Time- 90Min.   **M.Marks-40**

Q.1- Different proportions of oxygen in the various oxides of nitrogen prove the law of? 1

    (i) Reciprocal [   ]   (ii) Multiple [   ]

    (iii) Constant [   ]   (iv) Conservation of Mass [   ]

Q.2- Which of the following ions contains zero unpaired electron? 1

    (i) Cr^{+2}[   ]   (ii) Fe^{+2} [   ]

    (iii) Cu^{+2} [   ]   (iv) Zn^{+2} [   ]

Q.3- Vapour density of a gas is 22. What is its molecular mass? 1

    (i) 44 [   ]   (ii) 33 [   ]

    (iii) 22 [   ]   (iv) 11 [   ]

Q.4- Different lines in Ballmer series of H spectrum line in- 1

    (i) Far IR [   ]   (ii) IR [   ]

    (iii) UV[   ]   (iv) Visible [   ]

Q.5- The No. of molecules in 8906 lit. of a gas at NTP are- 1

    (i) N_A [   ]   (ii) $2.N_A$ [   ]

    (iii) $4N_A$ [   ]   (iv) $6N_A$ [   ]

Q.6- Which one of the following electronic configuration is not possible? 1

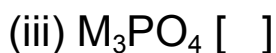   (i) $2P^6$ [   ]   (ii) $3s^1$ [   ]

    (iii) $2b^5$ [   ]   (iv) $4f^{12}$ [   ]

Q.7- The chloride of a metal has the formula MCl_3. The formula of its phosphate will be.   1

    (i) M_2PO_4 [   ]   (ii) MPO_4 [   ]

    (iii) M_3PO_4 [   ]   (iv) $M(PO_4)_2$ [   ]

Q.8- The orbital angular momentum of an electron is 2p-orbital is-

  1

    (i) $h/4\pi$ [   ]   (ii) $h/2\pi$ [   ]

    (iii) zero[   ]   (iv) $\sqrt{2h}/2\pi$ [   ]

Q.9- The no. of molecules present in a drop of water, if its volume is

0.05ml, are- 1

    (i) 1.66×10^{21} [   ]   (ii) 1.66×10^{22} [   ]

    (iii) 1.66×10^{23} [   ]   (iv) 1.66×10^{24} [   ]

Q.10- Maximum no. of electrons in a subshell l=3 and n=4 is-

  1

    (i) 10 [   ]   (ii) 12 [   ]

    (iii) 14 [   ]   (iv) 16 [   ]

Read the give passage and answer the questions that follows-

Orbitals are region or space where there is maximum probability of finding electrons. Qualitatively, these orbitals can be distinguished by their size, shape and orientation. An orbital of small size means there is more chance of finding the electron near the nucleus. Shape and orientation means the direction in which probability of finding electron is maximum. Atomic orbitals can be distinguished by quantum numbers. Each orbital is designated by three quantum numbers n, l and mi (magnetic quantum number) which define energy, shape and orientation but these are not sufficient to explain spectra of multi- electrons atoms. Spin quantum number (ms)

determines the spin of electron. Spin angular momentum of electron has two orientations relative to chosen axis which are distinguished by spin quantum numbers m, which can take values +1/2 and -1/2.

Q.11- How many orbitals are associated with n = 3?

  1

Q.12- Describe the orbitals represented by (i) n = 2, 1= 1 (ii) n = 4, 1 = 0.   1

Q.13- How many electron are possible in an orbital? Why?

  1

Q.14- What is shape of 's' and 'p' orbitals?

  1

ASSERTION AND REASON QUESTIONS

In the following questions a statement of Assertion (A) followed by a statement of Reason (R) is given. Choose the correct option out of the choices given below each question.

a) If both Assertion & Reason are true and the reason is the correct explanation of the assertion.

b) If both Assertion & Reason are true but the reason is not the correct explanation of the assertion.

c) If Assertion is a true statement but Reason is false.

d) If both Assertion and Reason are false statements.

Q.15- Assertion (A): The empirical mass of ethene is half of its molecular mass.

  Reason (R): The empirical formula represents the simplest whole number ratio of various atoms present in a compound.

  1

Q.16. A: Photoelectric effect is most readily shown by cesium.

     1

   R: Photon have easiest access to the surface of cesium metal.

Q.17- Write down electronic configuration of Cr^{+++}, B_r^-?

   1

Q.18- Define the molality?   1

Q.19- A mixture having 2 gm of H2 and 32gm. of oxygen occupies a volume of ..... at NTP. 1

Q.20- Find the quantum no. of 24e⁻ of iron?

   1

Q.21- What is Pauli's exclusion Principle? Explain it by giving an example?   2

Q.22- How many litres of N_2 gas will be obtained by heating 3.2gm. of ammonium nitrite at NTP?   2

Q.23- Find out the no. of gm-molecule and H atoms in 0.017gm NH_3?   3

Q.24- A golf ball has a mass of 40gm and a speed of 45m.s⁻¹. If the speed can be measured with in accuracy of 2%. Calculate the uncertainty in the position?   4

Q.25- Calcium carbonate reacts with aq. Hcl to gives calcium chloride and CO_2. What mass of $CaCO_3$ is required to react completely with 25ml. of 0.75M Hcl? 4

Q.26- A- Calculate the % composition of each element in sugar?

   3

     B- If the density of methanol is 0.793kg L⁻¹. What is its volume needed for making 2.5 L of its 0.25M solution?

                2