JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

B.Tech-VIII Semester (OE)

COURSE CODE (CREDITS): 20B1WEC731 (3)   MAX. MARKS: 15

COURSE NAME: Automation and Robotics

COURSE INSTRUCTORS: EPN   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

Q.No	Question	CO	Marks
Q1	What are the primary advantages of industrial automation, and how does it improve operational efficiency?	CO-1	2
Q2	What are the key desirable characteristics of sensors? Additionally, define the terms accuracy and precision in the context of sensor performance.	CO-4	2
Q3	What are the various types of automation systems used in industries, and how do they differ in terms of functionality, level of flexibility, and areas of application? Additionally, how do factors such as production volume, customization needs, and operational efficiency influence the selection of a specific automation system?	CO-1	3
Q4	What are the various layers within the automation pyramid, and how do they contribute to the overall structure of industrial automation? Provide a sketch of the automation pyramid and offer a brief explanation of each layer, including its role and function in the automation process. Explain how these layers work together to achieve efficient and effective automation solutions in an industrial setting.	CO-1	4
Q5	Describe the working principle of a strain gauge sensor. Using a circuit diagram, explain how force measurement is performed using a single-element strain gauge and a four-element strain gauge sensor. Additionally, discuss the advantages of using a four-element strain gauge sensor over a single-element configuration.	CO-4	4