

*This question paper contains 3 printed pages.*

3145

Your Roll No. ....

M.E.

J

POLYMER TECHNOLOGY

Paper – CH.505

(Petrochemical Technology)

Time : 3 hours

Maximum Marks : 100

*(Write your Roll No. on the top immediately  
on receipt of this question paper.)*

*Attempt any five questions.  
All questions carry equal marks.*

1. (a) Define crude oil. How do you classify it? What are the various parameters by which its quality can be assessed?
- (b) Why is refining of crude oil necessary? Discuss the various challenges faced by Indian Refining Industry. Illustrate the process technologies which need to be developed in our country. 8,12
2. (a) What are the general methods of preparation of petrochemicals from components of crude oil?
- (b) Sketch and explain the working of gas phase reactors used for the industrial manufacture of petrochemicals. 10,10

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3. (a) Describe fluid-bed catalytic technique for the manufacture of gasoline from naphtha.
- (b) Discuss the manufacture of formaldehyde from methanol with explanation of flow sheet diagram.  
10,10
4. (a) Discuss Triolefin Process for the manufacture of ethylene. What are its advantages?
- (b) Describe the flow sheet diagram for the industrial production of vinyl chloride monomer by oxy-chlorination of ethylene.  
8,12
5. (a) How do you explain that propylene is next to ethylene as the largest volume hydrocarbon intermediate for the production of petrochemicals?
- (b) Discuss chlorohydrin method for the industrial production of propylene oxide. Write the important uses of propylene oxide in industry.  
10,10
6. (a) How will you manufacture acetaldehyde from acetylene as the starting material? Discuss the process with flow sheet diagram.
- (b) How can you obtain the following petrochemicals from acetylene:  
Acrylic acid, acrylonitrile, vinyl acetate and acetone?  
10,10

7. (a) Describe the method of preparation of phenol monomer from oxidation of cumene with flow sheet diagram.
- (b) Discuss Bayer's method for the preparation of maleic anhydride (MAN) from the mixtures of butanes and butenes. 10,10
8. Write short notes on any *three* of the following:
- (i) Styrene
  - (ii) *p*-Xylene
  - (iii) Butadiene
  - (iv) Isoprene
  - (v) Petroleum transportation
  - (vi) Toluene diisocyanates. 20