|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Roll No |  |  |  |  |  |  |  |  |  |  |  |

PRESIDENCY UNIVERSITY BENGALURU

SCHOOL OF ENGINEERING

SUMMER TERM EXAMINATION - AUGUST 2024

|  |  |
| --- | --- |
| **Semester : 4** | **Date : 6.8.2024** |
| **Course Code :MEC 3065** | **Time : 9.30 AM TO 12.30 PM** |
| **Course Name : Introduction to Robotics and Automation** | **Max Marks : 100** |
| **Program :B.Tech** | **Weightage :25%** |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Question paper consists of 3 parts.*
3. *Scientific and non-programmable calculator are permitted.*
4. *Do not write any information on the question paper other than Roll Number.*

|  |  |  |  |
| --- | --- | --- | --- |
| **PART A** | | | |
| **ANSWER ANY 5 QUESTIONS 5Q X 4M=20M** | | | |
| 1 | What are ultrasonic sensors? Explain. | (CO 1) | [Knowledge] |
|  | | | |
| 2 | What are the different applications of sensors in robotics. | (CO 2) | [Knowledge] |
|  | | | |
| 3 | With suitable diagram explain robot anatomy. | (CO 2) | [Knowledge] |
|  | | | |
| 4 | List and explain ten strategies for automation and process improvement. | (CO 3) | [Knowledge] |
|  | | | |
| 5 | What are the main differences between Fixed and Flexible automation ? | (CO 4) | [Knowledge] |
|  | | | |
| 6 | List and explain types of flexibility. | (CO 4) | [Knowledge] |
|  |  |  |  |
| 7 | Write a short note on robotic vision system. | (CO 4) | [Knowledge] |
|  | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **PART B** | | | |
| **ANSWER ANY 5 QUESTIONS 5Q X 10M=50M** | | | |
| 8 | A type of proximity sensor which is used to detect metallic objects and detect magnetic losses due to eddy current that are generated on a conductive surface by an external magnetic field. Identify the type of sensor and explain with suitable diagram. | (CO 1) | [Comprehension] |
|  | | | |
| 9 | What are eddy current proximity sensors? With suitable diagram explain the working of eddy current proximity sensors. | (CO 2) | [Comprehension] |
|  | | | |
| 10 | One of the major factors which determines how an industrial robot will move and what limits its workspace is its robot configuration. List and explain any one type of robot configuration. | (CO 3) | [Comprehension] |
|  | | | |
| 11 | What is an end-effector? Classify different types of end-effector. | (CO 3) | [Comprehension] |
|  | | | |
| 12 | List and explain Automation principles and stratagies. | (CO 4) | [Comprehension] |
|  | | | |
| 13 | What are the basic components Flexible manufacturing system? Explain. | (CO 4) | [Comprehension] |
|  |  |  |  |
| 14 | One of the major factors which determines how an industrial robot will move and what limits its workspace is its robot configuration.List and explain any one type of robot configuration. | (CO 4) | [Comprehension] |
|  | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **PART C** | | | |
| **ANSWER ANY 2 QUESTIONS 2Q X 15M=30M** | | | |
| 14 | With the help of suitable diagram list and explain different types of flexible manufacturing layouts. | (CO 1) | [Application] |
|  | | | |
| 15 | List and explain different types of flexible manufacturing systems. | (CO 3) | [Application] |
|  | | | |
| 16 | With suitable example list and explain different types of automation and compare. | (CO 4) | [Application] |
|  | | | |
|  | | | |