

GUJARAT TECHNOLOGICAL UNIVERSITY**M.E Sem-I Regular Examination January / February 2011****Subject code: 713004N****Subject Name: Advance Petroleum Refining****Date: 03 /02 /2011****Time: 02.30 pm – 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Discuss the applications of Gas Chromatography in Petroleum Industries. **07**
(b) Explain the Fluidized Catalytic Cracking with neat Sketch. **07**

- Q.2** (a) Discuss the Process Variables for Fluidized Catalytic Cracking Process. **07**
(b) Explain the STRATCO Effluent refrigerated Sulfuric Acid Alkylation Process with neat flow sheet. **07**

OR

- (b) Explain the Reactor section, Neutralization section and the Distillation system for HF Alkylation Process. **07**

- Q.3** (a) What is CCR Platforming? Discuss the Advantages of CCR Platforming. **07**
(b) Explain with neat flow sheet RDS/ VRDS Process. **07**

OR

- Q.3** (a) Explain with neat flow sheet ROSE Process. **07**
(b) What is Road Octane Number? Discuss the two methods for determination of Road Octane Number. **07**

- Q.4** (a) Discuss about Isocracking Catalyst and explain isocracking for Naphtha Production. **07**
(b) Explain on-stream Catalyst replacement reactor (OCR) in detail. **07**

OR

- Q.4** (a) Explain with neat sketch Delayed coking Process in detail. **07**
(b) Write a short note on Deep Catalytic Cracking Process. **07**

- Q.5** (a) Explain physic-chemical unit operations involved in deasphalting process for lube base oil Production. **07**
(b) Discuss with neat sketch Molex Process for Production of normal Paraffins. **07**

OR

- Q.5** (a) Differentiate between Atmospheric and Vacuum Distillation unit for Petroleum Refining. **07**
(b) Atmospheric Distillation of crude oil with a capacity of 6000 MT/day is defective in desalting operation and the chloride ion concentration at the top of the column is 3 ppm. The crude contains volatile sulfide as H_2S max. 5 ppm. Calculate the quantity of Ammonia required to be added for the neutralization of chloride and sulfide ions for avoiding corrosion in the column. For maintaining corrosion free condensate pH it should be around 5.0. Density at 15°C of the crude processed is 0.8225 gm/ml and 1st ionization constant of H_2S at $28^\circ\text{C} = 9.81 \times 10^{-8}$. **07**
