M18001028

Registration No: | | | | | | | | | | |

Total Number of Pages : 02 **B.TECH**

B.TECH 2ND SEMESTER REGULAR EXAMINATIONS, MAY 2018
ENGINEERING CHEMISTRY
Subject Code:BBSBS1022
Time: 3 Hours
Max Marks : 100

CO1 Identify suitable water treatments techniques for domestic and industrial purposes
CO2 Differentiate various types of corrosion, and gain knowledge on control measures associated with corrosion
CO3 Classify the different types of fuel , it's analysis and gain knowledge on fractional distillation of petroleum.
CO4 Understand various types of polymers, their preparation along with applications

PART-A (10X1 = 10 MARKS)

Answer *All* Questions.

a. Potable water treatment doesn't involve: (CO1)
Softening b) Sedimentation c) Coagulation d) Disinfection

b. Collidal conditioning of boiler is done by using (CO1)
a) Calgon b) Lignin c) EDTA d) Na_2HPO

c. A sample of water contains Sodium chloride. It is: (CO1)
a) Soft water. B) Hard water c) Moderately hard d) None

d. The rusting of iron is catalyzed by (CO2)
a) Fe b) O_2 c) Zn d) H^+

e. Addition of hydrazine hydrates to corrosive environment. (CO2)
a) Retards anodic reaction
b) Prevents diffusion of proton to cathode
c) Increases hydrogen overvoltage
d) Retards cathodic reaction by consuming dissolved oxygen

f. For corrosion of iron to take place: (CO2)
a) Presence of moisture is sufficient b) Hydrogen is required
c) A strong acid is necessary d) Presence of both moisture & oxygen is essential

g. Octane number tells the quality of : (CO3)
a) Diesel b) Kerosene oil c) Lubricating oil d) Petrol

h. A good fuel should have : (CO3)
a) High moisture content b) Low calorific value
c) High ash content d) Moderate ignition temperature

i. Bakelite is obtained from phenol by reacting with : (CO4)
a) HCHO b) $(CH_2OH)_2$ c) CH_3CHO d) CH_3COCH_3

j. Which of the following is not a polymer? (CO4)
a) Glycogen b) Starch c) Natural rubber d) petroleum

PART-B (15 x 2 = 30 MARKS)

Answer any fifteen questions from the following.

1. What do you mean by sterilization of water? (CO1)
2. What is caustic embrittlement? (CO1)
3. What are the disadvantages of hardness in domestic water? (CO1)
4. What is calgon and why calgon conditioning is preferred? (CO1)

5. $CaCO_3$ equivalent is used to express hardness of water, Give reason (CO1)
6. Write Nernst's equation. (CO2)
7. How the corrosion can be prevented by cathodic inhibitor (CO2)
8. What is Pilling-Bedworth rule? (CO2)
9. List two application of electrochemical series (CO2)
10. Why the area of cathode should be smaller than area of anode? (CO2)
11. MTBE decreases knocking in IC engine, Explain. (CO3)
12. Which catalyst is used in Fischer-Tropsch method? (CO3)
13. Why it is important to remove moisture from fuel? (CO3)
14. Write the classification of petroleum. (CO3)
15. Use of TEL in petrol is avoidable, explain. (CO3)
16. Define polymerization. (CO4)
17. Write any two characteristics of Teflon. (CO4)
18. Write the monomers of nylon-6, 6. (CO4)
19. Differentiate between addition and condensation polymer. (CO4)
20. Write two uses of Bakelite. (CO4)

PART-C (6 x 5 = 30 MARKS)

Section-i **Answer any Six questions**

1. Write down the process of sterilization of water. (CO1)
2. Differentiate between hot lime soda and cold lime soda process (CO1)
3. Explain dry corrosion. (CO2)
4. Explain aeration corrosion with example. (CO2)
5. What is knocking? Write the disadvantages of knocking and write any two unleaded antiknocking agents. (CO3)
6. Calculate HCV and LCV of 2L petrol having following compositions
   CH_4=50%, H_2 = 12%, N_2 =8 %,, O_2 = 3 %,S=4% . (CO3)
7. Write the preparation and uses of Bakelite. (CO4)
8. Write the classification of polymer based on tacticity and molecular strength. (CO4)

Section-ii **Answer any Two questions** **(2 x 15 = 30 MARKS)**

1) (a) How softening of water is carried out by ion exchange process? How it is better then lime soda process?(7+3marks) (CO1)
   (b) Calculate the amount of soda required for 100 liters of water having following salts
   $MgCl_2$=9.5ppm, $CaSO_4$= 13.6ppm, $MgSO_4$=12ppm (5marks) (CO1)
2) (a) Define the term corrosion. How environment is responsible for corrosion.(2+8marks) (CO2)
   (b)Write short notes on galvanization and Tinning(5marks) (CO2)
3) (a) What is cracking ? Explain Fixed-Bed Catalytic Cracking(10marks) (CO3)
   (b) Write the advantages of catalytic cracking on thermal cracking(5marks) (CO3)
4) (a)What is polymers?
   Write down any two mechanism of addition polymerization(2+8marks) (CO4)
   (b) Short note on conducting polymer with one example(5marks) (CO4)

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