B.E. CHEMICAL ENGINEERING THIRD YEAR FIRST SEMESTER (OLD) SUPPLEMENTARY EXAM – 2018

Subject : CHEMICAL TECHNOLOGY-II
Time : 3 h Full Marks : 100

Answer any *ten* questions

1. Write the reactions, catalysts used, operating conditions pertaining to production of 2-ethylhexanol using propylene and synthesis gas as feedstocks. **[10]**

2. Mention typical operating conditions used in the furnace in thermal cracking of naphtha. Define KSF and show its effects on product yields. **[5+5]**

3. Describe the production of vinyl acetate monomer using a block flow diagram mentioning the reactions, heterogeneous catalysts used and operating conditions maintained. Mention the drawbacks of homogeneous catalytic process in this context. **[10]**

4. Briefly describe the production of methanol mentioning the reactions, catalysts used, operating conditions using natural gas feedstock (Use block flow diagram). **[10]**

5. What are the objectives of hydrotreatment of petrochemical feedstocks bearing sulfur, nitrogen and oxygen impurities? Describe a typical hydrotreatment process using a simplified block flow diagram mentioning the pertinent major reactions and operating conditions employed. **[3+7]**

6.(i) Elucidate "Auto-acceleration" (Gel Effect) behaviour in free radical bulk/mass polymerization systems.

(ii) Briefly describe Polyethylene Production through Ziegler Process mentioning the process conditions using a block flow diagram. **[4+6]**

7. Briefly describe the Halcon Process for production of Aniline from phenol using a simplified block flow diagram. **[10]**

8. Briefly discuss the butane dehydrogenation process employing Fluidized bed Reactor using a simplified block flow diagram. **[10]**

9. Describe Merox sweetening process for removal of mercaptans from petroleum feedstock using a block flow diagram mentioning the reactions involved. **[10]**

10. Elucidate the operational principle of a fat splitting plant mentioning reprentative process conditions using a simplified block flow diagram. **[10]**

11. Write brief note on (a) Disproportionation of Toluene (b) Transalkylation of C_9+ aromatic fraction. **[5+5]**

12. Briefly discuss the influence of different process variables on the performance of 'Crude Oil Electric Desalting Unit'. **[10]**

13. Briefly discuss the visbreaking of petroleum feedstock using a simplified block flow diagram mentioning the reaction mechanism and influence of operating parameters on the product yield. **[10]**