



K20U 0866

Reg. No. : .....

Name : .....

**IV Semester B.Sc. Degree (CBCSS-Reg./Sup./Imp.)  
Examination, April 2020  
(2014 Admn. Onwards)**

**COMPLEMENTARY COURSE IN CHEMISTRY**

**4C04 CHE (PS) : Chemistry (For Physical Sciences)**

Time : 3 Hours

Max. Marks : 32

**SECTION – A**

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

1. Define unit cell.
2. Give one example of a basic salt.
3. Name any of two thermal methods of analysis.
4. State phase rule.
5. What is meant by RMS velocity ? **(1×5=5)**

**SECTION – B**

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

6. Give the Vander Waals equation for n moles of gas and explain the terms.
7. Highlight one feature in which nematic liquid crystal differs from smectic.
8. State and explain Raoult's law.
9. What are concentration cells ? Give examples.
10. Why is an aqueous solution of  $\text{FeCl}_3$  acidic ?
11. Explain the terms eutectic point and triple point. **(2×4=8)**

P.T.O.



## SECTION – C

Answer **any three** questions. **Each** question carries **3** marks.

12. What are the applications of AAS ?
13. At 353 K benzene and toluene form a nearly ideal solution. The vapour pressure of pure benzene and toluene are 760 mm and 290 mm. Calculate the total vapour pressure and the composition of vapour for a solution containing 0.5 mole fraction of benzene.
14. How is pH of a solution determined using hydrogen electrode ?
15. Explain Debye Huckel theory of strong electrolytes.
16. Calculate the RMS velocity and average velocity of  $N_2$  molecules at 273 K. **(3×3=9)**

## SECTION – D

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

17. a) Explain the phase diagram of sulphur.  
b) What is meant by deliquescence and efflorescence ?
18. a) What is meant by standard electrode ? Describe the construction and working of a calomel electrode.  
b) Calculate the EMF of the cell  $Cu/Cu^{2+}(0.25M)//Ag^+/Ag(0.6M)$ . at 298K, given  $E^0_{Cu/Cu^{2+}} = 0.34$  V and  $E^0_{Ag/Ag^+} = 0.80$  V.
19. a) Discuss the crystal structure of NaCl.  
b) What are the differences between amorphous and crystalline solids ?
20. Describe briefly the instrumentation and applications of TGA. **(5×2=10)**