



B.E DEGREE EXAMINATIONS: NOV/DEC 2022

(Regulation 2018)

Fifth Semester

ELECTRONICS & INSTRUMENTATION ENGINEERING

U18EIE0004 – Robotics and Flexible Automation

COURSE OUTCOMES

- CO1: Describe the major concepts, components and applications of robotics (K2)
 CO2: Analyze the transformation in different types of robots. (K4)
 CO3: Apply the fundamental concepts of robotics path planning & work space. (K3)
 CO4: Describe the technology and evaluation strategies (K2)

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

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|------------------------------------------------------------------------------------------------------|-----|-------------------|
| 1. List out the classification of robots | CO1 | [K ₂] |
| 2. What is mean by work space in the robotic system? | CO1 | [K ₂] |
| 3. State the repeatability of articulated robot. | CO1 | [K ₂] |
| 4. Define the speed of response in SCARA robot using in packing section. | CO2 | [K ₂] |
| 5. Define the important of payload capacity in robot | CO2 | [K ₂] |
| 6. What are the different types of actuators employed in robots? | CO3 | [K ₃] |
| 7. Define robot kinematics and list the types. | CO2 | [K ₂] |
| 8. Explain the transformation in robots | CO3 | [K ₂] |
| 9. List some important area arrangements in flexible manufacturing system to improve the production. | CO4 | [K ₄] |
| 10. Distinguish the flow time and cycle time in flexible automation system. | CO4 | [K ₄] |

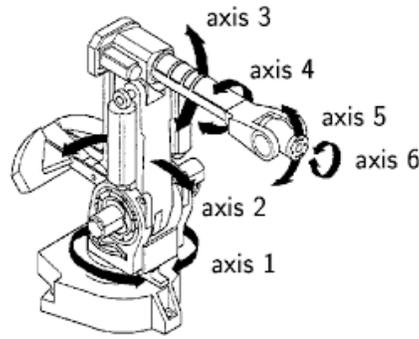
Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

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|----------------------------------------------------------------------------------|----|-----|-------------------|
| 11. Classify the various robotic motion in a paint shop at a automobile industry | 16 | CO1 | [K ₄] |
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12. Identify and explain the different types of robotic joints with suitable diagram 16 CO2 [K₄]



13. a) Discuss the different types of robotics control with suitable example 8 CO2 [K₂]
 b) Describe the various robotic path and list the merits and demerits 8 CO3 [K₂]

14. a) Develop a suitable work envelop for gantry pick and place robot 10 CO3 [K₃]
 b) Categorize End-Effector used in robot and list the suitable application. 6 CO1 [K₄]

15. a) List the most important computer control technique in flexible manufacturing system 8 CO4 [K₂]
 b) Explain the important points in robot selection procedure for forging industry 8 CO3 [K₂]

16. Describe the various types of layout configurations in flexible automation system. 16 CO4 [K₂]
