Question Paper Code	14163

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025

Sixth Semester

Artificial Intelligence and Data Science

20AIPC601 - ROBOTICS PROCESS AUTOMATION

Regulations - 2020

Duration: 3 Hours   Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)
Answer ALL Questions

		Marks	K–Level	CO
1.	RPA is primarily used to automate _____ and _____ tasks in businesses. (a) creative, dynamic (b) strategic, planning (c) repetitive, predictable (d) unique, innovative	1	K1	CO1
2.	Which of the following will define Robot? (a) Re-programmable (b) Multifunctional (c) Manipulator (d) All of the mentioned	1	K1	CO1
3.	Automated storage and retrieval systems (AS/RS) are primarily used for: (a) Data encryption (b) Material handling (c) Financial transactions (d) Air conditioning	1	K2	CO2
4.	Which of the following is a key safety feature in automated systems? (a) Emergency stop buttons (b) Protective barriers (c) Light curtains (d) All of the above	1	K1	CO2
5.	Which tool can be used for information retrieval in RPA? (a) Notepad (b) OCR Engine (c) Calculator (d) Paint	1	K1	CO3
6.	What activity is used to delete a row in an Excel data table? (a) Remove Data Row (b) Delete Column (c) Clear Data (d) Remove Duplicate Rows	1	K1	CO3
7.	Infrared sensors can be used for ------------------ (a) Object detection (b) Temperature measurement (c) Night vision applications (d) All of the above	1	K2	CO4
8.	Tactile sensors can be employed for -------------------- (a) Measuring distance (b) Detecting touch and force (c) Controlling sound waves (d) Capturing images	1	K2	CO4
9.	In task space interpolation, the robot moves based on: (a) A random motion pattern (b) Fixed angular positions of the joints (c) A predefined joint limit (d) The desired path of the end-effectors	1	K1	CO5
10.	What types of robots are commonly used in household applications? (a) Industrial robots (b) Humanoid robots (c) Service robots (d) Autonomous vehicles	1	K1	CO6

PART - B (12 × 2 = 24 Marks)
Answer ALL Questions

		Marks	K–Level	CO
11.	List the important components of PDD.	2	K1	CO1
12.	How the industries are benefited from RPA?	2	K1	CO1
13.	What are grippers and mention its uses.	2	K1	CO2
14.	How to build a data table using data scrapping?	2	K1	CO2
15.	What is information retrieval in the context of RPA, and why is it important?	2	K1	CO3
16.	How can anchors be used in PDFs to extract specific information?	2	K1	CO3
17.	Mention the factors influence the detection range of a proximity sensor.	2	K1	CO4
18.	What challenges arise when using range finders in outdoor environments?	2	K1	CO4
19.	State the concept of inverse kinematics and how it is different from forward kinematics.	2	K2	CO5
20.	What is the Jacobian matrix, and how is it used in robot kinematics?	2	K1	CO5
21.	What are the key features of Industry 4.0 in robotics and automation?	2	K1	CO6
22.	Summarize the impact of humanoid robots in future workplaces.	2	K2	CO6

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **14163**

PART - C (6 × 11 = 66 Marks)
Answer ALL Questions

23. a) Explain the importance of processes and flowcharts in RPA.   *11   K2   CO1*

    OR

    b) Summarize RPA implementation methodologies in detail.   *11   K2   CO1*

24. a) List the panels available in RPA tool and explain in detail.   *11   K2   CO2*

    OR

    b) Explain the role of sequences and flowcharts in advanced control flow in RPA.   *11   K2   CO2*

25. a) Illustrate RPA challenges faced while automating such tasks and suggest strategies to handle them effectively.   *11   K2   CO3*

    OR

    b) Explain the role of customization and debugging in automation. How can debugging tools help in improving automation scripts?   *11   K2   CO3*

26. a) Explain in detail the principle, working, and applications of ultrasonic sensors.   *11   K2   CO4*

    OR

    b) Explain in detail the key characteristics of sensors. Compare different types of proximity sensors (inductive, capacitive, and infrared).   *11   K2   CO4*

27. a) Explain the difference between forward kinematics and inverse kinematics with suitable examples.   *11   K2   CO5*

    OR

    b) Relate the key factors to consider while designing a trajectory planner for a robotic arm.   *11   K2   CO5*

28. a) Explain in detail about future applications of robotics in healthcare, agriculture, and space exploration.   *11   K2   CO6*

    OR

    b) Summarize on how robots contribute to modern military defence? Discuss their applications.   *11   K2   CO6*