**BE-1/4 – SEM-1,EEE, (2018-19)**

**Engineering Chemistry-Assignment**

**CO I**

1) What is refrence electrode.Describe the construction of calomel electrode, write the electrode notation, electrode reaction and electrode potential.

2)What is the principle involved in potentiometric acid-base titration in determination of PH of acid solution.

b) Emf of combined cell using Quinhydrone and saturated calomel electrodes at 25ºC was found to be 0.380v. Calculate the pH of unknown acid solution used in the experiment.Given electrode potential of quinhydrone is 0.6990 and calomel electrode is 0.242 v.

3) What are flow batteries.Describe the working of methanol –oxygen fuel cell .

4)Describe the construction and working of dry cell.

**CO-II-**

5) What is electrochemical corrosion? Explain galvanic corrosion with examples.

6)Explain a) waterline and b) pitting corrosion .

7)What is hot dipping? Explain galvanization method.

8) How does following factors effect the rate of corrosion- a) position of metal in galvanic series,

b)Relative areas of anode and cathode. C) PH

**COIII-**

6)Define PPM. Why is hardness expressed in CaCO3 equivalents ?

7)Describe the determination of hardness by EDTA method.

8) What is alkalinity in water. How is it determined?

9) What is the temporary and permanent hardness ( in PPM) of 100ml sample water which consumes 50ml of 0.1M EDTA before boiling and 20ml of 0.1M EDTA after boiling.

**CO-IV**

10)Write the products of polymerization and identify the type of polymerization for the following-

i) CH4 ii)C2H4 iii)C2H2 iv)C2H6  v)C6H5-OH and HCHO vi)CH2= CHCl vii)Styrene and butadiene

11)What is the mechanism of conduction in conducting polymers. Give examples and applications of conducting polymers.

12)Write the preparation , properties and uses of the following- a)Bakelite, b) Kevlar and

c) butyl rubber

CO-V

13) A fuel sample analysis by weight is as follows,-C=90%, H=8%, S=0.5% and

Rest is oxygen, Calculate a) the minimum quantity of air required for

Complete combustion of 1Kg of fuel.

(b)weight of air if 20% excess air is used.

c) HCV and LCV (latent heat of condensation of steam at 15˚C =540cal)

14)Write the significance of analysis of following components-1)moisture 2) carbon and hydrogen 3) sulfur 4) ash

15)What is cracking? Describe catalytic cracking of heavy oil by moving bed method.

**CO-vi**

16) Explain what is atom economy with example.

17)Give 3 examples of clean technology.

18)What is transesterification in the manufacture of Biodiesel.What are the advantages of biodiesel over petro diesel.

19)what are composites? Give the classification of composites.

20)What are the properties and applications of FRC’s.