

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE Semester VIII • EXAMINATION – WINTER 2017

**Subject Code: 180502**
**Date: 02-11-2017**
**Subject Name: Petroleum Refining and Petrochemicals**
**Time: 02:30 pm to 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** Answer the following: **07**
- (a)(i) Define Flash & Fire point.
  - (ii) Give the expression for API gravity. Write expression for a blend.
  - (iii) What is LPG? List grades of LPG.
  - (iv) What is knocking? Define octane number.
  - (v) What is sweetening? List criteria of doctoring
  - (vi) Give the expression of UOP characterization factor. Write expression for a mixture of components.
  - (vii) State the significance of Softening point.
  - (b) List tests for gasoline. Discuss ASTM distillation characteristics with a neat diagram. **07**
- Q.2** (a) Write short note on gases from petroleum. **07**
- (b) With a neat sketch of True Boiling Point apparatus, explain the test method and significance. **07**
- OR**
- (b) With a neat sketch of Conradson carbon residue apparatus, explain the test method and significance **07**
- Q.3** (a) Explain oxidation of Mercaptans to disulfides. **07**
- (b) What is cracking? Discuss thermal cracking operations and properties of cracked materials. **07**
- OR**
- Q.3** (a) Discuss dehydration and desalting of crude. **07**
- (b) Explain Merox sweetening in detail **07**
- Q.4** (a) Discuss polyethylene manufacture by low pressure process. **07**
- (b) Discuss major engineering problems in SBR manufacture **07**
- OR**
- Q.4** (a) Explain manufacture of methanol with a neat flowsheet. **07**
- (b) Discuss major engineering problems in ethylene oxide manufacture. **07**
- Q.5** (a) Explain manufacture of vinyl chloride monomer. List major engineering problems. **07**
- (b) Write short note on petrochemical feedstock **07**
- OR**
- Q.5** (a) With a neat flow diagram discuss manufacture of acetic acid and the major engineering problems associated with it. **07**
- (b) Write short note on "Petrochemical sector- present and future" **07**

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