Roll No.												

PRESIDENCY UNIVERSITY
BENGALURU
SCHOOL OF ENGINEERING

Make-Up Examination DECEMBER-2025

Semester: MK
Course Code: CHE1013
Course Name: Chemistry for Engineers
Program B.Tech,

Date: 26-12-2025
Time: 1.00 PM to 04:00 PM
Max Marks: 100
Weightage: 50%

Instructions:

(i) Read the question properly and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and Non-programmable calculators are permitted.

Part A

Answer all the Questions. Each question carries 3 mark. (10Qx3M=30M)

1. Write examples of three types of battery. (C.O.NO.1) [Knowledge Level]

2. What are different modes of charge transport in an electrochemical cell. (C.O.NO.1) [Knowledge Level]

3. Write the Nernst's Equation and define the terms involved. (C.O.NO.1) [Knowledge Level]

4. What are three important components of battery and mention it's role. (C.O.NO.1) [Knowledge Level]

5. What are renewable energy sources? Give two examples.

6. Mention three disadvantages of fuel cell. (C.O.NO.2) [Comprehension Level]

7. What is a semi-conductor? Mention the band gap of Silicon. (C.O.NO.2) [Comprehension Level]

8. Name two suitable anti-reflective coating materials for photovoltaic cell. (C.O.NO.2) [Comprehension Level]

9. Name any three methods of synthesis of nanomaterials and classify them as bottom-up and top-down. (C.O.NO.3) [Comprehension Level]

10. Give an example each for 0-D, 1-D and 2-D nanomaterial. (C.O.NO.3) [Comprehension Level]

Part B

Answer all the Questions. Each question carries 8 marks. (5Qx8M=40M)

11) Write the cell reactions and name important parts of Zn-carbon dry cell.
(C.O.NO.1) [Knowledge Level]

12) Explain the construction and cell reactions of Fuel cell.
(C.O.NO.2) [Comprehension Level]

13) List out the differences between a rechargeable battery and supercapacitor.
(C.O.NO.2) [Comprehension Level]

14) What is CNTs? List out their superior properties to use in Li-ion batteries and cancer chemotherapy treatments. (C.O.NO.3) [Application Level]

15) What are the main differences between bulk materials and nanomaterials? Correlate the size of the particles with their electrical, thermal, catalytic and optical properties.
(C.O.NO.3) [Application Level]

Part C

Answer all the Questions. Each question carries 10 marks. (3Qx10M=30M)

16) Describe the construction and cell reaction of Li-MnO_2 battery.
(C.O.NO.1) [Knowledge Level]

17) Explain Czochralski method of preparation of monocrystalline Silicon.
(C.O.NO.2) [Comprehension Level]

18) Explain the top down method of nanomaterial synthesis along with listing it's advantages and disadvantages. (C.O.NO.3) [Application Level]