

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2026

PhD-II Semester (CE)

COURSE CODE (CREDITS): 24P1WCE231 (3)

MAX. MARKS: 25

COURSE NAME: Life Cycle Analysis and Design for Environment

COURSE INSTRUCTORS: Dr. Rishi Rana Kalia

MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	CO	Marks
Q1	Environmental impact assessment within LCA can be performed using several methodological approaches. a) Compare three different impact assessment methods used in LCA (e.g., midpoint, endpoint, and damage-oriented approaches). b) Evaluate their strengths, limitations, and suitability for application in sectors such as manufacturing, energy production, and waste management.	CO-2	5 marks
Q2	Life Cycle Assessment (LCA) studies must follow internationally accepted ethical and methodological standards. Explain the Code of Good Conduct in LCA, highlighting its importance in ensuring transparency, reproducibility, and scientific credibility. Discuss three potential ethical dilemmas that may arise during industrial LCA studies and suggest mechanisms to address them.	CO-3	6 marks
Q3	Explain how system boundaries and functional units influence the reliability of LCA results.	CO-2	3 marks
Q4	A company manufacturing biodegradable food packaging made from agricultural residues claims that its product is environmentally superior to conventional plastic packaging. The company plans to conduct a Life Cycle Assessment to validate its claim before introducing the product into international markets. Based on the case study: Identify and explain the major stages of the Life Cycle Assessment that should be conducted to evaluate the environmental performance of this packaging material. Suggest appropriate data requirements and system boundaries for the study. Discuss how Life Cycle Impact Assessment (LCIA) could help identify environmental hotspots in the product life cycle.	CO-3	8 marks
Q5	Differentiate between the following LCA impact assessment approaches: Midpoint indicators and Endpoint indicators	CO-2 & 3	3 marks