D

05000MR202122301

Pages: 2

Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fourth Semester B.Tech Degree (S, FE) Examination January 2024 (2015 Scheme)

Course Code: MR202

Course Name: SENSORS AND ACTUATORS (MC)

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions. Each question carries 5 marks

1	Compare the working of inlet line, pressure line and return line filters.	5
2	Explain the component parts of a pneumatic system.	5
3	Draw the symbol of (i) Pressure relief valve. (ii) 4/2 valve. (iii) Check valve. (iv) 3/2 Poppet valve. (v) Rotary valve.	5
4	Which type of seal must be provided between moving surfaces? Explain any one such seal.	5
5	Explain, why a Fail up actuators is so termed?	5
6	Write a short note on signals and standards used in process control pneumatics.	5
7	How does Coanda effect apply to helicopters?	5
8	Explain the working of interruptible jet sensor.	5

PART B

Answer any three questions. Each question carries 10 marks

9	Which type of positive displacement pump will reduce the leakage? Explain the working of the same with neat diagram.	10
10	Explain the following, (i) Deliquescent drier. (ii) Pilot operated regulator.	10
11	With help of a neat circuit, demonstrate the working of a 4.2 push button actuated spring return valve to control the direction of a double acting cylinder.	10

12	(a)	Which type of motor will give highest torque? Explain the working of the same with neat diagram.	5
	(b)	Demonstrate briefly about meter out speed control.	5
13		With neat diagram explain the construction details of atypical cylinder.	10

PART C

Answer any two questions. Each question carries 15 marks

14	a)	Elucidate the concept of Flapper nozzle in detail.	7
	b)	Identify the device which will linearize the flapper nozzle. With neat diagram how it achieves the same?	8
15		Explain 2 term and 3 terms controllers. Compare the working of all 3 types of controllers.	15
16	(a)	What do bistable flip flops, OR, NOR, and EXOR gates mean? Explain employing suitable illustrations and truth tables.	12
	(b)	Brief out about applications of stepping motor.	3
17	a)	"It has the same general constructional details as small ac motors". Identify the Control device mentioned in the above statement. Explain with neat diagram and mathematical expressions. Compare its operation with ac motors.	10
	b)	Explain about Inductosyn.	5