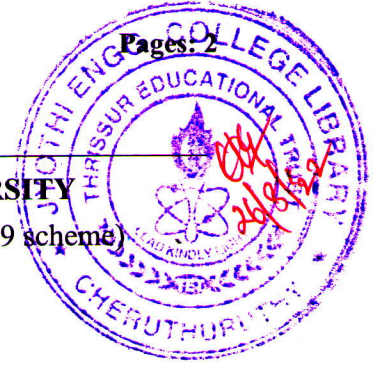


Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Fourth Semester B.Tech Degree Examination June 2022 (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 magnetic sensors detect	3
2	What is a hall effect sensor	3
3	Write about MEMS magnetic field sensor	3
4	Draw the block diagram of a sensor system and explain	3
5	What is a reductor sensor	3
6	Calculate the e.m.f produced by a disc rotating at 20 revs per second inside a solenoid of 1000 turns and length 1 m carrying a current of 1 A.	3
7	Plot the distributed view of the claw pole rotary actuator vs displacement	3
8	Appraise the design of disk rotary actuator	3
9	List the advantages and disadvantages of Numerical Control (NC) machines compared to conventional systems	3
10	How does back-pressure affect engine performance?	3

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

11	a) Describe coating technology	7
	b) Evaluate static analysis of a stepper motor	7
12	a) Summarise on Disk Solenoids	7
	b) Summarise on Ball Solenoids	7

Module -2

13	a) Analyse magnetic sensor	7
	b) Discuss about conventional VR sensors	7
14	a) Write short notes on the following (i) sensors with E shaped magnetic structure	7
	b) (ii) Sensors with U shaped magnetic structure	7

Module -3

- 15 a) Discuss in detail about pulse width modulation analysis for linear actuators 7
- b) With neat diagram explain disk solenoids 7
- 16 a) Explain optimization of fast-acting actuators 7
- b) Write a detailed note on diesel fuel injectors 7

Module -4

- 17 a) Write about disk rotary actuator permanent magnet 7
- b) Analyse claw pole rotary actuator 7
- 18 a) Write about the excitation electromagnetic circuit of claw pole rotary actuator 7
- b) With neat sketch explain 2D analysis of cylindrical rotary actuator 7

Module -5

- 19 a) What are the different types of stepper motors. Explain 7
- b) Classify CNC control systems 7
- 20 a) With necessary diagram explain ultrasonic fluidic sensor 7
- b) Explain backpressure sensor 7
