

Roll No.: .....

## SGT UNIVERSITY

### END TERM THEORY EXAMINATION JULY-2022

Faculty/College of Study:	Engineering & Technology	Year/Semester:	6 <sup>th</sup> Semester
Program:	B. Tech. (ME)	Duration:	03:00 Hrs
Course/Subject:	Pneumatics & Control	Maximum Marks:	60
Course/Subject Code:	13030654	Batch:	2019

**Instructions:-**

1. Write Your Roll No. on the Question Paper.
2. Candidate should ensure that they have been provided correct question paper. Complaint(s) in this regard, if any should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. All Questions are compulsory. Marks are indicated against each question.
4. Illustrate your answer with diagram wherever required.

### SECTION-A

#### (Very Short Answer Type Questions)

**Note: All Questions are compulsory: -**

**[12X1=12 Marks]**

S. No.	Question	Marks Allotted
1	Define Pneumatics.	1
2	Give significance of drawing pneumatic circuits.	1
3	What is Shuttle valve?	1
4	What is function of compressor?	1
5	What do you mean by Automation?	1
6	Name two safety sensors.	1
7	Illustrate joint integrated motion.	1
8	What is Potentiometer?	1
9	What is feedback loop?	1
10	Elaborate the function of aftercoolers in pneumatics.	1
11	What does FRL stand for?	1
12	What is Fluid Power?	1

**SECTION-B**  
**(Short Answer Type Questions)**

**Note: All Questions are compulsory: -**

**[4X2=8 Marks]**

S. No.	Question	Marks Allotted
13	List out some applications of Pneumatics.	2
14	What are different types of control system?	2
15	What is inverse kinematics explain?	2
16	On what criteria Robots are selected for performing tasks assigned?	2

**SECTION-C**  
**(Descriptive Answer Type Questions)**

**Note: All Questions are compulsory: -**

**[4X4=16 Marks]**

S. No.	Question	Marks Allotted
17	Draw the symbols of i) Compressor ii) 5/3 Valve iii) Filter iv) Pressure Relief Valve  <b>OR</b> Discuss construction and working of each component in FRL.	4
18	Explain the meaning of Exoskeleton, also give two examples.  <b>OR</b> Give the difference between a path and a trajectory.	4
19	Explain Langrangian method.  <b>OR</b> Explain the construction and working of PD Controller.	4
20	Identify the robot assisting needling system.  <b>OR</b> Differentiate between two finger exo skeleton and an index finger exo skeleton.	4

**SECTION-D**  
**(Long Answer Type Questions)**

**Note: All Questions are compulsory: -**

**[4X6=24 Marks]**

<b>S. No.</b>	<b>Question</b>	<b>Marks Allotted</b>
21	Give basic principle of Air control valves with three examples. <b>OR</b> What are the major actuation methods? Explain any three.	6
22	Derive the kinematic design for three finger exo skeleton. <b>OR</b> What is the Trajectory planning for a robot for pick and place the objects?	6
23	Explain the future applications of Robot in industry and medical field. <b>OR</b> Give the classification of robot by control system.	6
24	Which are the sensors used in robots for sensing position and force? Mention an application for each where these sensors are used. <b>OR</b> Illustrate the difference between linear and rotary actuation mechanisms using hydraulic drive.	6