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Name : Ardra.V.

First Semester B.Sc. Degree Examination, November 2019

First Degree Programme under CBCSS

Complementary Course I for Physics / Geology

CH 1131.1/CH 1131.2 – THEORETICAL CHEMISTRY

(2017 Admission onwards)

Time : 3 Hours

Max. Marks : 80

PART – A

(Answer **ALL** questions. Each question carries **1** mark)

1. The electrons present in K shell of the atom will differ in ———— quantum number.

2. According to Bohr's atomic model, electron on H atom have only certain values of ————.

3. Polarity in a molecule and hence the dipole moment depends primarily on ———— of the constituent atoms.

4. According to VSEPR theory geometry of ———— block elements can be explain.

5. The shape of sp^3d^2 hybrid orbital is ————.

6. The radioisotope used in cancer therapy is ————.

7. The units of dosimetry are ———— and ————.

8. _____ is used for acidification in permanganate titration.

9. In cation analysis second group metals are precipitated as _____.

10. The acid used for flame test is conc _____.

(10 × 1 = 10 Marks)

PART – B

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

11. What is Schrodinger wave equation?

12. What is Pauli's Exclusion principle?

13. What is Hund's rule of maximum multiplicity?

14. What is lattice energy?

15. What are the limitations of VSEPR theory?

16. What is bond order? How is it related to the stability?

17. What is rock dating?

18. What is mass defect?

19. What are the significances of n/p ratio?

20. What is normality?

21. What are the specifications for a standard solution?

22. What is solubility product?

(8 × 2 = 16 Marks)

PART – C

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

23. Briefly explain the significances of the four quantum numbers.

24. Describe the stability of the half-filled orbitals.

25. Discuss the Pauling's approach of electronegativity scale.

26. Describe the hybridization involving 'd' orbitals.

27. Discuss biological effects of radiations.

28. What is meant by artificial transmutation?

29. What are the characteristics of nuclear fission?

30. Discuss the criteria for primary standard in analytical chemistry.

31. Describe the titration curve of a weak acid with strong base. **(6 × 4 = 24 Marks)**

PART – D

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

32. (a) Explain the different series of Hydrogen spectrum.

    (b) Explain the postulates of Bohr Theory. (8 + 7)

33. (a) Briefly explain Born – Haber Cycle.

    (b) Explain the various types of hydrogen bonds.

    (c) Briefly discuss the LCAO method. (5 + 5 + 5)

34. (a) Explain the determination of radioactivity by Geiger Muller counter.

(b) Discuss the applications of neutron activation analysis in agriculture.

(c) What is Fricke dosimeter?

(7 + 4 + 4)

35. (a) Explain the principle and applications of paper chromatography.

(b) Describe the theory of redox indicators.

(9 + 6)

(2 × 15 = 30 Marks)

