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Question Paper Code: Q 2222

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Eighth Semester

Instrumentation and Control Engineering

EI 1003 — INSTRUMENTATION IN PETROCHEMICAL INDUSTRIES

(Common to Electronics and Instrumentation Engineering)

(Regulation 2004)

Time: Three hours Maximum: 100 marks

Answer ALL questions.

PART A -- (10 × 2 = 20 __a.i.s)

- 1. List out the various petroleum recovery took, iques.
- 2. What are the steps involved in oil-gas se aration?
- 3. Which type of cracking produces un sturated gas?
- 4. What do you mean by polyme, ize a 'n?
- 5. What are the chemical restuct derived from acetylene?
- Mention the application of ethylene glycol.
- 7. What is the need for composition controller in a petrochemical industry?
- 8. What are had factors to be considered in the selection of measuring instrumer...?
- 9. Give the Nock diagram of a distillation column control.
- 10. What an enriching section in a distillation column?

PART B - (5 × 16 = 80 marks)

11.	(a)	(i)	Explain the various recovery techniques in a petroleum processing plant. (8)
		(ii)	Describe in detail the method for processing wet gases. (8)
			Or
	(b)	(i)	Give the P and I diagram of a gas separation process in a petroleum refinery and explain in detail. (8)
		(ii)	Explain in detail the seismic method used to discover petroleum mines. (8)
12.	(a)	(i)	List the various low molecular weight product produced after cracking. (6)
		(ii)	Explain the fluidized bed catalytic cracking method with a nest sketch. (10)
			Or
	(b)	(i)	With the help of a neat P and I diagram rescribe how acetylene is separated from petroleum. (8)
		(ii)	Discuss in detail the preparation of ethylene from liquid hydrocarbon. (8)
13.	(a)	(i)	Give a brief account on t'10 i hysical and chemical properties of propylene. (8)
		(ii)	What is meant by startension polymerization and emulsion polymerization? Give to an aparison of both. (8)
			Or
	(b)	(i)	List the various party ene derivatives - Explain. (8)
4		(ii)	Explain the voces a control system in an methane production plant. (8)
14.	(a)	(i)	With the brip of neat sketch explain the lead compensation in a temperature sensor placed in a process environment. (8)
		(ii)	Discuss the common methods for density measurement in patroleum evaporator station. (8)
			Or
	(b)	(1,	Explain in detail the various Alarms and Annunciators circuits used in a refinery. (8)
	-	(m)	How is boiler feed rate measured in a refinery? Name the various flow measuring instruments on a petroleum industry. (8)

- 15. (a) (i) Explain in detail, process control system for a pyrolysis unit with the help of a P and I Diagram. (8)
 - (ii) Explain the basic principle behind the stripping and enriching sections of distillation column. List the various products obtained using distillation. (8)

Or

- (b) (i) Name any three polymers and describe the structure of nylon with a neat sketch. (8)
 - (ii) Write short notes on the control involved in the production of polyethylene.(8)