C 33330

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 ClF3 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 beurette 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.

                                                    ($7 \times 2 = 14$ 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.

                                                    ($4 \times 5 = 20$ 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 ?

                                                    ($2 \times 10 = 20$ marks)