

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
 B.Tech Degree S4 (S, FE) Examination December 2024 (2019 Scheme)

**Course Code: MRT204****Course Name: SENSORS AND ACTUATORS**

Max. Marks: 100

Duration: 3 Hours

PART A*(Answer all questions; each question carries 3 marks)*

		Marks
1	What do you mean by an actuator?	3
2	Mention the applications of magnetic sensor.	3
3	Differentiate active and passive sensors with an example.	3
4	With the help of a neat sketch explain coil magnetic sensor	3
5	Justify the use of stepper motors in the NC machines.	3
6	Discuss magnetic sensor applications with suitable example.	3
7	Mention the application of a disk rotary actuator.	3
8	What is Coanda effect?	3
9	Explain the back pressure sensor	3
10	Explain the cone jet proximity sensor	3

PART B*(Answer one full question from each module, each question carries 14 marks)***Module -1**

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|----|----|--|---|
| 11 | a) | Differentiate between soft and hard magnetic materials with suitable examples. | 7 |
| | b) | Explain about coating technology | 7 |
| 12 | a) | Suggest an appropriate technique for sensing the wheel speed with magnetic sensors for automotive application. | 7 |
| | b) | Differentiate between diamagnetic, paramagnetic and ferromagnetic materials | 7 |

Module -2

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|----|----|--|---|
| 13 | a) | With a neat sketch explain the working of hall effect sensor | 7 |
| | b) | List the advantages, disadvantages and application of hall effect sensor | 7 |
| 14 | a) | Discuss in detail the disk type configurations of solenoid actuator | 7 |
| | b) | Explain the use of magnetic sensor to detect the crankshaft position in an automobile. | 7 |

Module -3

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|----|----|--|---|
| 15 | a) | Discuss about linear solenoids working principle and explain about its types | 7 |
| | b) | With necessary diagrams explain plunger solenoid | 7 |
| 16 | a) | Explain the long stroke solenoid fuel pump | 7 |
| | b) | Describe about the gasoline injectors in brief | 7 |

Module -4

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|----|----|--|----|
| 17 | a) | With a neat sketch, explain the construction and working principle of cylindrical rotary actuator. | 14 |
| 18 | a) | With a neat sketch, explain the construction and working principle of claw pole rotary actuator | 14 |

Module -5

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|----|----|--|---|
| 19 | a) | With an example explain about VR sensor noise | 7 |
| | b) | Explain the construction and working principle of resolver with diagram. Point out the advantages and disadvantages of resolvers | 7 |
| 20 | a) | Describe about the encoders and list the advantages, disadvantages and application of encoders | 7 |
| | b) | Explain the working of stepper motor with necessary sketches | 7 |
