

**Model Question Paper**  
**Atomic Structure - II -Part II**

12th Standard

**Chemistry**

Reg.No. : 

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I. Answer all the questions.

II. Use Blue pen only.

Time : 01:00:00 Hrs

Total Marks : 55

6 x 1 = 6

**Section-A**

- 1) Which of the following particle having same kinetic energy, would have the maximum de-Broglie wave length  
(a)  $\alpha$  - particle (b) proton (c)  $\beta$  - particle (d) neutron
- 2) If the energy of an electron in the second Bohr orbit of H-atom is -E, what is the energy of the electron in the Bohr's first orbit?  
(a) 2E (b) -4E (c) -2E (d) 4E
- 3) The bond order of oxygen molecule is  
(a) 2.5 (b) 1 (c) 3 (d) 2
- 4) The hybridisation in  $SF_6$  molecule is  
(a)  $sp^3$  (b)  $sp^3d^2$  (c)  $sp^3d$  (d)  $sp^3d^3$
- 5) The intramolecular hydrogen bonding is present in  
(a) o-nitrophenol (b) m-nitro phenol (c) p-nitrophenol (d) None
- 6) The energy of electron in hydrogen atom is given by  $E_n =$   
(a)  $-\frac{4\pi^2 me^4}{n^2 h^2}$  (b)  $-\frac{2\pi^2 me^2}{n^2 h^2}$  (c)  $-\frac{2\pi^2 me^4}{n^2 h^2}$  (d)  $-\frac{2\pi me^4}{n^2 h^2}$

**Section-B**

- 7) What are molecular orbitals?
- 8) Why  $He_2$  is not formed?
- 9) What is bond order?
- 10) Define hybridisation.

4 x 3 = 12

**Section-C**

- 11) Explain the formation of  $O_2$  molecule by molecular orbital theory .
- 12) What is hybridisation? Explain the salient features of hybridisation?
- 13) Write notes on intermolecular forces.

3 x 5 = 15

**Section-D**

- 14) a) Explain the formation of  $N_2$  molecule by using molecular orbital theory.  
b) Write notes on the shapes of d-orbitals.
- 15) a) Explain intermolecular hydrogen bonding with suitable examples.  
b) Explain intramolecular hydrogen bonding with examples. Explain the consequences of intramolecular hydrogen bonding.

2 x 10 = 20

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