

**18U130**

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Name: .....

Reg. No. ....

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

(Regular/Supplementary/Improvement)

(CUCBCSS-UG)

**CC15U CHE1 C01 - GENERAL CHEMISTRY**

(Chemistry - Complementary Course)

(2015 Admission onwards)

Time: Three Hours

Maximum: 64 Marks

**SECTION – A**

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

1. The conjugate base of HF is .....
2. Concordance of a series of measurements of the same quantity is called .....
3. The designation for an orbital with  $n = 5$  and  $\ell = 3$  is .....
4. Be shows diagonal relationship with .....
5. Eriochrome Black T is used as an indicator in .....titrations
6. The state of hybridization of Be in  $\text{BeF}_2$  is .....
7. The mass of Avogadro number of oxygen atoms is .....Kg
8. Calculate the bond order of  $\text{O}_2^-$
9. Alkaline earth metals are .....block elements
10. What is the type of hydrogen bonding present in *o*-nitro phenol?

**(10 × 1 = 10 Marks)**

**SECTION – B**

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

11. What is the molality of NaOH (20 g dissolved in 500 mL water) solution? (density of water =  $0.97 \text{ gL}^{-1}$ )
12. What is meant by micro analysis? Mention two examples.
13. Calculate the energy associated with a photon of light having wavelength  $6 \times 10^5 \text{ pm}$ .
14. How is N/P ratio related to stability of nucleus?
15. What are metallo enzymes?
16. Identify the oxidant and reductant in the reaction
$$\text{Zn}_{(s)} + \text{CuSO}_{4(aq)} \rightarrow \text{ZnSO}_{4(aq)} + \text{Cu}_{(s)}$$
17. What is the role of  $\text{NH}_4\text{Cl}$  as group III reagent, in the cation analysis?
18. Cu (I) is diamagnetic where as Cu (II) is paramagnetic. Why?
19. Why is second ionization enthalpy larger than first?
20. Why is  $\text{PCl}_5$  a reactive molecule?

**(7 × 2 = 14 Marks)**

### SECTION – C

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

21. Write a short note on ‘*alchemy*’?
22. Explain the principle of redox indicators.
23. Draw the MO energy diagram for CO molecule. Calculate the bond order.
24. Write a short note on breeder reactors.
25. Write a short note on the biochemistry of Zn and Co.
26. What are transition elements? Discuss their general characteristics.

**(4 × 5 = 20 Marks)**

### SECTION – D

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

- 27 (a) Discuss the action mechanism of haemoglobin. (5 Marks)  
(b) Explain ‘sodium – potassium’ pump. (5 Marks)
28. (a) A solution contains  $\text{Cu}^{2+}$  and  $\text{Ni}^{2+}$  ions. How would you separate the ions and identify them? (5 Marks)  
(b) Calculate the molarity of a solution containing 25 g of urea (MW = 60) in 1750 mL of solution. 200 ml of water is added to 500 ml of the above solution. What is the molarity of this diluted solution? (5 Marks)
29. (a) How is hydrogen spectrum explained on the basis of Bohr theory? (5 Marks)  
(b) Discuss Born – Haber cycle of NaCl. (5 Marks)
30. (a) How are the ages of archeological carbonaceous samples and fossils determined? (5 Marks)  
(b) The amount of  $^{14}\text{C}$  present in an old piece of wood is found to be one – sixth of that present in a fresh piece of wood. Calculate the age of wood. Half life of  $^{14}\text{C}$  is 5668 years. (5 Marks)

**(2 × 10 = 20 Marks)**

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