

C 33330

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(Pages : 2)

Name.....

Reg. No.....

FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2017

(CUCBCSS—UG)

Complementary Course

CHE 1C 01—GENERAL CHEMISTRY

Time : Three Hours

Maximum : 64 Marks

Section A

Answer all questions.

Each question carries 1 mark.

1. Concordance between the observed value and the correct value is _____.
2. What is the shape of ClF_3 molecule ?
3. What is the hybridization of the central atom in SF_6 ?
4. The bond order in O_2^+ is _____.
5. The nuclides, ^{40}Ar and ^{40}K are _____.
6. Name a metalloenzyme containing Zinc.
7. The radiation responsible for formation of ^{14}C in the atmosphere is _____.
8. Name a property which decreases along a period in the periodic table.
9. Name a redox indicator.
10. The oxidation number of sulphur in H_2SO_4 is _____.

(10 × 1 = 10 marks)

Section B

Answer any seven questions.

Each question carries 2 marks.

11. The amount of radioactive substance decreases 20% of the initial value after 100 minutes. Calculate the disintegration constant
12. Write a note on dipole-dipole interactions with example.
13. Using VSEPR theory explain the shape of NH_3 and NH_4^+ .
14. Write notes on nuclear binding energy.

Turn over

15. Discuss double burette method of titration. What are its advantages ?
16. Write a note on sodium - potassium pump.
17. The uncertainty in position of an electron is 10^{-11} m. What is its uncertainty in velocity ?
($h = 6.6 \times 10^{-34}$ Js)
18. Write briefly on redox titrations with suitable example.
19. What are quantum numbers ?
20. Write down the principle of indicators used in acid base titration.

(7 × 2 = 14 marks)

Section C

*Answer any four questions.
Each question carries 5 marks.*

21. Represent MO energy level diagram of oxygen molecule and explain its magnetic property.
22. Define ionization enthalpy. How does it vary along a group and period in the periodic table ? What are the factors influencing it ?
23. Discuss sp^3d^2 hybridization with suitable example.
24. Discuss the principle of complexometric titration taking suitable example.
25. Describe the use of Hund's rule in finding the electronic configuration of atoms.
26. Write a note on radiocarbon dating.

(4 × 5 = 20 marks)

Section D

*Answer any two questions.
Each question carries 10 marks.*

27. (a) Discuss the applications of radioactive isotopes.
(b) Write a note on nuclear reactors in India
28. (a) Discuss the periodicity in the following properties in the light of modern periodic law and the long form of periodic table :
(i) Atomic radii. (ii) Ionic radii.
(b) Explain LCAO- MO theory with example
29. (a) What is solubility product? Discuss the application of solubility product.
(b) Discuss valence bond theory with suitable example.
30. Define lattice energy of ionic compound ? How is it determined ? What are its applications ?

(2 × 10 = 20 marks)