



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.



- 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.



- 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



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. $2 + 3 + 10$

