

05/09

9:30 AM

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2026

B.Tech-VII Semester (OE)

COURSE CODE (CREDITS): 20B1WEC731 (3)

MAX. MARKS: 15

COURSE NAME: Automation and Robotics

COURSE INSTRUCTOR: EMP

MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.

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

(c) Use of calculator is not allowed

Q.No	Question	CO	Marks
Q1	Explain the key stages of the industrial product life cycle and analyze how each stage influences the strategies adopted for product development, marketing, and production.	CO-1	2
Q2	Trace the major milestones in the evolution of industrial revolutions with particular emphasis on automation. Analyze the impact of automation on employment patterns and industrial productivity.	CO-1	2
Q3	Explain the operating principle of a four-element Wheatstone bridge strain-gauge sensor. Compare the four-element and single-element configurations in terms of sensitivity, temperature compensation, accuracy, advantages, and limitations.	CO-4	3
Q4	Draw and explain the industrial automation pyramid, identifying its major hierarchical layers. Describe the role and functions of each layer and analyze how the interaction among these layers contributes to efficient, reliable, and integrated industrial automation.	CO-1	4
Q5	With a neat sketch, explain the construction and working principle of a mass-spring type accelerometer. Analyze the interaction of the mass, spring, and damping mechanism in response to acceleration, and explain how the resulting mass displacement is sensed and converted into a corresponding electrical output signal.	CO-4	4