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Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, January 2019
First Degree Programme Under CBCSS
Chemistry
Core Course – II
CH 1341 – INORGANIC CHEMISTRY – II
(2013 Admission-2016 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. Answer in **one** word to maximum of **two** sentences. **Each** question carries **one** mark.

1. Define lattice energy.
2. What is the dipole moment of CO_2 ? Why ?
3. What is the hybridisation of B in BCl_3 ?
4. Define Radioactivity.
5. Give Born-Lande equation and explain the terms.
6. Define mass defect.
7. Give the self ionization in SO_2.
8. Mention the applications of XRD.
9. What are nanostructures ?
10. What are SWNTs and MWNTs ?

(10×1=10 Marks)

P.T.O.

SECTION – B

Short answer type. (**Not** to exceed **one** paragraph). Answer **any 8** questions from the following. **Each** question carries **two** marks.

11. Why PCl_5 is more reactive than PCl_3 ?
12. Distinguish between sigma bond and pi bond.
13. Illustrate how a coordinate bond is formed.
14. What is Van der Waals force ?
15. How will you distinguish three types of radiations ?
16. What is meant by artificial transmutation ? Give one example.
17. Mention any two advantages of using liquid ammonia as a solvent.
18. Explain levelling effect.
19. Describe basic principle of TG.
20. What is AFM ? Explain.
21. What is Lycurgus cup ?
22. What are fullerenes ? Give an example. **(8×2=16 Marks)**

SECTION – C

Short essay (**Not** to exceed **120** words). Answer **any 6** questions from the following. **Each** question carries **four** marks.

23. Depict the orbital overlap diagrams of bonds in O_2 and N_2.
24. Compare VB and MO theory.
25. Explain the covalent character of an ionic bond.
26. Describe the theory of Rock dating.
27. The amount of ^{14}C present in an old piece of wood is found to be one-sixth of that present in a fresh piece of wood. Calculate the age of the wood. Half-life of ^{14}C = 5668 years.

28. Write a note on reactions in non-aqueous solvents.

29. Distinguish between SEM and TEM.

30. Explain colloidal precipitation and co-precipitation.

31. Discuss nanosystems in nature. **(6×4=24 Marks)**

SECTION – D

Long essay. Answer **any 2** questions from the following. **Each** question carries **fifteen** marks.

32. What is Born-Haber cycle ? Discuss with respect to NaCl and mention its applications.

33. Discuss principle, instrumentation and application of various thermal methods.

34. Describe various properties of nanoparticles with examples.

35. a) Write a short note on Neutron activation analysis.

    b) Explain the classification of solvents. **(2×15=30 Marks)**