

BACHELOR OF CHEMICAL ENGINEERING EXAMINATION, 2018

(THIRD YEAR SECOND SEMESTER)

CHEMICAL TECHNOLOGY - II

Time: Three hours

Full Marks:100
(50 marks for each part)

Use a separate Answer-script for each part

Part I

Answer *any ten* questions

10×5

Answers must be brief and to the point

1. LNG is stored at one atmospheric pressure. How?
2. Hydrocracking is an exothermic process — how the temperature is controlled in the reactor?
3. Which unit operations/processes are necessary with the product stream from the naphtha cracker before it enters into the de-methaniser column? Give reasons.
4. What is the function of gasoline stabilizer column? What are the overhead and bottom products of this column?
5. About 80% ethylene is recycled (due to low conversions per pass) in high pressure LDPE process after some purifications. What are the impurities and how are they produced?
6. What are PVC and UPVC? How one can be made from the other? What are their specific uses?
7. Wherefrom p-xylene is obtained in a petrochemical complex? Outline only the steps in the production of PET from it.
8. Deliming, bating and pickling are the three important steps before tanning. Why? In the finishing stage how leather can be made suede?
9. Wherefrom molasses is obtained?
10. Viscose rayon filaments can be produced by no other process except wet spinning process. Why?
11. Outline only the steps in the production of LABS via α -olefins alkylation route.

[Turn over

Part-II (50 Marks)**Answer all questions**

1.
 - a) Why drying is essential for paraffins up to 3 carbon atom before usage?
 - b) How catalytic cracking is distinguished from thermal cracking and in which case stable structured compounds are formed?
 - c) Which type of vis-breaker produces less coke and why?
 - d) How sulfur affects the coke yield?
 - e) Why H₂S is beneficial for naphtha cracking?
 - f) What is the difference between hydrodesulphurization and hydrotreatment?
 - g) How octane rating improvement is accomplished?
 - h) What do you mean by submerged fermentation?
 - i) What is a degree of polymerization?
 - j) What is vulcanization? 1x10=10

2.
 - a) Briefly explain the catalytic desulfurization of gasoline with process flow-sheet diagram.
 - b) Briefly explain the fluid catalytic cracking (FCC) operation with diagram and sketch the profiles of different parameters w.r.to riser height. 5+5=10

3.
 - a) Why fatty acids are passed overhead to a flash tank in soap production?
 - b) Discuss the design principles for sterile operations.
 - c) Briefly explain the ethyl alcohol synthesis by fermentation with process flow sheet diagram. 1+2+7=10

4.
 - a) What are the synthetic tanning agents?
 - b) Briefly explain the chrome tanning operation with process flow sheet diagram for leather synthesis. 1+9=10

5.
 - a) What is an acrylic?
 - b) What is suspension polymerization?
 - b) Briefly explain the polyvinyl chloride synthesis process. 1+2+7=10