

Hall Ticket Number:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Code No. : 12014A O2

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (CBCS) II-Semester Old Examinations, May/June-2018

Applied Chemistry
(Civil, EEE & Mech. Engg.)

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. Calculate the potential of Ag/Ag⁺ (0.5 M) electrode at 298K. S.R.P. of silver electrode is 0.8V.
2. The SRP for Fe²⁺/Fe and Sn²⁺/Sn electrode are -0.44V and -0.14V respectively. Write the cell reaction and calculate its standard E.M.F.
3. Differentiate between primary & secondary batteries.
4. Give the reactions taking place while charging of Ni-Cd battery.
5. Define phase and component by giving example of each.
6. What is a refractory material? Explain acidic refractory material.
7. Write the characteristics of a good refractory.
8. Differentiate between thermal & electrical insulators.
9. List the applications of conducting polymers.
10. What are the advantages of composites?

Part-B (5 × 10 = 50 Marks)

11. a) Construct quinhydrone electrode and describe the determination of P^H of a given solution by using quinhydrone electrode. [6]
b) Compute P^H of an acid solution when standard electrode potential of quinhydrone electrode is 0.6997V and electrode potential of reference calomel electrode is 0.224V and E_{cell} is 0.25V. [4]
12. a) Illustrate the construction and working of Zinc alkaline battery. [5]
b) Explain the lead acid battery with charging and discharging reactions. [5]
13. a) Draw the well labeled phase diagram for water system and explain. [5]
b) Discuss the applications of safety fuses and solders. [5]
14. a) Explain the mechanism of hydrodynamic lubrication. [4]
b) Discuss (i) Refractoriness under load (ii) Thermal spalling properties of refractories. [6]
15. a) Explain different types of fibre reinforced composites. [4]
b) Write the mechanism of conduction in P-doped conducting polymers. [6]
16. a) The resistance of a deci normal solution of an electrolyte taken in a conductivity cell with the electrodes 4cm apart and 10.7cm² in area is found to be 70 ohms. Calculate the specific and equivalent conductivities of the electrolyte. [4]
b) Write construction and working of phosphoric acid fuel cell with reactions and mention its applications. [6]
17. Answer any *two* of the following:
a) Lead-silver system. [5]
b) Discuss the terms: [5]
i) Viscosity-index ii) Saponification number.
c) Layered composites. [5]

