Shri Shantadurga Higher Secondary School, Bicholim-Goa.
First Terminal Examination October-2019

Std: XI Science		**Max Marks: 55**
Date: 21/10/2019	**Chemistry**	**Duration: 150 Minutes**

Instructions:-

*1. All questions are compulsory; however question **8, 24,** and **25** has internal choice.*

*2. Use of calculator is **not permitted**, however logarithmic table will be provided on request.*

3. Every Question should be attempted only once.

Section-A consists of 7 questions of 1 mark each.
Section-B consists of 8 questions of 2 marks each.
Section-C consists of 8 questions of 3 marks each.
Section-D consists of 2 questions of 4 marks each.

$N_A = 6.022 \times 10^{23}$;

*At mass (u): H=1, C=12, O=16, S=32; K=39*

Section-A

Q.1. Shape of Boron Trifluoride molecule is---------------------------------- **(1)**

    # Octahedral   # Tetrahedral   # Trigonal planar   # Pyramidal

Q.2 A graph plotted at a constant volume is called _____ . **(1)**

    # isobar   # isochore   # isotherm   # isomer

Q.3. In the chemical reaction $2Na + 2D_2O \rightarrow 2A+B$, **(1)**

A & **B** are _____ and _____.

    # NaOH & H_2O # NaOH & D_2O # NaOD & D_2 # Na_2D & D_2

Q.4. An example of a nucleophile is _____ . **(1)**

    # $AlCl_3$ # H^+ # BF_3 # H_2O

Q.5. Name the spectral series of hydrogen atom **spectrum** that lies in **UV** region? **(1)**

Q.6. Write any two properties of the **transition** metals. **(1)**

Q.7. Write the chain isomers for the compound having the molecular formula C_4H_{10} **(1)**

Section-B

Q.8 23g of **Ethyl alcohol** (Molar mass = 45g mol^{-1}) is dissolved in 54g of **water** (Molar mass=18g mol^{-1}). **(2)**

Calculate the **mole fraction** of ethyl alcohol and water in solution.

OR

Q.8 Calculate the following **(2)**

    1. Mass of **One atom of Iodine** *(Given atomic mass of Iodine=129 u)*

    2. Number of atoms in **0.5 moles of Calcium** atoms. *(Given atomic mass of Calcium=40 u)*

Q.9 Define **Electronegativity**. Write its trends across the period and down the group. **(2)**

Q.10   Answer the following: **(2)**
    i.   Name two ions which are **isoelectronic** with Ne.

    ii.   Explain the trend observed for **atomic radius** across the period and down the group.

Q.11   Answer the following questions w.r.t. graph shown below..   **(2)**
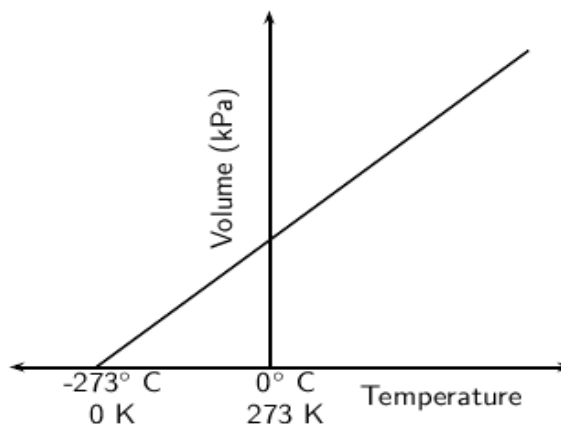
    1. Name the law depicted in above graph.

    2. What is **absolute zero**.

Q.12   Write a point of **similarity** and a point of **difference** between **hydrogen** and **halogen**.   **(2)**

Q.13   Wrie two points of difference between **ionic** hydrides and **covalent** hydrides.   **(2)**

Q.14   Write a complete classification of **carbocyclic** compounds.   **(2)**

Q.15   Answer the following.   **(2)**
    1 .What is **acid rain**?
    2. State any two gases responsible for the **green house** effect.

