NATIONAL INSTITUTE OF TECHNOLOGY, KURUKSHETRA

THEORY EXAMINATION, CHEMISTRY

Question Paper

Month and year of examination: **May- 2024**
Programme: **B. Tech 1st Year (2nd Semester)**
Subject: Chemistry (For ECE and EE)
Course coce: **CHIC103**
Number of questions to be attempted: **05**
Total no. of questions: **05**

Maximum marks: **50**
Time allowed: **03 hours**
Total no. of pages: **01**

Unless stated otherwise, the Symbols have their usual meanings in context with the Subject. If any data is missing assume yourself.

Question No.	Description	Marks
1	A) What is meant by 'Smart polymers? Explain any two of the following smart polymers. o Thermoresponsive polymers o pH-sensitive polymers o Photo-responsive polymers	5
	B) Write a note on - interpenetrating polymer network. OR Write a note on - Liquid-crystal polymers	5
2	A) Describe the construction, working principle, cell reactions, and applications of the Nickel-Metal hydride battery	5
	B) Why lithium-ion is a good material for batteries? Describe the construction and working principle of Li-MnO_2 cell	5
3	A) Describe the diagram, working, reactions, and applications of Polymer Electrolyte Membrane Fuel Cell (PEMF)	5
	B) What is oxidation corrosion and how does it take place? Describe the mechanism of oxidation corrosion.	5
4	A) What is stress corrosion? Explain its role in season cracking and caustic embrittlement.	5
	B) How do you control corrosion by anodic protection techniques?	5
5	A) Explain the principle and working of 'Dye Sensitized solar cells' with a schematic diagram.	5
	B) Compare the top-down and bottom-up processes for the synthesis of nanoparticles and give examples for each type (OR). What is fullerene? Write down synthetic methods and their applications in the energy sector.	5