**KENDRIYA VIDYALAYA SITAPUR FIRST SHIFT**
**Chemistry**
**Class-XI (UT-I)**

**Max. Marks=40** **Time-90 Minutes**

Instructions:
(i) All questions are compulsory.

Q.1. Yellow light emitted from a sodium lamp has wave length λ=5800 nm . What will be its wave number (√) of the yellow light ?
(a) $1.72x10^6$ $m^{-1}$ (b) $1.00x10^2$
(c) $4.00x10^6$ $m^{-1}$ (d) None of above

Q. 2. Which is a correct electronic configuration of f-block elements ?
(a) $ns^2np^6(n-1)d^{1-10}$ (b) $ns^2ns^{(1-6)}$
(c) $ns^2np^{(1-6)}$ (d) $ns^2nd^{(1-10)}$

Q. 3. What is not unit of pressure ?
(a) bar (b) N/m2
(c) Kg/m2 (d) Torr

Q. 4. Calculate the number of moles present in 6 gram of carbon ?
a) 0.5 moles (b) 1.5 moles
(c) 5.0 moles d) 12 moles

Q. 5. Molarity of NaOH in the solution prepared by dissolving in 4 gm in enough water to form 250 ml of solute ?
(a) 0.25m (b) 0.22m
(c) 0.4m (d) 0.34m

Q. 6. How many moles of electrons weigh on kilogram ?
(a) $6.022x\ 10^{23}$ (b) $1/9.108\ x\ 10^{31}$
(c) $6022/9.108\ x\ 10^{54}$ (d) $1/9.108x6.022\ x\ 10^{8}$

Q. 7. The set representing the correct order of first ionization potential is ?
(a) K > Na > Li (b) Be > Mg > Ca
(c) B > C > N (d) Ge > Si > C

Q. 8. Which of the following has least election affinity ?
(a) Oxygen (b) Argon
(c) Nitrogen (d) Boron

Q. 9. Sulphuric acid provides a simple example of
(a) Coordinate bonds (b) non-covalent compound
(c) non-covalent ion (d) none of these

Q 10. The shape and hybridization in $BF_3$ is ?
a) sp2, linear b) sp3d, plannar
c) sp2, planar d) sp3, planar

Q.11 10 g hydrogen is react with 64 g of oxygen. The amount of water formed ( in moles) ?
(a) 3 (b) 4
(c) 1 (d) 2

Q. 12 The correct order of ionization enthalpy
a) B<Be<c<o<N b) B<Be<c< N< o
C) Be <B<C<N<o d ) Be<B<C<o<N

Q.13 The high metallic element will have the configuration
A) 2,8,7 B)2,8,8,5 C)2,8,8,1 D)2,8,2

**Q.14**
**CASE STUDY** **(1+1+1)**

The energy of an electron in the orbit does not change with time .However the electron will move from a lower stationery state to a higher stationery state when required amount of energy is emitted when electron moves from higher stationery state to lower stationery state . the energy change dose not take place in a continuous manner.

The frequency of radiations absorbed or emitted when transition occurs between two stationary state that differ in energy by delta E

The angular momentum of an electron is quantized

Q (i). Which of the following equation is plank's equation
(a) $E=mc^2$ b) E==hu
(c) $E= hc^2$ (d) E=h √

Q (ii). What is nature of light

a) Wave b) particle

c) wave and particle d) all of these

Q( iii). De Broglie equation is

a) $\lambda=h/mv$ b) $\lambda=h/mv_2$

c) ) $\lambda=h/mv^2$ d) none of these

**Q. 15** ( 1+1)

Assertion and Reason Questions

Directions : Each of these questions contain two statements, Assertion and Reason. Each of these questions also has four alternative choices, only one of which is the correct answer. You have to select one of the codes (a), (b), (c) and (d) given below.

(a) Assertion is correct, reason is correct; reason is a correct explanation for assertion.

(b) Assertion is correct, reason is correct; reason is not a correct explanation for assertion

(c) Assertion is correct, reason is incorrect

(d) Assertion is incorrect, reason is correct.

Q.(i) Assertion : All isotopes of a given element show the same type of chemical behaviour.

Reason : The chemical properties of an atom are controlled by the number of electrons in the atom..

Q.(ii) Assertion : The position of an electron can be determined exactly with the help of an electron microscope.

Reason : The product of uncertainty in the measurement of its momentum and the uncertainty in the measurement of the position cannot be less than a finite limit.

Q.16 How many moles of methane are required to produce 22gm of Co2 after combustion. ( 1 mark)

Q. 17. General electronic configuration of f -block elements (1 mark)

Q. 18 . Write two advantages of Bohr "s model of an atom. (1 marks)

Q. 19 Write difference between electronegativity and electron gain enthalpy. 1mark

Q. 20 Write two important characteristics of d block elements. 1 mark

Q. 21 Compare the dipole moment of $NH_3$ and $NF_3$. 1 mark

Q. 22 Write resonance structures of $SO_3$ ,$NO_3^-$ 1 mark

Q.23 What is the sigma and pi bonds in the following molecules $C_2H_4$ , $C_2H_2$ 1 mark

Q. 24. If n=2 ,Find the values of m and s . (1 marks)

Q. 25. Write electronic configuration of cu+ and $cr^{+++}$ . (1 marks)

Q.26 Write electronic configuration of $O_2$ ,$O_2^{--}$, $O_2^{++}$ . Compare stability on the basis of bond order. 2 mark

Q.27 Describe hybridization and shape of cH4 and pcl5 2 mark

Q.28 Which of the following pairs of elements would have more negative electron gain enthalpy

a) N or O b) C or Si 2 marks

Q.29 Define the followings with examples (2 marks)

(i) Aufbau principle

(iii) Hund's rule of maximum multiplicity

(iv) Palui exclusion principle

(v) Heisenberg's uncertainty principle

Q.30 A compound contains 4.07% hydrogen, 24.27% carbon and 71.65% chlorine. Its molar mass is 98.96g. What are its empirical and molecular formula? ( 2 marks)

Q.31. Calculate the standard enthalpy of formation of $CH_3OH$. from the following data: ( 2marks)

(i) $CH_3OH(l) + 3/2\ 0_2\ (g)$ ———-> $CO_2\ (g) + 2H_20\ (l)$; $\Delta_rH^- = -726 kj\ mol^{-1}$

(ii) $C(s) + 0_2(g)$ ————>$C0_2\ (g)$; $\Delta_cH^- = -393\ kj\ mol^{-1}$

(iii) $H_2(g) + 1/20_2(g)$ ————->$H_20\ (l)$; $\Delta_fH^- = -286\ kj\ mol^{-1}$