



K18U 0923

Reg. No. : .....

Name : .....

IV Semester B.Sc. Degree (CBCSS – Reg./Sup./Imp.)  
Examination, May 2018  
(2014 Admn. Onwards)  
**COMPLEMENTARY COURSE IN CHEMISTRY**  
**4C04CHE(PS) : Chemistry (For Physical Sciences)**

Time : 3 Hours

Max. Marks : 32

SECTION – A

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

1. State Raoult's law.
2. What are Miller indices ?
3. Define RMS velocity.
4. Expand SHE.
5. What is meant by solubility product ?

(1×5=5)

SECTION – B

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

6. Differentiate between amorphous and crystalline solids.
7. Give the working principle of calomel electrode.
8. Calculate the RMS velocity of  $O_2$  at  $25^\circ C$ .
9. What are the advantages of potentiometric titrations ?

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10. Calculate the hydrolysis constant and degree of hydrolysis of 0.1 M solution of  $\text{NH}_4\text{OH}$ .  $K_b = 1.81 \times 10^{-5}$ ,  $K_w = 1 \times 10^{-14}$ .

11. What is meant by deliquescence and efflorescence ? (2×4=8)

SECTION – C

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

12. Explain the different types of liquid crystals.

13. Draw and explain the phase diagram of water.

14. Explain the instrumentation of uv-visible spectroscopy.

15. What are the factors influencing degree of dissociation ?

16. Explain the determination of critical volume of a gas. (3×3=9)

SECTION – D

Answer **any 2** questions. **Each** question carries **5** marks.

17. a) Give a brief account of Debye-Huckel theory.

b) How is  $P^H$  determined using hydrogen electrode ?

18. Discuss the principle and applications of amperometry. What are the limitations of this method ?

19. a) Give an account of the structure of NaCl. 3

b) At what angle would be the second order diffraction be observed in X ray diffraction of a set of crystal planes for which  $d$  is  $2.06 \times 10^{-10}$  m if the X rays used have a wavelength of  $1.54 \times 10^{-10}$  m. 2

20. Discuss the lead silver system and verify it as a simple eutectic. (2×5=10)