Section-C

Q.16.   Answer the following.   **(3)**
    1. Draw the shape of dz^2 orbital.
    2. What is **black body** radiation?
    3. Write the electronic configuration of **Sc**(Z=21)

Q.17.   Answer the following.   **(3)**
    1. State **Aufbau** Principle.
    2. Draw a neat label diagram of **Thomson** model of atom.
    3. Write any two limitations of **Bohr'**s model of atom.

Q.18   Answer the following.   **(3)**
    1. State **Avogadro**'s law.
    2. Write a point of difference between **molarity** and **molality**.
    3. Name the following:
       a) The mass of **one mole** of a substance in grams
       b) Property of a substance which can be measured or observed without changing the **identity** or **composition** of a substance

Q.19   Write the full form of **VSEPR** Theory and write its **Four** Postulates   **(3)**
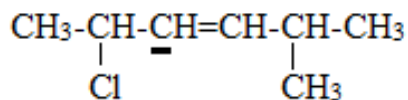
Q.20   Answer the following.   **(3)**
    1. Liquids at high altitudes boil at **lower temperatures** in comparison to that at sea level. Give reason.
    2. State '**Dalton's Law** of Partial Pressure.
    3. What is **surface tension**?

Q.21   Draw a graph to depict **Boyles Law**.   **(3)**

    A balloon with a volume of 2.0 L is filled with a gas at 3 atmospheres. If the pressure is reduced to 0.5 atmospheres without a change in temperature, calculate what would be the volume of the balloon?

Q.22 Answer the following questions: (3)
        1) What is **syn** gas?
        2) Explain a method used to remove **temporary hardness** of water.
        3) Hydrogen peroxide is stored in **wax lined** glass bottle. Give reason.

Q.23 Answer the following with respect to the given organic compound (3)

$$CH_3-\underset{\underset{Cl}{|}}{CH}-\underset{=}{CH}=CH-\underset{\underset{CH_3}{|}}{CH}-CH_3$$

  (i) Write the **hybridization** of the underlined species.
  (ii) Write the **bond line** structure.
  (iii) Count and write the total number of **sigma** bond and **pi** bond
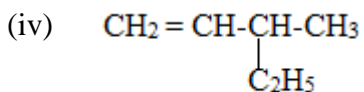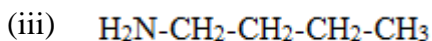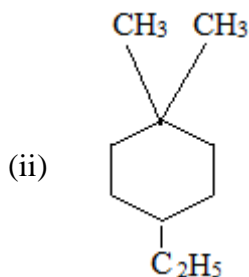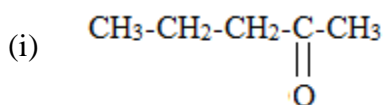
Section-D

Q.24 With respect to **Sigma bond**, answer the following questions. (4)
    a) Name the different types of overlapping of atomic orbitals that leads to this bond formation.
    b) Why it is stronger than pi bond?
    c) Write its one point of difference with pi bond w.r.t free rotation of atoms.
    d) How many such bonds are present in C_2H_4 Molecule?

OR

Q.24 With respect to NH_3 (**Ammonia**) molecule answer the following. (4)
    a) Draw the **shape** of the molecule.
    b) Show the **Bond diploe** and net **dipole moment** in this molecule.
    c) Write the number of **lone pairs** and **bond pairs** on **Nitrogen** atom.
    d) Comment on its arrangement of bond pairs and lone pairs and also on its geometry.

Q.25 Write the **IUPAC** name for the given compound: (4)

(i) $CH_3-CH_2-CH_2-\underset{\underset{O}{||}}{C}-CH_3$

(ii)

(iii) $H_2N-CH_2-CH_2-CH_2-CH_3$

(iv) $CH_2=CH-\underset{\underset{C_2H_5}{|}}{CH}-CH_3$

OR

Q.25 Write the structure for the following compounds: (4)

(i) 4-methylpent-2-yne

(ii) Propanal

(iii) p-dibromobenzene

(iv) 3-methylbutanenitrile

*************************THE END ********************************