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**F.E. (Sem – I/II) (Revised Course 2016-17)**
**EXAMINATION NOV/DEC 2019**
**Applied Science (Chemistry)**

**[Time: Three Hours]** **[Max. Marks: 100]**

***Instructions:***
1) Answer any **two** questions each from **Part – A** and **Part – B**. and **anyone** question from **Part – C**.
2) Draw diagrams wherever required.
3) Assume additional data, if required.

## Part – A

(Answer Any **Two** Questions)

Q.1 a) A galvanic cell to be operated at 25°C is set up. Write the cell representation and chemical reactions involved in the cell. Also find the e.m.f. of the cell assuming that Ni was dipped in 0.02M Ni salt solution and Ag rod was dipped in 0.05 M Ag salt solution. (Given $E^0_{Ni}$ = - 0.23V and $E^0_{Ag}$ =0.80V ) **6**

b) Describe the type of corrosion taking place in a metal with an example when the metal is placed in i) acidic medium ii) neutral medium **4**

c) Define the terms:
i) Galvanic cell
ii) Fuel Cell
iii) Calorific value
iv) H.C.V. **4**

d) Discuss any two application of Green Chemistry for achieving sustainable development. **6**

Q.2 a) Construct a cell using the metal strips of Magnesium, one dipping in a solution of 0.04M $MgSO_4$ and the other in 0.004M $MgSO_4$. Write the cell reactions, working principle and calculate the E.M.F. of the cell. Given $E^0_{Mg}$= - 2.37V **6**

b) Explain the phenomenon of differential aeration corrosion with regard to Pitting and waterline corrosion. **4**

c) With the help of neat labelled diagram explain mining of petroleum. **4**

d) Outline the objectives of Green Chemistry. **6**

Q.3 a) Explain the different stages involved in the purification of crude oil and name the different fractions obtained from crude oil along with their carbon content. **6**

b) Explain in brief factors affecting the rate of corrosion. **4**

c) With the help of a neat diagram, explain the working of Zn – air Battery. **4**

d) Discuss the basic components of Green Chemistry.

## PART – B

(Answer Any **Two** Questions)

Q.4 a) Give the classification of Polymers based on i) Structure ii) Number of monomers and their arrangements iii) Types of Polymerization **6**

b) Calculate the temporary hardness and total hardness of sample of water containing **6**