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Reg No.: _____

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fourth Semester B.Tech Degree (S, FE) Examination January 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	Differentiate active and passive sensors with an example.	3
2	Classify actuators based on motion.	3
3	How do magnetic sensors work?	3
4	Sketch the VR sensor components.	3
5	Define linear actuators with examples.	3
6	Define Solenoid and mention any two applications.	3
7	State the limitations of cylindrical actuators.	3
8	Mention the application of a disk rotary actuator.	3
9	Recall the truth table for an EX-OR gate.	3
10	List the limitation of tachogenerators.	3

PART B

(Answer one full question from each module, each question carries 14 marks)

Module -1

- 11 a) List and explain the Static and Dynamic characteristics of sensor in detail. 14
- 12 a) Compare and contrast rotary and linear actuators with examples and applications. 14

Module -2

- 13 a) Discuss the working principle of Variable Reluctance Sensor and its applications. 14
- 14 a) Explain the use of magnetic sensor to detect the crankshaft position in an automobile. 14

Module -3

- 15 a) Explain the construction and working principle of fast acting disk solenoids. 14

- 16 a) Elucidate the use of electronic diesel fuel injectors with a neat sketch. 14

Module -4

- 17 a) Classify rotary actuators used in the design of mechatronic system and explain the principle of Disk Rotary Actuator with a neat sketch. 14
- 18 a) With a neat sketch, explain the construction and working principle of Cylindrical rotary actuator. 14

Module -5

- 19 a) Explain the construction and working principle of resolver with diagram. Point out the advantages and disadvantages of resolvers for position measurement. 14
- 20 a) Explain the construction, working principle and truth table of a bistable fluidic flipflop. 14
