Graphic Era HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

End Term (Odd) Semester Examination November 2025

Roll no.....

Name of the Course: Diploma Engineering
Semester: I
Name of the Paper: Applied Chemistry-I
Paper Code: DTCH-103
Time: 3 hour Maximum Marks: 100

Note:

(i) All the questions are compulsory.
(ii) Answer any two sub questions from a, b and c in each main question.
(iii) Total marks for each question is 20 (twenty).
(iv) Each sub-question carries 10 marks.

Q1. (2X10=20 Marks)

a.Explain Modern Periodic Law and discuss the arrangement & characteristics of the modern periodic table.(CO1)

b.Define chemical bond and write short notes on any two (i.)Vander Waals Forces (ii.) Metallic bond (iii)Ionic Bond (CO1)

c.Explain and discuss the periodic properties electron affinity, atomic size, and ionization potential.(CO1)

Q2. (2X10=20 Marks)

a.Elucidate term Chemical kinetics and Rate of reaction also derive expression for half -life of first order reaction.(CO2)

b.Define Electrolysis and discuss its industrial applications.(CO2)

c.What is rusting of iron? Discuss the causes and methods to prevent.(CO2)

Q3. (2X10=20 Marks)

a.Explain colligative properties and discuss elevation in boiling point, depression in freezing point.(CO3)

b.Define solution and describe different ways to express concentration or strength of a solution (CO3)

c.Discuss pH and buffer solutions. Explain the role of buffers in maintaining pH (CO3)

Q4. (2X10=20 Marks)

a.Elucidate Ore dressing, enlist different techniques and describe the methods (CO4)

b.Define metallurgy,ore, mineral and differentiate between roasting and calcination (CO4)

c.Elaborate term Alloy, discuss purpose of alloying and describe any two alloys in detail (CO4)

Q5. (2X10=20 Marks)

a.Elaborate term Calorific value and discuss principle, construction and use of Bomb Calorimeter.(CO5)

b.What are the ideal characteristic of a good fuel and discuss any two ecofriendly fuels in detail?(CO5)

c.Describe lubricants, properties, uses and discuss the mechanisms of lubrication.(CO5)