

D 73260

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Name.....

Reg. No.....

**FIRST SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2019**

(CBCSS—UG)

Chemistry

**CHE 1B 01—THEORETICAL AND INORGANIC CHEMISTRY—I**

(2019 Admissions)

Time : Two Hours

Maximum : 60 Marks

**Section A (Short Answers)**

*Answer questions up to 20 marks.*

*Each question carries 2 marks.*

1. What is meant by scientific hypothesis ?
2. What is meant by a research design ?
3. How many significant digits are there in each of the following reported values, (a) 5400 ml  
(b) 0.00086 g.
4. What is the purpose of fume cupboards in laboratory ?
5. Define term binding energy of nucleus and binding energy per nucleon. How is it related to stability of nucleus ?
6. State group displacement law.
7. Describe Mullikens approach of electronegativity.
8. State and explain modern periodic law.
9. The ionic radius of  $K^+$  is smaller than that of  $Cl^-$  even though they are isoelectronic. Why ?
10. Write a note on inert pair effect.
11. Explain Lowry-Bronsted and Lewis concepts of acids and bases.
12. Distinguish hard and soft acid and bases.

(Ceiling of marks : 20)

**Section B (Short answer)**

*Answer questions up to 30 marks.*

*Each question carries 5 marks.*

13. What are the criteria for scientific statements ?
14. Calculate mean and standard deviation of following measurements for concentration of lead in ppm found in replicate analysis of sample blood. 0.751, 0.752, 0.756, 0.760.

**Turn over**

15. What are complexometric titrations ? Explain with reference to EDTA titration.
16. Define ionization enthalpy and electron affinity. State how they vary down a group of periodic table.
17. Explain term diagonal relationship. Discuss with example. Illustrating the similarities in properties.
18. Describe structure, properties and applications of diborane.
19. State SAB principle? Mention its application.

(Ceiling of marks : 30)

**Section C (Essay)**

*Answer any one question.*

*Each question carries 10 marks.*

20. Discuss the theory of acid base indicators.
21. (a) Distinguish between terms nuclear fission and nuclear fusion.  
(b) Give methods of separation of isotopes.

(1 × 10 = 10 marks)