

17651

16172

3 Hours / 100 Marks

Seat No.

--	--	--	--	--	--	--	--

- 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) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks

1. **Attempt any FIVE of the following:** **20**
- a) Name any four Indian refineries with their location and capacity.
 - b) Name any four test properties of each gasoline and diesel.
 - c) Draw well labeled flow diagram of polymerisation process.
 - d) Write the chemical reaction of the following with standard condition.
 - (i) Manufacture of methanol.
 - (ii) Manufacture of formaldehyde.
 - e) Write the boiling range of any four fractions obtained from fractionation of crude oil.
 - f) Describe waste water treatment in petroleum and petrochemical industries, in brief.
 - g) Describe manufacture of ethylene oxide with well labeled flow diagram.

P.T.O.

2. Attempt any FOUR of the following: 16

- a) Write the carbon range of any four fractions obtained from fractionation of crude oil.
- b) Describe refining process with well labeled flow diagram.
- c) Describe manufacture of methanol with well labeled flow diagram.
- d) Define following:
 - (i) Octane number
 - (ii) Cetane number
- e) Name any four petrochemicals derived from C_1 hydrocarbon with their one application.
- f) Draw well labeled flow diagram of isomerisation process.

3. Attempt any FOUR of the following: 16

- a) Draw well labeled flow diagram of manufacture of MTBE.
- b) Describe UDEX process for BTX recovery.
- c) Name any two test properties of the following:
 - (i) Gasoline
 - (ii) Kerosene
 - (iii) Diesel
 - (iv) Lubricating oil
- d) Describe manufacture of formaldehyde with well labeled flow diagram.
- e) Describe alkylation process with well labeled flow diagram.
- f) Name any eight global crude oil producers.

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

- a) Explain with well labeled flow diagram of atmospheric distillation unit.
- b) Describe hydrocracking process with well labeled flow diagram.
- c) Name any four petrochemicals derived from C_2 hydrocarbon with their one application.
- d) Write chemical reaction involved in the following manufacturing
 - (i) Butadiene
 - (ii) Butyl acetate
- e) Define following term with suitable example
 - (i) Thermal cracking
 - (ii) Catalytic cracking
- f) Describe composition of petroleum in detail.

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

- a) Explain uses of any two
 - (i) MTBE
 - (ii) Styrene
 - (iii) Ethanol
- b) Write any four chemical reactions involved in reforming process with standard conditions.
- c) Name any eight petrochemicals manufactured from benzene, toluene and xylene as a starting material.
- d) Name the fraction which belongs to following list of test properties.
 - (i) Octane number
 - (ii) Aniline point
 - (iii) Smoke point
 - (iv) Cetane number

- e) Give two uses each of following petrochemicals.
 - (i) Formaldehyde
 - (ii) Ethylene oxide
 - (iii) Acetaldehyde
 - (iv) Butadiene
- f) Name four methods for dehydration and desaltification of crude oil. Explain any one in brief.

6. Attempt any FOUR of the following: 16

- a) Explain safety measures followed in petrochemical industry.
 - b) Describe hydration process with well labeled flow diagram.
 - c) Write any one use of the following
 - (i) Kerosene
 - (ii) Diesel
 - (iii) Lubricating oil
 - (iv) Gasoline
 - d) Draw well labeled diagram of vacuum distillation unit.
 - e) Describe hydrogenation process with well labeled flow diagram.
 - f) Name any two physical properties of the following petrochemicals.
 - (i) Methanol
 - (ii) Formaldehyde
 - (iii) Ethanol
 - (iv) Propylene oxide
-