

B.Tech. Seventh Semester (Food, Pulp & Paper, Oil & Paint & Petro Technology) (CGS)
11066 : Special Technology - IV : Petrochemical Technology - IV : 7 PC 03

P. Pages : 2

Time : Three Hours



AU - 2949

Max. Marks : 80

- Notes :
1. Due credit will be given to neatness and adequate dimensions.
 2. Assume suitable data wherever necessary.
 3. Diagrams and chemicals equations should be given wherever necessary.
 4. Illustrate your answer necessary with the help of neat sketches.
 5. Discuss the reaction, mechanism wherever necessary.
 6. Use of pen Blue/Black ink/refill only for writing book.

SECTION - A

1. 'Reduction in the diameter of tubes decreases the residence time and increases the selectivity'. Prove the above statement with respect to tube furnace used for cracking. Hence write the designing concept adopted in reaction furnace. **14**

OR

2. p) Define and discuss the utility of pipe still heaters in petroleum refinery. **5**
q) What is reaction furnace? Name any three processes where reaction furnaces are used. **5**
r) Define the term severity and selectivity. How will you determine kinetic severity function? **4**
3. Discuss in brief the product pattern and properties related to visbreaking. Also give the graphical representation of yield in visbreaking. How the classification of visbreaking unit is done? Discuss in brief. **13**

OR

4. Discuss in detail the operating conditions, specifications and time scheduled for delayed coking unit. Why delayed coking is most preferable over other techniques of coking? Discuss in brief. **13**
5. Recently which techniques is introduce in regenerator design to lower the residual carbon level on regenerated catalyst? Hence discuss the design consideration for FCCU regenerator with diagrammatic representation. **13**

OR

6. For delayed coking following data is available, feed having CCR 6%, 16% and 26% but having same °API (12.3). Determine the yield and check the effect of carbon residue on yield. **13**

SECTION - B

7. What are the various source for styrene? How will you obtained styrene from C_8 fraction? 14
What are the techno-economical problems related with styrene separation and how are they overcome? Discuss in brief.

OR

8. p) Explain, 'feed preparation for hydrocracking process decide the nature of hydro process'. 7
q) Which type of catalyst is commonly used in hydrodesulfurisation process? Give its detail with activity involved. 7
9. What operating parameters to be adopted in reactor for acrylonitrile synthesis? Hence discuss the acrylonitrile synthesis in brief. 13

OR

10. During processing for catalytic reforming, which basic similarities and dissimilarities occur in continuous and cyclic operation? Discuss in brief. 13
11. Discuss the design aspect of phthalic anhydride synthesis in brief with technical problems encountered and their solutions. 13

OR

12. p) What are the various uses of multiphase reactor's in petroleum refinery? Discuss. 6
q) Discuss the mass transfer and heat transfer aspects in slurry reactor. 7

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