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**II Semester M.Sc. Degree Examination, May/June 2019***(CBCS Pattern/Revised Syllabus)***INDUSTRIAL CHEMISTRY****Energy Systems, Colloids And Petrochemicals**

Time : 3 Hours]

[Max. Marks : 70

Instructions :

1. Answer Part A and **any five** questions from Part B.
2. Figures to the right indicate marks.

PART - A

1. Answer **any five** questions : **(5 × 2 = 10)**
- (a) Differentiate between natural and shale gas.
 - (b) Efficiency of Zn-MnO₂ cell decreases sharply. Give reasons.
 - (c) Why electrolyte level to be maintained at optimum level in lead acid battery?
 - (d) Explain the term 'Betz Limit'.
 - (e) How colloidal chemistry is applicable in the purification of gas from industries?
 - (f) What is 'gel'? How silica is prepared?
 - (g) A fuel with good octane number shows poor cetane number - Why?
 - (h) What is meant by compression ratios in IC engines?

PART - B

Answer **any five** questions : **(5 × 12 = 60)**

2. (a) Describe 'fluidized bed method of petroleum cracking'.
- (b) Discuss the construction, working and advantages of Zn-MnO₂ alkaline dry cell. **(6 + 6)**

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3. (a) Explain the construction, reactions and applications of Ni-Cd cell.
(b) Give construction and working of H₂-O₂ fuel cell with reactions involved.
(c) Write a note on Biochemical fuel cell. (4 + 4 + 4)
 4. (a) Illustrate the working of solar cell.
(b) How dye sensitized photogalanic cell generates electricity? (6 + 6)
 5. (a) Discuss the physicochemical characteristics of biomass.
(b) Explain the process of hydrogen storage by metals.
(c) Explain the different techniques adopted to trap geothermal energy. (4 + 4 + 4)
 6. (a) How the particle size of colloids is determined? Explain any two methods?
(b) Explain the importance and applications of colloids. (6 + 6)
 7. (a) Discuss Langmuir-Hinshelwood theory of surface reactions.
(b) Describe the method for the separation of proteins by gel electrophoresis.
(c) How Langmuir adsorption isotherm differ from Freundlich? Explain. (4 + 4 + 4)
 8. (a) What is reformation of petroleum? Discuss the reactions involved.
(b) Explain the Bergius process for production of synthetic petrol. (6 + 6)
 9. (a) Explain the caustic washing and merox process.
(b) How vacuum distillation differ from atmospheric distillation? Explain.
(c) Discuss Fischer-Tropsch method of petroleum cracking. (4 + 4 + 4)
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