K20U 3172

I Semester B.Sc. Degree (CBCSS-Supplementary)
Examination, November 2020
(2014 – 2018 Admissions)
COMPLEMENTARY COURSE IN CHEMISTRY
1C01CHE : Chemistry (For Physical and Biological Sciences)

Time : 3 Hours

Max. Marks : 32

SECTION – A

Answer **all** questions. **Each** question carries 1 mark.

1. What is a coordinate bond ?

2. Write the general electronic configuration of d-block elements.

3. Write the significance of azimuthal quantum number.

4. Predict the shape of NH_4^+ ion.

5. Differentiate between an orbit and an orbital.

(1×5=5)

SECTION – B

Answer **any four** questions. **Each** question carries 2 marks.

6. Calculate the de Broglie wave length of a body with mass 1 Kg. moving with a velocity of 2000 m/s.

7. Compare between ionic bond and covalent bond.

8. What are the advantages of conductometric titration ?

9. Explain dual nature of electron.

10. Discuss the hybridisation and shape of PCl_5 molecule.

11. Distinguish between BOD and COD.

(2×4=8)

SECTION – C

Answer **any three** questions. **Each** question carries **3** marks.

12. Discuss the ion exchange and desalination methods for the purification of water purification.

13. Explain orbital overlapping.

14. Briefly outline the salient features of hybridisation.

15. Explain the effect of pesticides on environment.

16. Discuss the features of Bohr's atomic model.

(3×3=9)

SECTION – D

Answer **any two** questions. **Each** question carries **5** marks.

17. Discuss the harmful effects of water pollution from different sources.

18. Explain the general periodic trends of the following properties.
    i) Ionization energy
    ii) Electron affinity
    iii) Electro negativity
    iv) Atomic radius

19. Draw Born-Haber cycle for the formation of strontium chloride. Calculate the enthalpy of formation of strontium chloride. Given, the enthalpy of sublimation of strontium is 164 kj/mole, first ionization energy for strontium is 549 kj/mole, second ionization energy for strontium is 1064 kj/mole, the enthalpy of dissociation of chlorine, Cl_2 is 243 kj/mole, the electron affinity of chlorine, Cl is –349 kj/mole and the lattice energy of strontium chloride is –2150kj/mole.

20. Compare sp^3d^2 and d^2sp^3 hybridisation using suitable examples.

(5×2=10)