MOBILES AND SMART WATECHES ARE BANNED (Follow Online test instructions)

RAMAIAH INSTITUTE OF TECHNOLGY, BANGALRORE – 560054

DEPARTMENT OF CHEMISTRY

SUB: ENGG. CHEMISTRY **CODE: CY22** **COURSE: II SEM B.E. (All branches)**

CIE TEST – 1 **TERM: 10-05-2021 to 30-08-2021** **MAX. MARKS: 30,** **TIME: 60 MIN.**
Credits: 3:0:0

Instructions: answer any two full questions. Each carries 15 marks

Q. NO	Question	Marks	Course outcomes
1	Explain the following characteristics of the battery (i) Capacity (ii) Voltage	3+2	CO1
	b) What is single electrode potential? A cell is constructed by coupling Zn-electrode dipped in 0.5 M $ZnSO_4$ and Ni-electrode dipped in 0.05 M $NiSO_4$. Write the cell representation, cell reactions and calculate EMF of the cell at 298 K. Given: standard reduction potentials of Zn and Ni are -0.76 and -0.25 V respectively.	5	CO1
	c) Explain the method of determining chloride content in water Argentometrically (Principle is not required).	5	CO4
2	a) Derive the Nernst equation for the following electrode reaction: $M^{n+} + ne^- \leftrightarrow M$	5	CO1
	b) Explain the construction, reactions and applications of Ni-MH_2 battery	5	CO1
	c) In a COD experiment, 32.5 cm^3 and 24.2 cm^3 of N/100 FAS solution were required for blank and back titration respectively. The volume of test sample used is 50 cm^3. Calculate the COD of the test sample.	5	CO4
3	a) Write the details of construction and electrode reactions of calomel electrode	5	CO1
	b) Define metallic corrosion? Explain the mechanism of *wet corrosion* of an iron rod by electrochemical theory.	5	CO2
	c) How hardness is caused? 25 cm^3 of the hard water sample consumed 10.6 cm^3 of 0.01M EDTA. Calculate the total hardness.	5	CO4
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