

# SEE MODEL QUESTION PAPER

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21CHE12

First Semester B.E. Degree Examination, March- 2022

## Engineering Chemistry

Time: 3 hrs.

Max. Marks: 100

*Note: answer any Five full questions, choosing ONE full question from each module.*

Q. No.	MODULE - 1	Marks
	a With the help of a neat sketch explain the construction and working of calomel electrode and list out its applications.	07
1	b For the cell, $\text{Cu}/\text{Cu}^{2+}(0.04\text{M})//\text{Ag}^{+}(0.1\text{M})/\text{Ag}$ , write the cell reaction and calculate the EMF of cell at 25 °C, If $E^0$ values of Cu and Ag electrodes are +0.34 V and +0.8V respectively.	07
	c Explain the construction, working of Li- ion battery. Mention its applications.	06
	a Describe the construction, working and applications of methanol-oxygen fuel cell.	07
2	b A cell is obtained by combining two Magnesium electrodes immersed in Magnesium sulphate solutions of 0.1M and 0.5M at 298 K. Represent the cell, cell reaction and hence calculate the EMF of the cell.	07
	c Enumerate the determination of pH of the given solution by using glass electrode.	
	<b>MODULE - 2</b>	
	a Outline the process of electroplating of chromium. Chromium cannot be used as anode, Justify the statement.	07
3	b Discuss electrochemical theory of corrosion taking iron as an example.	07
	c List the Technological importance of metal finishing.	06
	Explain the following types of corrosion with relevant examples.	
	a i) Differential metallic corrosion      ii) Water line corrosion	07
4	b Summarize the principle of cathodic protection and enumerate the processes with relevant sketch.	07
	c What is meant by electroless plating? Interpret the process of electroless plating of copper on PCB with relevant reactions.	06
	<b>MODULE - 3</b>	
5	a Demonstrate the determination of the calorific value of solid/ liquid fuel using a Bomb calorimeter.	07
	b	07

