



Name :

Roll No. :

Invigilator's Signature :

CS/B.Tech (CHE-N)/SEM-6/CHE-602/2011

2011

CHEMICAL PROCESS TECHNOLOGY – II

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

i) Which of the following is a detergent ?

- | | |
|------------------|------------------------|
| a) fatty alcohol | b) ABS |
| c) fatty acids | d) methylene chloride. |

ii) Soap is

- | |
|---|
| a) fatty acids |
| b) fatty alcohols |
| c) salts fatty acid derivatives of alkali metals |
| d) salts of fatty alcohol derivatives of alkali metals. |

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- iii) Temperature and pressure required for detergent manufacture by catalytic hydrogenation is
- a) 0 – 100° C, 0 – 100 atm
 - b) 100 – 200° C, 0 – 100 atm
 - c) 200 – 300° C, 100 – 200 atm
 - d) 100 – 200° C, 100 – 200 atm.
- iv) Yellow glycerine is made into white, using
- a) activated carbon
 - b) diatomaceous earth
 - c) bauxite
 - d) bentonite.
- v) Sugar belongs to
- a) Monosaccharide
 - b) Disaccharide
 - c) Polysaccharide
 - d) Starch.
- vi) Acetone is produced by catalytic dehydrogenation of
- a) phenol
 - b) naphthalene
 - c) isopropanol
 - d) ethyl benzene.
- vii) Production of alcohol by fermentation of molasses is an
- a) anaerobic process
 - b) endothermic process
 - c) aerobic process
 - d) both (a) and (b).
- viii) Parathion is a
- a) pesticide
 - b) plasticizer
 - c) polyester
 - d) tranquillizer.
- ix) Chloral is used in the manufacture of
- a) DDT
 - b) BHC
 - c) parathion
 - d) malathion.
- x) Crepe rubber sheet is dried at
- a) 50° C
 - b) 40° C
 - c) 30° C
 - d) 100° C.

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- xi) Solvent used for the extraction of oil is
- | | |
|-------------|------------------------|
| a) hexane | b) methyl ethyl ketone |
| c) furfural | d) toluene. |
- xii) Hydrogenation of edible oils is carried out in the presence of finely divided
- | | |
|-----------|------------|
| a) copper | b) nickel |
| c) iron | d) silver. |

GROUP – B**(Short Answer Type Questions)**Answer any *three* of the following. $3 \times 5 = 15$

2. Define natural rubber. What are the advantages of vulcanized rubber over natural rubber ? 2 + 3
3. What are the differences between thermosets and elastomers ? Give one example of each of them. 3 + 2
4. a) Discuss the process economics of detergent production via catalytic hydrogenation and sodium reduction process.
- b) Arrange the following fatty acids according to their boiling point.

i) oleic acid	
ii) linoleic acid	
iii) steric acid	
iv) linolenic acid.	3 + 2
5. What are the major engineering problems associated with the production of ethylene oxide ? 5
6. What is meant by inversion of sugar ? Recommend any method to overcome the problem of inversion and describe it. 2 + 3
7. Define biodegradability. Name two biodegradable materials. 5

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**GROUP – C****(Long Answer Type Questions)**Answer any *three* of the following. $3 \times 15 = 45$

8. a) What are the chemical reactions involved in the manufacturing process of vinyl chloride ?
- b) Describe the production process of vinyl chloride from ethylenedichloride with the help of a neat flow sheet. Compare production of vinyl chloride by thermal pyrolysis of ethylenedichloride, and acetylene-HCl route. $2 + 10 + 3$
9. Discuss in detail the solvent extraction method of vegetable oil with the help of a neat flow diagram. Mention the type of solvent used and its recovery process. $10 + 5$
10. How is parathion manufactured ? State the engineering problems of parathion manufacturing process. $11 + 4$
11. What is the difference between 6-nylon and 6, 6 nylon ? Mention the chemical reactions involved in the manufacturing process of 6-nylon. With the help of a flow diagram, discuss the manufacturing process of 6, 6 nylon. $2 + 3 + 10$

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