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**Question Paper Code: 94905**

B.E./B.Tech. DEGREE EXAMINATION, MAY 2022

Fourth Semester

Chemical Engineering

19UCH405 – Chemical Process Industries

(Regulations 2019)

Duration: Three hours

Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

- Bleaching agent used in Sugar industry is CO1- U  
(a) CO<sub>2</sub>                      (b) CO                      (c) SO<sub>2</sub>                      (d) Alumina
- \_\_\_\_\_ is a fresh pulping liquor for the Kraft process, consisting of the active pulping species NaOH and Na<sub>2</sub>S, small amounts of Na<sub>2</sub>CO<sub>3</sub> CO1- U  
(a) Black liquor              (b) White liquor              (c) Red liquor              (d) Green liquor
- Which commercial product is produced by Frasch Process? CO1- R  
sulfur                      (b) ammonia                      (c) nitric acid                      (d) sulfuric acid
- Concentration of NaOH produced in mercury cell process is \_\_\_\_\_ CO1- R  
(a) 10-12%                      (b) 30-33%                      (c) 50%                      (d) 70%
- Which one doesn't come under Calcareous Rocks? CO1- R  
(a) limestone                      (b) cement rock                      (c) chalk                      (d) marine shell deposits
- The % weight of detergent in washing powders is \_\_\_\_\_ CO1- R  
(a) 5-10                      (b) 50-70                      (c) 15-30                      (d) 30-45
- Which of the following is not a process involved in glass production? CO1- R  
(a) Extrusion              (b) Forming and shaping              (c) Heat treatment              (d) Finishing
- Which method of forming cannot be used to produce sheet glass? CO1- R  
(a) Floating              (b) Rolling                      (c) Drawing                      (d) Casting

9. Which of the following raw material obtained from petroleum can be in preparation of acetic acid? CO1- R
- (a) Acetone      (b) Phosphoric acid      (c) Ethylene      (d) Tartaric acid
10. Solvent used for dewaxing of petroleum products are CO4- R
- (a) Furfural      (b) Methyl ethyl ketone      (c) Propane      (d) Both (b) & (c)

PART – B (5x 2= 10 Marks)

11. Give the significance of starch and its industrial applications. CO1- U
12. Give the industrial uses of sulfur. CO1- U
13. What are the primary benefits of bio fertilizers? CO1- U
14. Name the antifoaming agent used in water based paints. CO1- R
15. What is the most common source for synthetic fibres? CO1- U

PART C - (5 x 16 = 80 Marks)

16. (a) Draw the process flow diagram to illustrate the process involved in sulfate (Kraft) pulp process. CO1 -U      (16)
- Or
- (b) Demonstrate the importance of starch derivatives and draw the process flow diagram to show the production process involved in dextrin production and give suggestions when ammonia is added what happens? CO3 -Ana      (16)
17. (a) Draw the flow diagram for manufacture of sulfuric acid and oleum by contact process.. CO1 -U      (16)
- Or
- (b) Explain with the flow sheet the process involved in production of nitric acid by ammonia oxidation process. CO1 -U      (16)
18. (a) List out the factors to be considered in cement industry and detail the process with neat diagram on manufacture of Portland cement and give solutions for the major engineering problems.. CO3-Ana      (16)
- Or
- (b) List out the advantages of continuous hydrolysis and saponification process in soap production process and also demonstrate the continuous process for soap production CO1 -U      (16)

19. (a) Explain in detail the constituents of paint and types of paints. CO1 -U (16)  
Or  
(b) Explain the raw materials needed for the glass industries with their application CO1 -R (16)
20. (a) Explain in detail with a neat sketch of process flow diagram in the production of viscose rayon. CO1 -U (16)  
Or  
(b) Explain in detail about pyrolysis and moving bed catalytic cracking process. CO1 -U (16)

