Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII • EXAMINATION – WINTER • 2014

Subject Code: 180502 **Date: 29-11-2014**

Subject Name: Petroleum Refining and Petrochemicals

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)**	With respect to evaluation of petroleum explain (a) U.O.P. Characterization factor (b) Correlation index.	**07**
	(b)	What is cracking? Dicuss thermal cracking operations and properties of cracked materials.	**07**
Q.2	**(a)**	Define (a) API (b) Octane number (c) Flash and fire point (d) Diesel index (e) smoke point (f) Cloud point.	**07**
	(b)	Write short note on gases from petroleum.	**07**
		OR	
	(b)	List tests for gasoline. Discuss ASTM distillation characteristics with a neat diagram.	**07**
Q.3	**(a)**	What is sweetening? Explain oxidation of mercaptans to disulfides.	**07**
	(b)	Explain phenol extraction of lubes.	**07**
		OR	
Q.3	**(a)**	What is salty crude? Explain electric desalting with a neat diagram.	**07**
	(b)	Explain MEK dewaxing with a neat flowsheet.	**07**
Q.4	**(a)**	Explain manufacture of vinyl chloride monomer. List major engineering problems.	**07**
	(b)	Discuss major engineering problems in ethylene oxide manufacture.	**07**
		OR	
Q.4	**(a)**	Explain manufacture of methanol with a neat flowsheet.	**07**
	(b)	Discuss styrene butadine rubber manufacture with a neat flowdiagram.	**07**
Q.5	**(a)**	Write short note on petrochemical feedstock.	**07**
	(b)	Discuss polyethylene manufacture by low pressure process.	**07**
		OR	
Q.5	**(a)**	Write short note on growth of petrochemical sector and challenges ahead.	**07**
	(b)	Discuss manufacture of acetic acid.	**07**

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Marking scheme

No		Questions	Marks
Q.1	**(a)**	With respect to evaluation of petroleum explain (a) U.O.P. Characterization factor (b) Correlation index	**04+ 03**
	(b)	What is cracking? Dicuss thermal cracking operations and properties of cracked materials	**04+ 03**
Q.2	**(a)**	Define (a) API (b) Octane number (c) Flash and fire point (d) Diesel index (e) smoke point (f) Cloud point	**07 (01 each)**
	(b)	Write short note on gases from petroleum.	**07**
		OR	
	(b)	List tests for gasoline. Discuss ASTM distillation characteristics with a neat diagram	**02+ 05**
Q.3	**(a)**	What is sweetening? Explain oxidation of mercaptan to disulfides	**02+ 05**
	(b)	Explain phenol extraction of lubes.	**07**
		OR	
Q.3	**(a)**	What is salty crude? Explain electric desalting with a neat diagram	**02+ 05**
	(b)	Explain MEK dewaxing with a neat flowsheet.	**07**
Q.4	**(a)**	Explain manufacture of vinyl chloride monomer. List major engineering problems.	**05+ 02**
	(b)	Discuss major engineering problems in ethylene oxide manufacture.	**07**
		OR	
Q.4	**(a)**	Explain manufacture of methanol with a neat flowsheet	**04+ 03**
	(b)	Discuss Styrene butadine rubber manufacture with a neat flowdiagram	**04+ 03**
Q.5	**(a)**	Write short note on petrochemical feedstock.	**07**
	(b)	Discuss polyethylene manufacture by low pressure process	**04+ 03**
		OR	
Q.5	**(a)**	Write short note on growth of petrochemical sector and challenges ahead.	**07**
	(b)	Discuss manufacture of acetic acid.	**04+ 03**

NB., Complete flow diagrams carry 04 marks and written description, reactions, raw materials and uses carry 03 marks in general.