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Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, March 2022

First Degree Programme under CBCSS

Chemistry

Core Course II

CH 1341 : INORGANIC CHEMISTRY II

(2017 – 2018 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. Write down the equation for the formal charge.
2. How many sigma and pi bonds are there in acetylene?
3. What is the bond order of O_2^+?
4. Give one example of molecular solid.
5. Name a molecular shape that results from sp^3d hybridization of the central atom.
6. Name one metal in nano form used in medicine.
7. 'There is plenty of room at the bottom' whose statement is this about nano materials?
8. What are the contents of window glass?

P.T.O.

9. Name two silicide compounds.

10. What is salt like carbide?

(10 × 1 = 10 Marks)

SECTION – B

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

11. Write resonance structures of NO_2F.

12. Write any two limitations of valence bond theory.

13. Most ionic compounds have high melting point. What does this indicate?

14. What is meant by magic number?

15. Distinguish among metals, non metals and semiconductors on the basis of band theory.

16. Explain nuclear fission and fusion.

17. Write a note on Van der Waals forces.

18. Define mass defect.

19. Discuss the structure and synthesis of borazene.

20. What are the application of silicones?

21. Why the XeF_2 molecule is having a bend T shape?

22. Explain synthesis and preparation of one Xenon compound?

(8 × 2 = 16 Marks)

SECTION – C

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

23. Explain the structure of ethylene by hybridization method.

24. Draw the shapes of AB_2E_2, and AB_2E molecules by VSEPR theory.

25. What are radioactive tracers? Discuss the application of tracers in medicine.

26. Explain nuclear liquid drop model.

27. Explain structure of two Radone compounds.

28. Explain Born Lande equation.

29. Which of the following has dipole moment? H_2O, CCl_4, $CHCl_3$, CO_2 Justify your answer.

30. Write down synthesis and uses of two borides.

31. What are Pseudo halogen compounds? Discuss with examples.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Explain LCAO methods and draw the structure molecular orbital diagram of HF and NO

33. (a) Discuss the method of rock dating

    (b) A sample of uranium ore is found to contain 5.95 g of ^{238}U and 5.15g of ^{209}Pb. Calculate the age of ore. The half life of uranium ore is 4.5×10^9 years.

34. (a) What are application of Born Haber Cycle?

    (b) Explain Born Haber cycle for NaCl.

35. Explain the following properties of nanomaterials
    (a) Magnetic
    (b) Optical
    (c) Thermal

(2 × 15 = 30 Marks)