

# 17651

**21819**

**3 Hours / 100 Marks**

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.  
(2) Answer each next main Question on a new page.  
(3) Illustrate your answers with neat sketches wherever necessary.  
(4) Figures to the right indicate full marks.  
(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. a) Attempt any THREE of the following: 12
- (i) List out the names of any six countries producing crude oil with their percentage share in crude oil production.
  - (ii) Why distillation operation is considered to be major unit operation in oil refining process?
  - (iii) How emission control can be done in petrochemical industries? (Any four methods).
  - (iv) List any four petrochemicals obtained from  $C_1$  and  $C_2$  hydrocarbons.
- b) Attempt any ONE of the following: 6
- (i) Describe thermal cracking process.
  - (ii) Explain with flowsheet the production of MTBE

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- 2. Attempt any FOUR of the following:** **16**
- a) What crude oil is called black gold? What are its advantages and disadvantages over other energy sources?
  - b) Explain desalting of crude oil.
  - c) Describe esterification process with reaction.
  - d) What is the principle of reforming? What are the reactions involve in it?
  - e) Draw flowsheet far manufacturing of ethylene oxide.
- 3. Attempt any TWO of the following:** **16**
- a) Explain any one solid and hazardous waste treatment in refinery.
  - b) List the names of different fractions with their boiling ranges and uses obtained during the refining of crude oil.
  - c) Explain the manufacturing of styrene with neat flowsheet.
- 4. a) Attempt any THREE of the following:** **12**
- (i) What is OPEC? Explain in briefly.
  - (ii) What are the various characteristics and constituents of crude oil?
  - (iii) Explain the fractional distillation in refining process.
  - (iv) Explain visbraking with neat flowsheet.
- b) Attempt any ONE of the following:** **6**
- (i) Explain delayed coking.
  - (ii) Explain the manufacturing of methanol with neat flowsheet.

- 5. Attempt any FOUR of the following:** **16**
- a) What are strength and weaknesses of Indian petrochemical industry?
  - b) How crude oil is separated by vacuum distillation?
  - c) Explain isomerisation process with neat flowsheet.
  - d) What is alkylation? Write down reactions involve in it.
  - e) Define Cetane number and ignition temperature.
- 6. Attempt any TWO of the following:** **16**
- a) Explain manufacturing of butadiene with neat flowsheet. Give reactions involve in it.
  - b) What is coking process? What are different types of coking process? Explain any one coking process.
  - c) Explain the manufacture of propylene oxide with reactions and a neat flowsheet. Give its two uses.
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