

**18U129**

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Name: .....

Reg. No.....

**FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2018**

(Regular/Supplementary/Improvement)

(CUCBCSS-UG)

**CC15UCHE1 B01 - THEORETICAL AND INORGANIC CHEMISTRY - I**

(Chemistry - Core Course)

(2015 Admission onwards)

Time: Three Hours

Maximum: 80 Marks

**Section A**

Answer *all* questions. Each question carries 1 mark.

1. The oxidation number of Cr in  $\text{Cr}_2\text{O}_7^{2-}$  is-----..
2. The number of nucleons present in  ${}_{11}\text{Na}^{23}$  atom is -----.
3. Titrations involving iodine liberated in chemical reactions are called -----.
4. The phenomenon of photoelectric effect establishes the ----- nature of light..
5. The square of standard deviation is called -----.
6. Wave nature of electrons was verified by ----- experiments.
7. What is average life period?
8. For an electron having momentum 'p', the de-Broglie wavelength ( $\lambda$ ) = -----.
9. Isotones are atoms of different elements having same number of -----.
10. Equivalent mass of an acid =Molecular mass/-----.

**(10 x 1 = 10 Marks)**

**Section B**

Answer any *ten* questions. Each question carries 2 marks.

11. Differentiate between scientific theories and laws.
12. Define Avagadro number? What is its value?
13. What are adsorption indicators? Give two examples.
14. What is photo electric effect?
15. Explain the term mass defect.
16. What is meant by artificial transmutation? Give an example.
17. Define normality? Calculate the normality of a solution containing 20g of NaOH in 2L of water.
18. Is a primary standard in volumetric analysis.
19. What is Gieger-Nuttal rule?
20. What are redox titrations? Give an example.

21. Calculate the wavelength of matter waves associated with a particle of mass  $6 \times 10^{-24}$  kg moving with a velocity of  $3 \times 10^4$  m/s.

22. State Group displacement law.

**(10 x 2 = 20 Marks)**

### **Section C**

Answer any *five* questions. Each question carries 6 marks.

23. Define (i)mole fraction (ii)molarity (iii)normality and(iv)molality.

24. Give an account of various branches in modern chemistry.

25. Write briefly of C-14 dating.

26. Explain the principle of Aston's mass spectrograph.

27. Discuss the Ostwald's theory of acid base indicators.

28. Discuss the titration curves for the neutralization of (i) strong acid x strong base

(ii) strong acid x weak base.

29. Discuss the Davisson-Germer experiment on electron diffraction.

30. Discuss the atomic spectrum of hydrogen.

**(5 x 6 = 30 Marks)**

### **Section D**

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

31. (a)Write briefly Bohr atom model and its limitations.

(b)Explain (i) Planck's quantum hypothesis (ii) Photoelectric effect.

32. Discuss the principle and applications of Aston's mass spectrography. Write any one method used for enrichment of uranium.

33. (a) Explain permanganometry and dichrometrytitrations.

(b) Discuss the role and function of redox indicators in dichrometric titrations.

34. Discuss research design with a suitable example elaborating the different components of research project.

**(2 x 10 = 20 Marks)**

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