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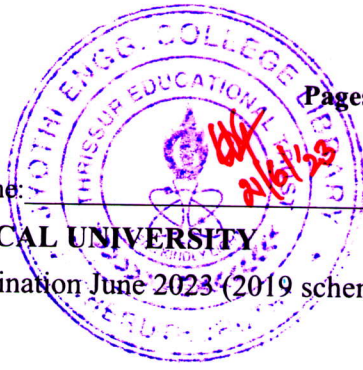
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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fourth Semester B.Tech Degree Supplementary Examination June 2023 (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	How are sensors classified?	3
2	With necessary diagram explain how the magnetic field is produced by a solenoid coil	3
3	Define solid state sensor	3
4	Write about rotary vane actuator	3
5	How does a magnetic sensor work?	3
6	What are the components present in a diesel fuel injector	3
7	List the features to be considered when designing a sensor	3
8	Illustrate briefly about cylindrical rotary actuator excitation electromagnetic circuit	3
9	Interpret about stepping motor. State its advantages and drawback.	3
10	Describe tachogenerators	3

PART B

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

Module -1

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|----|-----------------------------------------------------------------------|---|
| 11 | a) Classify sensors and actuators. Explain any two. | 8 |
| | b) Explain latching solenoids with moving magnets | 6 |
| 12 | a) Discuss in detail about Magnetic Materials Market and Applications | 8 |
| | b) Exemplify soft magnetic materials | 6 |

Module -2

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|----|----------------------------------------------------------|---|
| 13 | a) With neat diagram explain high performance VR sensors | 7 |
| | b) State and explain VR sensors with inserted magnets | 7 |
| 14 | a) Explain dual magnet sensor | 7 |
| | b) Evaluate about solid state sensors | 7 |

Module -3

- 15 a) Discuss about symmetrical analysis of electromagnetic devices 7
- b) Write a detailed technical note on the magnetic forces for linear actuators 7
- 16 a) With necessary diagrams explain plunger solenoid 7
- b) Elucidate ball solenoid 7

Module -4

- 17 a) Draw and explain disk rotary actuators 7
- b) Explain in short disk rotary actuator excitation electromagnetic circuit 7
- 18 a) Write about cylindrical rotary actuator 7
- b) Enlist the applications of disk rotary actuator 7

Module -5

- 19 a) Explain the fluidic devices 7
- b) Differentiate resolvers and encoders 7
- 20 a) With neat sketch explain proximity sensor types and mode of operation 7
- b) Explain interruptible jet sensor 7
