

(Pages : 4)

K – 1155

Reg. No. : .....

Name : .....

**Third Semester B.Sc. Degree Examination, January 2021**

**First Degree Programme under CBCSS**

**Chemistry**

**Core Course II**

**CH 1341 – INORGANIC CHEMISTRY – II**

**(2017 Admission onwards)**

**Special examination**

Time : 3 Hours

Max. Marks : 80

SECTION – A

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

1. What is the bond order of  $O_2^{2-}$  ion?
2. Why neutrons are considered to be effective projectiles?
3. Name the hydrogen bonding in salicylic acid
4. In molecular orbital concept CO molecule is isoelectronic with \_\_\_\_\_ molecule.
5. The shape of  $PCl_5$  molecule is \_\_\_\_\_
6. The principle used in atom bomb is \_\_\_\_\_

P.T.O.



7. Nuclear fusion reactions are difficult to carry out on earth. Why?
8. What are positrons?
9. The strength and stability of ionic bond is \_\_\_\_\_ (directly/inversely) proportional to the size of ions
10. What is the hybridisation of the central oxygen atom in water molecule?

**(10 × 1 = 10 Marks)**

SECTION – B

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

11. Explain half-life period of a radioactive element
12. Write a note on carbon nanotubes
13. How will you prepare lithium aluminium hydride? Explain its uses.
14. Write a note on boron nitrides
15. Helium molecule does not exist. Why?
16. What is mass defect? How mass defect is related to binding energy?
17. Distinguish between chemical reactions and nuclear reactions
18. Explain the micro emulsion for the preparation of nano particles
19. What are the limitations of valence bond theory?
20. Write a note on glass transition temperature.
21. Density of ice is less than that of water. Why?
22. What do you meant by inorganic benzene?

**(8 × 2 = 16 Marks)**



## SECTION – C

Answer **any six** questions. Each question carries **4** marks

23. Write a note on refractory carbides.
24. What are zeolites? Give the applications of zeolites.
25. Write a note on inorganic polymers.
26. Distinguish between sigma and pi bonds.
27. Explain the geometry of ammonia molecule on the basis of hybridisation.
28. Write a note on the applications of radioisotopes.
29. State and explain Geiger-Nuttal rule.
30. Correlate N/P ratio and nuclear stability.
31. Write a note on neutron activation analysis (NAA).

**(6 × 4 = 24 Marks)**

## SECTION – D

Answer **any two** questions. Each question carries **15** marks

32.
  - (a) Discuss the hybridisation of atomic orbitals.
  - (b) Explain the geometry of acetylene and phosphorus penta chloride molecules
  - (c) Differentiate between intermolecular and intra molecular hydrogen bonding with an examples
33.
  - (a) How are the ages of archaeological carbonaceous materials and fossils determined?
  - (b) Distinguish between nuclear fission and nuclear fusion
  - (c) Write notes on fissile and fertile isotopes



34. (a) What is meant by VSEPR theory? List its various postulates
- (b) Represent the MO theory level diagram of oxygen molecule and explain its magnetic property
- (c) Define and explain dipole moment and its various applications.
35. (a) Write a note on secondary bond forces
- (b) Give an account of band theory of metals

**(2 × 15 = 30 Marks)**

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