

**B. TECH. FIRST SESSIONAL EXAMINATION
FIRST SEMESTER 2018**

Subject: Engineering Chemistry
Paper Code: ETCH-113

Time: 90 Minutes
Maximum marks: 30

Note: Attempt Q.1, which is compulsory and any two more questions from the remaining.

Roll no: _____

- Q.1) a.** What is ignition temperature? Discuss about explosive limit. [5x2]
b. How does ash left after the coal is burnt differs from the originally present in the sample?
c. In phase diagram of ice, the fusion curve of ice has a negative slope, whereas the sublimation curve has positive slope. Explain.
d. "Light speeds up many reactions and is sometimes spoken of as a catalyst." Criticise the statement.
e. What is the difference between negative catalyst and catalytic poison?

- Q.2) a.** What are the various steps involved in a gaseous reactions taking place on the surface of solid catalyst. Which is the rate determining step. [5]
b. Give a labelled phase diagram of water system and discuss the importance of triple point. [5]

- Q.3) a.** A petroleum gas has the following composition:
Ethane = 5%, Propane = 10%, Butane = 40%, Butene = 10%,
Isobutane = 30%, Propene = 5%.
Calculate the volume of air required for complete combustion of 100 m³ of the gas and the percentage composition of the dry flue gases if 35% excess air is supplied. [5]
b. Define enzyme catalysis. Give the kinetics and mechanism of enzyme catalyzed reaction. [5]

- Q.4) a.** How do you determine the rate of hydrolysis of ethyl acetate by an alkali and the order of reaction. [4]
b. How do you explain Knocking in a diesel engine? How it can be controlled? What is cetane number. [6]