

VISWAJYOTHI COLLEGE OF ENGINEERING AND TECHNOLOGY (Autonomous)
FIRST SEMESTER B.TECH DEGREE EXAMINATION DECEMBER 2025 (2025 SCHEME)

Course Code: 25VJGCCYT122

Course Name: CHEMISTRY FOR PHYSICAL SCIENCE

Max. Marks: 60

Duration: 2 Hours 30 Minutes

PART A

<i>Q.No.</i>	<i>Answer all questions. Each question carries 3 marks</i>	<i>CO</i>	<i>Marks</i>
1	Give any 3 applications of fullerenes.	CO1	(3)
2	Write a note on Green hydrogen.	CO1	(3)
3	What is an electrochemical series?	CO2	(3)
4	Give the reason for Corrosion.	CO2	(3)
5	Explain the principle of Differential Thermal Analysis.	CO3	(3)
6	Define retention time. What is its importance?	CO3	(3)
7	Briefly explain ozone layer depletion.	CO4	(3)
8	Calculate the hardness of 0.05M Calcium chloride solution.	CO4	(3)

PART B

Answer any one full question from each module. Each question carries 9 marks

Module 1

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| 9 | Explain various properties of liquid lubricant. How do you measure them? | CO1 | (9) |
| 10 | a) What are conducting polymers? Give its classification. (6 marks) | CO1 | (9) |
| | b) Give any 3 applications of conducting polymers. (3 marks) | | |

Module 2

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| 11 | a) Give the construction of Glass Electrode. (3 marks) | CO2 | (9) |
| | b) How can you determine the pH of a solution using Glass electrode?. (6 marks) | | |
| 12 | a) How conductivity of a solution is measured using Digital Conductivity meter? (6 marks) | CO2 | (9) |
| | b) Calculate the conductivity of a given sample of water at 298K, which shows a conductance of 560 μ S in the given cell at 298K. A standard solution of 0.1M KCl shows a conductance of 12.34mS in that cell. Conductivity of 0.1 M KCl at 298K is 0.01288S cm^{-1} . (3 marks) | | |

Module 3

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| 13 | Explain the principle, instrumentation and working of Scanning Electron Microscope. | CO3 | (9) |
| 14 | a) Calculate the number of vibrations in CO ₂ molecule. Which of them are IR active? Why? Sketch the different vibrational modes. (6 marks) | CO3 | (9) |
| | b) Calculate the force constant of C=O bond if CO absorb IR at 2140 cm^{-1} . Given that atomic masses of carbon and oxygen are 12 amu and 16 amu respectively. (3 marks) | | |

Module 4

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| 15 | a) Explain various disinfection methods. (6 marks) | CO4 | (9) |
| | b) Define Biological Oxygen Demand. (3 marks) | | |
| 16 | a) Distinguish between aerobic and anaerobic oxidation process. (5 marks) | CO4 | (9) |
| | b) Explain trickling filter method for sewage water treatment. (4 marks) | | |
