Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII EXAMINATION – WINTER 2015

Subject Code:180502 **Date:04/12/2015**

Subject Name:Petroleum Refining & Petrochemicals

Time: 2:30pm to 5:00pm **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)	Define and briefly Explain the terms in context with petroleum refining and cite examples wherever possible: Flash point, Aniline point, Octane Number, Smoke point, API gravity, Sour crude, kinematic viscosity.	07
	(b)	Enlist the types of petroleum crude. Discuss different sulphur and nitrogen compounds and their effects on crude.	07
Q.2	(a)	State the types of hydrocarbons present in crude oil with examples and important properties for each of them. Justify the organic theory of petroleum origin with evidences.	07
	(b)	Describe the processing steps, characteristics, and typical tests for LPG. Make a block diagram of the process.	
		OR	
	(b)	State the desirable solvent characteristics for crude dewaxing and deasphalting. Compare the solvent performance of phenol and furfural for lube treatment.	07
Q.3	(a)	State different sweetening processes and discuss any one with a PFD.	07
	(b)	Describe with a flow diagram the principle, catalyst, major reactions and the process of hydrocracking.	07
		OR	
Q.3	(a)	Discuss fluid catalytic cracking with special reference to feed, catalyst and its characteristics, parameters, and reactor configuration with a PFD.	07
	(b)	Discuss the general characteristics, standard tests and additives of diesel.	07
Q.4	(a)	Discuss the objective, principle, reactions, feed and process conditions of catalytic reforming.	07
	(b)	State the principles and major features of Atmospheric and vacuum distillation in the fractionation of crude petroleum.	07
		OR	
Q.4	(a)	Discuss the manufacturing process of methanol from synthesis gas with a flow diagram. State the industrial uses of methanol.	07
	(b)	Compare low density and high density polyethylene. Discuss the process for the production of low density polyethylene (LDPE).	07
Q.5	(a)	Discuss with a flow diagram the manufacturing process of vinyl chloride. State the industrial uses of vinyl chloride	07

	(b)	Discuss the manufacturing process of ethylene oxide with special reference to reaction, catalyst and process conditions. State the industrial application of ethylene oxide.	07

OR

Q.5	(a)	Describe manufacturing process for Styrene via dehydrogenation of ethyl benzene along with major engineering problems.	07
	(b)	State and explain properties, applications and principle of production of styrene-butadiene rubber.	07

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