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Code No.: 12005 AS

**VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD**  
**B.E. (CBCS) II-Semester Advanced Supplementary Examinations, June/July-2017**

**Applied Chemistry**  
**(C.S.E. E.C.E. & I.T.)**

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

**Part-A (10 × 2 = 20 Marks)**

1. Distinguish electrolytic and metallic conductors.
2. Calculate the electrode potential of  $\text{Ag}/\text{Ag}^+$  (0.05 M) at 25°C. ( $E_{\text{Ag}/\text{Ag}^+}^0 = -0.8\text{V}$ ).
3. Write the cell reaction while Nickel-Cadmium battery is behaving as galvanic cell.
4. What are fuel cells? Give their advantages.
5. Discuss the classification of conducting polymers with examples.
6. What are composites? Give two examples.
7. List any four applications of liquid crystals.
8. Suggest and write the synthesis of polyether sulphone (PES) membrane.
9. What are rocket propellants? Give two examples.
10. How explosive material RDX is prepared?

**Part-B (5 × 10 = 50 Marks)**

11. a) Given an example of metal – metal insoluble salt type of electrode and show that electrode potential depends on the concentration of electrolyte only. [6]  
b) The resistance of N/2 solution of  $\text{MgCl}_2$  in a cell was found to be 45 ohms. Compute the molecular conductance of the solution if the electrodes in the cell are 2.2 cm apart and have an area of cross-section is  $3.8\text{ cm}^2$ . [4]
12. a) Describe the construction and working of Zinc-Carbon battery. [4]  
b) Illustrate the construction and working of Lithium-ion batteries. [6]
13. a) Explain the mechanism of conduction in polyacetylene. [5]  
b) What are different types of composites? Explain with suitable examples. [5]
14. a) What are liquid crystals? Give their classification with suitable examples. [6]  
b) Discuss the production of carbon nanotubes by Arc discharge method. [4]
15. a) How explosives are classified and write the precautions to be taken for storage of them. [5]  
b) Write the principle of rocket propulsion. What are the characteristics of good propellant? [5]
16. a) What is an ion-selective electrode? Explain the method of determination of  $\text{P}^{\text{H}}$  of a solution by using glass electrode. [5]  
b) Write a note on Molten Carbonate fuel cell and its applications. [5]
17. Answer any two of the following:
  - a) Mechanism of conduction in doped and undoped polyaniline. [5]
  - b) Role of membranes in modern technology. [5]
  - c) Classification of Rocket propellants with examples. [5]

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