

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – I • EXAMINATION – WINTER 2012****Subject code: 713004N****Date: 16-01-2013****Subject Name: Advance Petroleum Refining (Major Elective-I)****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) Explain steam reforming with CO₂ absorber and methanator for hydrogen production with the help of a neat flowsheet. **07**
- (b) Discuss the safety considerations in refinery plant lay out. **07**
- Q.2** (a) Explain the objectives and role of hydrocracking process in refinery. **07**
- (b) Discuss “Delayed Coking” with neat sketch. **07**
- OR**
- (b) Compare in brief different types of coking processes. **07**
- Q.3** (a) Explain production of clean fuels from natural gas and coal. **07**
- (b) Explain steam reforming via PSA process. **07**
- OR**
- Q.3** (a) Discuss OLEX process in detail with the help of neat sketch. **07**
- (b) What is FCC? Explain FCC process in detail with the help of neat sketch. **07**
- Q.4** (a) Explain in brief: **07**
- (i) Alkylation
- (ii) Desulphurization
- (b) Explain different methods for treatment and control of waste gas from refinery unit. **07**
- OR**
- Q.4** (a) List out various applications of gas chromatography in refinery units. **07**
- (b) Discuss naphtha hydrocracking process in refinery. **07**
- Q.5** (a) Explain Claus process for sulphur recovery from gaseous H₂S with the help of neat sketch. **07**
- (b) List out and compare different types of reactor bed involved in hydroprocessing method for residue upgradation in refineries. **07**
- OR**
- Q.5** (a) Explain “Deep Desulphurization” process with the help of neat sketch. **07**
- (b) Discuss “Biofuels”. **07**
