B. TECH. SEM - III (CHEMICAL ENGG.) 2014 COURSE) (CBCS) :
WINTER - 2017
SUBJECT: PHYSICAL CHEMISTRY

Day: Wednesday **Time:** 10.00 AM TO 01.00 PM
Date: 17/01/2018 **W-2017-2018** **Max. Marks: 60**

N.B:

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Use of non-programmable **CALCULATOR** is allowed.
4) Draw neat and labeled diagrams **WHEREVER** necessary.

Q.1 **a)** What is inductive effect? Explain +I and –I effect with suitable example. **(05)**

b) Write a note on- Electrophile and nucleophile. **(05)**

OR

Q.1 What is resonance effect? Give the necessary conditions for delocalization. Draw resonating structures of aniline and nitrobenzene. **(10)**

Q.2 Discuss the effect of following factors on SN^1 and SN^2 reactions. **(10)**
i) Nature of nucleophile ii) Nature of substrate
iii) Nature of leaving group iv) Nature of solvent

OR

Q.2 Give the mechanism of Friedel-Craft alkylation and acylation. **(10)**

Q.3 **a)** "IR spectra is often characterized as molecular fingerprints". Comment on it. **(05)**

b) Explain Beer-Lambert's law. **(05)**

OR

Q.3 Discuss principle, working and application of UV-visible spectroscopy. **(10)**

Q.4 Write note on: **(10)**
i) Enzyme catalysis ii) Catalyst promotors

OR

Q.4 Explain adsorption theory of catalysis. **(10)**

Q.5 What do you understand by term hydrogen bond? Discuss its importance in organic chemistry? **(10)**

OR

Q.5 Write a note on Vander Waal's forces. **(10)**

Q.6 What are surface active agents? Give its types and applications. **(10)**

OR

Q.6 Write note on: **(10)**
i) Cohesion ii) Emulsions

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