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Total Number of Pages : 02

B.TECH

B.TECH 1ST SEMESTER REGULAR EXAMINATIONS, DECEMBER 2017

ENGINEERING CHEMISTRY

Subject Code: BBSBS1022

Time: 3 Hours

Max Marks : 100

The figures in the right hand margin indicate marks.

PART-A**(10X1 = 10 MARKS)**

Answer all questions.

- _____ method is used to remove microorganism.
- _____ causes alkalinity in water.
- Formation of foam or bubbles in boiler is called _____
- Rate of corrosion increases with _____ in temperature.
- Corrosion is greater in _____ medium.
- _____ cell convert chemical energy to electrical energy
- The crude oil is emulsion of _____ and _____
- Electrons move from _____ to _____ in galvanic cell.
- All _____ polymers are biodegradable.
- Phenol-Formaldehyde resin is also known as _____

PART-B**(15 x 2 = 30 MARKS)**

Answer any fifteen questions from the following.

- What are the disadvantages of Lime-Soda process?
- Which resins are used in the ion exchange process? Give example
- Name the three substances used for sterilization of water.
- Why hot lime-soda process is better than cold lime-soda process?
- Why does magnesium bicarbonate require double amount of lime for softening?
- What is season cracking?
- What are the applications of electrochemical series?
- What is Pilling-Bedworth rule?
- What is pitting corrosion?
- Corrosion of water filled steel tanks occurs below the water line. why?
- What do you mean by Calorific value?
- Define gross calorific value and net calorific value?
- Define the term knocking.

14. Write two advantages of gaseous fuel.
15. Use of TEL in petrol is avoidable, explain.
16. Define polymerization.
17. Write the examples of biodegradable & non biodegradable polymer.
18. Write the monomers of nylon-6, 6.
19. How is differentiate between LDPE & HDPE.
20. Define polymers and monomers.

PART-C

(6 x 5 = 30 MARKS)

Section-i

Answer any Six questions

1. Define Priming and foaming.
2. What is the breakpoint chlorination?
3. Discuss about cathodic protection to prevent corrosion.
4. Write short notes on stress corrosion
5. Define the term cracking and discuss about thermal cracking.
6. Write short notes on fractional distillation of petroleum.
7. Short note on Polyethylene.
8. Differentiate between thermoplastic and thermosetting plastic.

Section-ii

Answer any Two questions

(2 x 15 = 30 MARKS)

1. Define hard water. What is hardness? A sample of water on analysis has been found to contain following in ppm: Ca $(\text{HCO}_3)_2$ = 4.86 Mg $(\text{HCO}_3)_2$ = 5.84 CaSO₄ = 6.8
MgSO₄ = 8.4 Calculate the temporary and permanent hardness.
2. Write short notes on chemical corrosion and electrochemical corrosion. Differentiate between chemical corrosion and electrochemical corrosion.
3. What do you mean by knocking? What are the antiknocking agent used? Calculate the volume of a required for combustion on 1000L of heavy oil of following composition. CH₄ = 50% , H₂ = 15%, N₂ = 5%, O₂ = 10%, CO₂ = 10%, CO = 10%,
4. What do you mean by combustion

A sample coal was found to have the following % composition:

C=70%, S= 5%, H₂=5.2%, O₂=12.1%, N₂=3.2% and ash=4.5%

- i) Calculate the minimum air required for complete combustion of 2kg of coal.
- ii) Calculate higher calorific value and lower calorific value of coal sample given above by Dulong's method.

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