

Hall Ticket Number:

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

Code No.: 11014 O

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (CBCS) I-Semester Backlog Examinations, December-2017

Engineering Chemistry
(Common to all Branches)

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. Suggest any two methods to prevent scale and sludge.
2. Calculate total hardness of water containing the dissolved salts $\text{Ca}(\text{HCO}_3)_2 = 16.2\text{mg/L}$, $\text{MgCl}_2 = 9.5\text{mg/L}$, $\text{CaSO}_4 = 27.2\text{mg/L}$ and $\text{Mg}(\text{HCO}_3)_2 = 14.2\text{mg/L}$.
3. What are Plastics and Fibres? Give one example of each.
4. List the advantages of biodegradable polymers.
5. What are chemical fuels? Give two examples.
6. Distinguish between Octane and Cetane number.
7. Aluminium occupies higher position in the ECS, but suffers lesser corrosion. Justify.
8. Define galvanic series and how it is helpful in predicting the intensity of corrosion.
9. What are corrosion inhibitors? Give two examples.
10. What is the role of pigment and drying oil in a paint?

Part-B (5 × 10 = 50 Marks)

11. a) What are the combinations of alkalis in water? How will you determine it experimentally? [6]
b) 100 ml of water sample required 20 ml of 0.01N EDTA solution, whereas 100 ml of the water sample after boiling required 12 ml of the same EDTA solution. Calculate temporary, permanent and total hardness of water sample. [4]
12. a) Give the preparation and engineering applications of the following polymers. [6]
i) Aramid ii) Silicone rubber
b) Differentiate thermoplastics and thermosetting resins. [4]
13. a) What is Ultimate analysis of coal? Give its importance in deciding the quality of coal. [6]
b) Calculate the Higher and Lower calorific value of coal having the following composition: [4]
C = 87%, H = 8%, S = 1%, Ash = 4%. The latent heat of steam = 587 Cal/gm.
14. a) What is Electrochemical corrosion? Explain Galvanic Corrosion with suitable example. [5]
b) Discuss the factors, which influence the rate of corrosion with reference to nature of environment? [5]
15. a) What are metallic coatings? Describe the method of Galvanization of iron. [6]
b) Write a note on Electroplating and mention its industrial applications. [4]
16. a) State the principle and method for softening of hard water by Reverse Osmosis. [6]
b) What is vulcanization of rubber? Give its advantages over raw rubber. [4]
17. Answer any *two* of the following:
a) Describe Fixed Bed Catalytic Cracking method with a well labelled diagram. [5]
b) Mechanism of corrosion of iron under a drop of acid. [5]
c) Cathodic protection. [5]

