Model Question paper

Atomic Structure - I 2

11th Standard

Chemistry

Reg.No. : | | | | | | |

I. Answer all the questions.

II. Use blue pen only.

Time : 01:15:00 Hrs

Total Marks : 45

Part - A

5 x 1 = 5

1) When the value of the azimuthal quantum number is 3, the magnetic quantum number can have values:

(a) +1, -1 (b) +1, 0, 1 (c) +2, +1, 0, -1, -2 (d) +3, +2, +1, 0, -1, -2, -3 (e) +3, -3

2) 2p orbitals have:

(a) n=1, l=2 (b) n=1, l=0 (c) n-2, l=0 (d) n-2, l=1

3) The atomic number of an elements is 17 and its mass number is 37. The number of protons, electron and neutrons present in the neutral atom are:

(a) 17,37,20 (b) 20,17,37 (c) 17,17,20 (d) 17,20,17 (e) 37,20,17

4) The maximum number of electrons that can be accommodated in the nth levels is:

(a) n^2 (b) n+1 (c) n-1 (d) $2n^2$ (e) 2+n

5) The magnetic quantum number decides:

(a) The distance of the orbital from the nucleus (b) The shape of the orbital (c) The orientation of the orbital in space (d) The spin of the electron (e) None of these

Part - B

5 x 2 = 10

6) What is meant by principle quantum number?

7) What are the particles generally present in the nuclei of atoms?

8) How will you experimentally distinguish between a ray of neutron and ray of proton?

9) What is the principal defect of Bohr atom model?

10) Sketch the shape of s and p-orbital indicating the angular distribution of electrons.

Part - C

5 x 3 = 15

11) How many electrons can have s+1/2 in a d-sub-shell

12) Which quantum accounts for the orientation of the electron orbit?

13) What is shape of the orbital with

n=2 and l=1?

14) Give the values for all quantum numbers for 2p electrons in nitrogen (Z=7)

15) Explain why the electronic configuration of Cr and Cu are written as $3d^5, 4s^1$ and $3d^{10}\ 4s^1$ instead of $3d^4\ 4s^2$ and $3d^9\ 4s^2$?

Part - D

2 x 5 = 10

16) What is Rutherford's α- ray scattering experiment? What are its conclusions?

17) Explain the various quantum numbers which completely specify the electron of an atom.

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