound A [C_6H_6O] gives a characteristic color with neutral ferric chloride. When carbon dioxide gas is passed through an alkaline solution of A at 400K under pressure compound B is obtained. Compound B on acidification gives C which reacts with acetyl chloride to form D which is a popular pain killer. Deduce structures of A, B, C and D and write the reaction of conversion of C to D.

End of the Question Paper