Q. Code:943431

Reg. No. | | | | | | | | | | | | | |

M.E./ M. TECH DEGREE EXAMINATIONS, MAY 2023

Second Semester

IR22201 – SENSORS, ELECTRICAL ACTUATORS AND DRIVES

(Regulation 2022)

TIME: 2 HOURS **MAX. MARKS: 60**

		RBT LEVEL
CO 1	Students will be able to identify proximity and displacement sensors and apply the same for automation.	**3**
CO 2	To understand and practice on different sensors and apply them for measuring parameters like pressure, force and temperature.	**3**
CO 3	Acquire the knowledge of signal conditioning and data acquisition.	**3**
CO 4	Graduates will able to select the suitable electrical actuators for the industrial automation.	**4**
CO 5	Acquire knowledge on selection of electrical drives for the specific actuators	**3**

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1	Passive Transducer required external power to function – True/False. Justify.	**1**	**3**
2	Eddy current sensor will be used for only conductive targets – True/False. Justify.	**1**	**3**
3	Recommend the suitable sensor to measure the stress in the railway tracks.	**2**	**3**
4	What type of sensor do you recommend for robotic grippers? Why?	**2**	**3**
5	What is the significance of Data Acquisition System?	**3**	**3**
6	How the filter and isolation circuits are used in industrial automation?	**3**	**3**
7	Why electrical actuators are preferred for most of the industrial applications?	**4**	**3**
8	Can piezo electric actuators be used for larger motion?	**4**	**3**
9	Distinguish between A.C & D.C motors.	**5**	**2**
10	Discuss the importance of drive circuit for controlling the motors.	**5**	**2**

PART- B (3 x 10 = 30 Marks)

		Marks	CO	RBT LEVEL
11(a)	How the static and dynamic characteristics of sensors affect the accuracy? Explain with example	(10)	1	3
	(OR)			
11(b)	Recommend the suitable sensor to detect the profile fault of a component. Explain the working principle of the same with a neat diagram.	(10)	1	3
12(a)	How he pressure variation of fluids is measured? Explain with suitable case study.	(10)	2	3
	(OR)			
12(b)	Suggest the suitable sensor for monitoring the temperature of industrial muffle furnace.	(10)	2	3
13(a)	How the operational amplifier used to control the signals in robots? Explain with a neat diagram.	(10)	3	3
	(OR)			
13(b)	How the automotive engine controller monitoring is implemented in an automobile? Explain the same with a neat sketch.	(10)	3	3

PART- C (1 x 10 = 10 Marks)

(Q.No.26 is compulsory)

		Marks	CO	RBT LEVEL
14	How the energy saving is accomplished in electric vehicles? Explain with a suitable case study.	(10)	5	3

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