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K19U 2219

Reg. No. : .....

Name : .....

V Semester B.Sc. Degree (CBCSS- Reg./Sup./Imp.)

Examination, November-2019

(2014 Admn. Onwards)

CORE COURSE IN CHEMISTRY

5B09 CHE : PHYSICAL CHEMISTRY - I

Time : 3 hrs Max. Marks : 40

SECTION - A

Answer **all** questions. Each question carries **one** mark. **(4×1=4)**

1. Define surface tension.
2. What is general gas equation?
3. What is meant by most probable velocity?
4. What is Hall effect?

SECTION - B

Answer any **seven** questions. Each question carries **two** marks. **(7×2=14)**

5. What are the different types of liquid crystals? Give examples.
6. How are the intercepts and angles related for a monoclinic and triclinic systems?
7. Calculate the angle at which the first order and second order reflection will occur on a X-ray spectrometer when X-rays of wavelength 1.54 A are diffracted by atoms of a crystal given that the interplanar distance is 4.04A°.
8. What are isotonic solutions? Give example.
9. Draw vapour pressure composition graph for non ideal systems.
10. Distinguish between amorphous and crystalline solids.
11. What is meant by optical exaltation? Illustrate with an example.
12. What is the average velocity of O_2 at 27^0c?
13. Define the term critical temperature of a gas.
14. Give the SI units of Vanderwaals constants.

P.T.O.

SECTION - C

Answer any **four** questions. Each question carries **three** marks.**(4×3=12)**

15. What are super conductors? Explain the type I and II?
16. Discuss the effect of temperature on the distribution of molecular velocities.
17. What are the applications of liquid crystals?
18. What is parachor? What are its applications?
19. Discuss the virial equation of state.
20. Explain Berkelys and Hartleys experiment.

SECTION - D

Answer any **two** questions. Each question carries **five** marks.**(2×5=10)**

21. a) Discuss the method of steam distillation.
    b) Explain the term consolute temperature and conjugate solutions.
22. Discuss the determination of internal structure of crystals by X-ray diffraction.
23. Define specific and molar refraction. How is refractive index measured?
24. a) Explain the principle of equipartition energy.
    b) Explain joule Thomson effect.
