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Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree Examination, December 2015
First Degree Programme under CBCSS
CHEMISTRY
Core Course – II
CH 1341 – Inorganic Chemistry – II

Time : 3 Hours Max. Weight : 30

SECTION – A

Weightage **1** (Answer in **one** word/sentence).

Answer **all** questions.

I. 1) High boiling point of water is due to _____ Hydrogen bonding.

2) The shape of PCl_5 molecule is _____

3) The isotope of carbon dating is _____

4) Expansion for DTA is _____

II. 5) Conjugate base of hydrochloric acid is _____

6) Bond order of O_2 molecule is _____

7) In molecular orbital concept CO molecule is isoelectronic with _____ molecule.

8) Fullerene is the nano form of _____

III. 9) The basic principle used in hydrogen bomb is _____

10) Name a radioactive material used for the treatment of cancer.

11) The hybridisation of oxygen in water molecule is _____

12) The dipole moment of carbon tetra chloride is _____

IV. 13) Solvents from which protons can be derived are called _____

14) Orbital having identical energies are called _____

15) The variability among replicate measurements is defined as _____

16) Iodine-131 has a half-life of 8 days. How many grams of I-131 in a 4.0 g sample remain after 24 days ?

P.T.O.

SECTION – B

Weightage **1** (Short answer type).

Answer **any eight** questions.

17. What are fertile and fissile isotopes ?

18. Explain Geiger-Nuttal rule and explain the terms.

19. How are the stability and bond length are related to bond order ?

20. What is dielectric constant of a solvent ?

21. Define bond order.

22. Explain the Lewis concept of acids and bases.

23. What is HSAB principle ?

24. What are aprotic solvents ?

25. Nuclear fusion reactions are difficult to carry out on the earth. Why ?

26. Why does helium molecule not exist ?

27. What is Stark-Einstein law of photochemical equivalence ?

28. What do you mean by 'nanoscale' ?

SECTION – C

Weightage **2** (Short essay type).

Answer **any five** questions.

29. Using TG data explain the decomposition of $CaC_2O_4.H_2O$.

30. Distinguish between sigma and Pi bonds.

31. Explain the band theory of metals.

32. On the basis of hybridisation, explain the geometry of ammonia molecule.

33. Write a note on carbon nanotubes.

34. Write a note on radio carbon dating.

35. What are Van der Waal's forces ? Explain the different types of interactions.

36. Distinguish between levelling and differentiating solvents.

SECTION – D

Weightage **4** (Long essay type).

Answer **any two** questions.

37. What is meant by hybridisation of atomic orbitals ? Explain the bond formation in ethylene and acetylene.

38. Write notes on :
    a) Mass defect
    b) Neutron activation analysis.

39. Write a note on liquid ammonia as a non-aqueous solvent.
