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**Question Paper Code : 40925**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018  
Second Semester  
Civil Engineering  
CY 6251 – ENGINEERING CHEMISTRY– II  
(Common to All Branches Except Marine Engineering)  
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. How will you remove temporary hardness in water ?
2. Mention the essential requirements for boiler feed water.
3. Distinguish between standard electrode potential and single electrode potential.
4. "Drying oil is also called as film forming constituent" - Justify the statement.
5. State the primary function of a breeder reactor.
6. Write any two applications of Hydrogen-Oxygen fuel cell.
7. Arrange abrasives according to Mohs scale of hardness.
8. Give the important characteristics of a refractory material.
9. What is meant by Explosive range of a fuel ? What is its significance ?
10. What is LPG ? Mention its constituents with their % composition.

PART – B

(5×16=80 Marks)

11. a) i) Tabulate the definition, causes, effects remedial measures of the following : (8)
- A) Scale            B) Sludge            C) Priming            D) Foaming
- ii) With a neat diagram and relevant chemical equations explain the softening and regeneration processes involved in Zeolite softener. (8)
- (OR)
- b) i) Explain the internal treatment of hard water by ion exchange process. (8)
- ii) Write notes on : A) Phosphate conditioning    B) Reverse Osmosis (8)

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12. a) i) How is electrode potential of an electrode determined? (8)  
ii) Enumerate the factors influencing corrosion. (8)  
(OR)
- b) i) Describe the mechanism of Electrochemical corrosion. (8)  
ii) What is electroless plating? Briefly explain the electroless plating of Nickel. (8)
13. a) i) How do the thermal and photo conversion of solar energy useful for mankind? (8)  
ii) Explain the discharging and charging processes of Lead storage battery. (8)  
(OR)
- b) i) Discuss the harvesting of wind energy. Give the advantages and drawbacks of Wind mills. (8)  
ii) Briefly explain the function of light water nuclear reactor with a neat diagram. (8)
14. a) i) With a neat sketch describe the manufacture of Portland cement by wet process. (8)  
ii) What is Segar cone test? How is it carried out? What is its significance? (8)  
(OR)
- b) i) Discuss the manufacture, properties and uses of the following abrasives. (8)  
A) Boron carbide B) Alundum  
ii) Write a short notes on : A) Borosilicate glass B) Flint glass. (8)
15. a) i) What is bio-diesel? How is it produced? Mention its advantages over gasoline. (8)  
ii) A gaseous fuel has the following % composition by volume :  
 $H_2 = 24$ ,  $CH_4 = 35$ ,  $C_2H_6 = 6$ ,  $C_2H_4 = 5$ ,  $C_4H_8 = 2.5$ ,  $CO = 7.6$   $CO_2 = 6.5$  and  $O_2 = 0.6$  and  $N_2$  rest. Calculate the minimum amount of air required for the complete combustion of  $1m^3$  of fuel. (8)  
(OR)
- b) i) Explain the proximate analysis of coal and its significances. (8)  
ii) Describe the manufacture of synthetic petrol by Bergius process. (8)