

17651

21415

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) Figures to the right indicate full marks.
(4) 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) What is OPEC? List the names of six major crude oil producing countries in the world with their percentage share in world crude oil production.
 - (ii) Why distillation operation is considered to be major unit operation in oil refining process.
 - (iii) What is BTX? State two uses of each.
 - (iv) Explain any one type of isomerisation process with neat flow sheet.
- b) **Attempt any ONE of the following:** **6**
- (i) State the constituents and characteristics of crude oil. List the names of four unit operations involved in refining process.
 - (ii) Describe thermal cracking process.

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2. Attempt any FOUR of the following:**16**

- a) How thermal cracking is different from catalytic cracking?
- b) What is the difference between petroleum refinery and petrochemical industry?
- c) What is desalting of crude? Explain with flow diagram.
- d) Explain polymerisation process with flow sheet and reaction.
- e) What are the characteristics of waste water produced in petrochemical plants?
- f) Why crude oil is called black gold? What are its advantages and disadvantages over other energy sources?

3. Attempt any FOUR of the following:**16**

- a) What are the applications of vacuum distillation in crude oil refining?
- b) How crude oil is separated by fractional distillation?
- c) Give two uses each of the following products.
 - (i) Jet fuel
 - (ii) Naphtha
 - (iii) Motor Gasoline
 - (iv) Aviation Gasoline
- d) Describe delayed coking process.
- e) What is hydration? Explain with example.

4. a) **Attempt any THREE of the following:** **12**
- (i) Write reaction involved in the production of ethylene oxide and formaldehyde.
 - (ii) What is refinery? Mention various types of refineries and explain oil refining.
 - (iii) Explain manufacturing of cumene with neat flow sheet diagram.
 - (iv) Draw a flow sheet for manufacturing of methanol.
- b) **Attempt any ONE of the following:** **6**
- (i) Explain the manufacturing of styrene with neat flow sheet diagram.
 - (ii) Explain the manufacturing of butadiene with neat flow sheet.
5. **Attempt any TWO of the following:** **16**
- a) With neat flow diagram explain the manufacturing of MTBE.
 - b) Describe manufacture of acetone by dehydrogenations of isopropanol.
 - c) Explain under process for recovery of BTX from reformat gasoline. What are the various derivatives obtained from BTX?

6. Attempt any FOUR of the following:**16**

- a) Define:
- (i) Octane No.
 - (ii) Cetane No.
 - (iii) Flash point
 - (iv) Fire point
- b) Describe atmospheric distillation process for waste water treatment.
- c) Name the test for determining properties of crude oil with description (any four)
- d) Name the four processes for waste water treatment. Describe any two.
- e) Write properties, method of production and chemical reaction for production and chemical reaction for production of vinyl chloride.
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