

R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT
(An Autonomous College U/s UGC Act 1956)

B. Voc. SEMESTER-II, SEMESTER END EXAMINATION – SUMMER 2025

Subject Code: 1IC202**Date: 15-05-2025****Subject Name: PHYSICAL AND ANALYTICAL CHEMISTRY****Time: 11:00 AM to 01:00 PM****Total Marks: 50****Instructions**

1. It is **compulsory** for students to write **Enrolment No. /Seat No.** on the question paper.
2. Attempt all questions in the question paper.
3. The figures to the right of each question indicate full marks. Make suitable assumptions with proper justification wherever required.
4. Simple, non-programmable scientific calculators are permitted.
5. BL - Bloom's Taxonomy Levels (R-Remember, U-Understanding, A-Application, N-Analyze, E-Evaluate, C-Create), CO - Course Outcomes.

	Marks	BL	CO
Q.1 Multiple-Choice Questions	[05]		
(a) To balance the solution electrically neutral _____ is used in electrochemical cell.	1	R	1
(i) salt bridge			
(ii) voltmeter			
(iii) anode			
(iv) cathode			
(b) Which of the following factors are responsible for corrosion?	1	R	2
(i) Temperature			
(ii) Moisture			
(iii) pH of solution			
(iv) All of these			
(c) Which of the following is not a typical use of surfactants?	1	R	3
(i) Detergents			
(ii) Emulsifiers			
(iii) Corrosion inhibitors			
(iv) Fuel combustion accelerators			
(d) A standard solution is a solution that has	1	R	4
(i) An unknown concentration			
(ii) A precisely known concentration			
(iii) A changing concentration			
(iv) A pH of 7			

(e) Which electrode is commonly used in a pH meter?	1	R	5
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(i) Calomel electrode	(ii) Glass electrode
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(iii) Platinum electrode	(iv) Zinc electrode
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Q.2 Attempt Any Three	[15]		
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(a) What is buffer solution? Explain its types each with two examples.	5	U	1
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(b) Describe the construction and working of a standard hydrogen electrode	5	U	1
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(c) Explain the Principles, Components, Working of conductivity meter.	5	U	5
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(d) What are the units of turbidity? Discuss the applications of a turbidity meter.	5	A	5
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Q.3 Attempt Any Three	[15]		
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(a) Explain the types of Measurement Errors.	5	U	4
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(b) What is standard deviation and what does it measure?	5	U	4
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(c) Describe Factors affecting Corrosion in detail.	5	R	2
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(d) What is corrosion? Explain concentration waterline corrosion.	5	U	2
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Q.4 Attempt Any Three	[15]		
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(a) Explain in detail application of adsorption.	5	A	3
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(b) Give differences between physical adsorption and chemical adsorption.	5	R	3
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(c) Explain the main methods of cathodic protection with the help of diagrams.	5	U	2
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(d) Describe the UV-Visible spectrophotometer instrumentation in detail, including the function of each component.	5	U	5
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