

F.Y.B.SC. SEM – II (2014 COURSE) : SUMMER - 2018
SUBJECT : CHEMISTRY : PHYSICAL & INORGANIC CHEMISTRY (C – 21)

Day : **Tuesday**
Date : **10/04/2018**

S-2018-0690

Time : **03.00 PM TO 05.00 PM**
Max. Marks : 40

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of logarithmic table / scientific **CALCULATOR** is allowed.
- 4) Answers to both the sections should be written in **SAME** answer book.

SECTION – I
[Physical Chemistry]

- Q.1** Attempt **ANY TWO** of the following: **[10]**
- a) What are ideal and non-ideal gases? Explain deviation of non-ideal gases from its ideal behavior.
 - b) Discuss the first law of photochemistry.
 - c) Describe the experimental determination of vapour pressure by Isoteniscope method.
- Q.2** Attempt **ANY TWO** of the following: **[10]**
- a) Explain the phenomenon of fluorescence.
 - b) Describe the Joule-Thomson effect.
 - c) Discuss the effect of temperature on viscosity.
- Q.3** **A)** Solve **ANY ONE** of the following: **[05]**
- a) A solution of Vitamin D₂ shows 80% transmittance at wavelength 264nm. Express the measurement in terms of absorbance units.
 - b) Calculate the constants 'a' and 'b' in SI units, of Van der Waal's equation, if T_c = 31^oC, P_c = 72.8 atm and R = 0.082 lit. atm deg⁻¹ mol⁻¹.

SECTION – II
[Inorganic Chemistry]

- Q.3** **B)** Attempt **ANY ONE** of the following: **[05]**
- a) Discuss the assumptions of valence Bond Theory.
 - b) Explain the concept of hybridization of atomic orbitals with reference to bonding in BeH₂.
- Q.4** Attempt **ANY FIVE** of the following: **[10]**
- a) Define pi (π) bond. Give one example.
 - b) Discuss VSEPR theory in brief.
 - c) What do you mean by sp hybridization? Give any one example.
 - d) Mention the different inter electrons repulsions based on VSEPR theory.
 - e) Explain overlapping of atomic orbitals in HF molecule.
 - f) Draw the structures of [Ni(CN)₄]²⁻ and ClF₃. Mention the type of hybridization.
 - g) Define Ionic bond and covalent bond.

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