

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

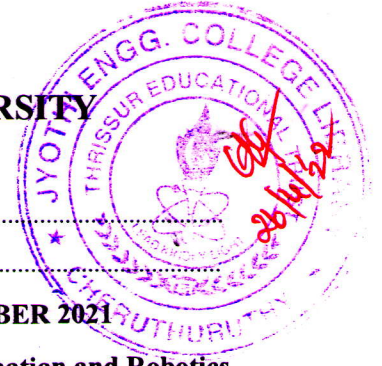
08 PALAKKAD CLUSTER

Q. P. Code: IAR0821151B-I

(Pages: 2)

Name:

Reg. No:



FIRST SEMESTER M.TECH. DEGREE EXAMINATION DECEMBER 2021

Branch: Mechanical Engineering

Specialization: Industrial Automation and Robotics

08ME6351(B) Fluid Power Automation

Time:3 Hours

Max. Marks: 60

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q.No.	Module 1	Marks
1.a	List the advantages of pneumatic power system.	3
	Answer b or c	
b	Explain the working of cylindrical cushioning with a neat sketch.	6
c	What is vane pump? Explain vane pump with suitable diagram.	6
Q.No.	Module 2	
2.a	What is the function of FRL unit in pneumatic system?	3
	Answer b or c	
b	With neat sketch explain about different types of actuating device used in pneumatic system.	
c	With a neat sketch explain the control of a double acting cylinder using actuators.	6
Q.No.	Module 3	
3.a	What are the different methods of actuation used in fluid power system?	3
	Answer b or c	
b	Design a pneumatic circuit and explain the working of a 3/4 way DCV valve.	6

c With the help of a neat sketch explain the working of spool valve. 6

Q.No.

Module 4

4.a What is meant by Pulse Width Modulation? 3

Answer b or c

b Explain about PID control? With the help of a graph describe the performance characteristics of PID controller. 6

c What is the effect of root locus method in analog control system? Sketch the Control configurations with the following conditions. 6

(a) Cascade compensation.

(b) Feedback compensation.

(c) Inner-loop feedback compensation.

Q.No.

Module 5

5.a Explain the importance of timers in PLC. 4

Answer b or c

b What is PLC? Explain about the architecture of PLC with a neat sketch. 8

c Explain the steps involved in the implementation of Closed Loop Control System using PLC. 8

Q.No.

Module 6

6.a Write any four applications of spool valves. 4

Answer b or c

b What are the basic elements of a direction control valve? Explain its application in paper industry. 8

c Explain with a neat circuit diagram, the counter balance valve application. 8