Register Number……

B.E. DEGREE EXAMINATIONS: APRIL/MAY 2012

Sixth Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

EIE132: Instrumentation In Petrochemical Industries

Time: Three Hours **Maximum Marks: 100**

Answer All Questions:-

PART A (10 x 1 = 10 Marks)

1. .---------- is the recovery or production oil without any external aids.

   a. secondary recovery b. primary recovery

   c. Tertiary recovery d. chemical flooding

2. The impurities such as salts, sediments in crude oil are known as

   a. Geophobic b. Oleophobic c. naphthalic d. Catalytic

3. ---------- is carried out by thermal cracking process to produce ethylene

   a. splitter b.hydrogen purification c. Seperator d. Dehydrogenation

4. ---------- process is employed to reform low octane naphthas into premium quality motor fuels

   a. catalytic reforming b. Catalytic cracking c. isomerisation d. Hydrocracking

5. _____ is the starting material for styrene production.

   a. benzene b. ethyl benzene c.ethylene c. acetylene

6. Acetaldehyde is used for the manufacture of _____

   a. isobutyle b. ketene c .acetic acid d. bisphenol

7. The ratio of mass of water vapour to the mass of dry gas in a given volume is known as

   a. Relative viscosity b. Specific humidity

   c. Relative humidity d. Kinematic viscosity

8. The unit of vaccum pressure is

   a. Nm^3/hr b. torr c. kg/cm^2 d. bars

9. The breaking down of large hydrocarbon molecules into smaller molecules by heat is called as

   a. Catalytic cracking b. Pyrolysis c. polymerisation d. Isomerisation

10. In ---------- heat exchanger, the hot and cold fluids are separated by a wall and heat transferred to and through the wall

    a. Direct contact b. Regenerating c. condenser d.recuperating

PART B (10 x 2 = 20 Marks)

11. List the various methods of separation of liquids.
12. What is the need for petroleum recovery?
13. What do you mean by alkylation?
14. Define Visbreaking.
15. List the technologies to explore methanol synthesis.
16. What are the chemical products derived from propylene?
17. List the parameters to be measured in a petrochemical industry.
18. What are the factors to be considered in the selection of measuring instruments?
19. List the types of control in production of polyethylene.
20. What is the relation between internal and external reflux ratio of a distillation column in a petrochemical industry?

PART C (5 x 14 = 70 Marks)

21. a) (i) Draw the illustrative diagram of petroleum mine. Explain how petroleum is lifted from the deposits in the mine. (7)

(ii) Describe in detail how a gas separation process is carried out in a petroleum refinery with a P&I diagram. (7)

(OR)

b) (i) Explain the various recovery techniques in petroleum processing plant. (7)

(ii) Name the different products that are obtained from refining crude oil. Mention their percentage of output and use. (7)

22. a) (i) Explain fluidized bed catalytic cracking method with a neat sketch. (7)

(ii) Write short notes on hydro cracking and catalytic reforming. (7)

(OR)

b) (i) With a neat sketch explain the production of ethylene from crude oil. (7)

(ii) Discuss in detail propylene production plant with relevant diagrams. (7)

23. a) (i) List the various methane derivatives and brief about them. (7)

(ii) Write down the physical and chemical properties of propylene. (7)

(OR)

b) (i) Name the various acetylene derivatives and brief about them. (7)

(ii) Explain the production of ethanol from ethylene. (7)

24. a) (i) Write a detailed note on the maintenance of measuring instruments in a petrochemical industry. (7)

(ii) Explain intrinsic and electrical safety in petroleum industry. (7)

(OR)

b) (i) How is boiler feed rate measured in a refinery? Name the various flow measuring instruments in a petroleum industry. (7)

(ii) With the help of neat sketches explain the lead compensation in a temperature sensor placed in a process environment. (7)

25. a) (i) Explain in detail the process control system for pyrolysis unit with the help of P&I diagram. (7)

(ii) Explain the basic principle behind the stripping and enriching sections of distillation column. List the various products obtained using distillation. (7)

(OR)

b) (i) Discuss the procedure involved in controlling the top product of the distillation column. (7)

(ii) Write short notes on the control involved in the production of polyvinyl chloride. (7)

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