MAHATMA GANDHI INSTITUTE OF TECHNOLOGY (Autonomous)

M.Tech. I Semester End Examinations

Model Question Paper

MR-22

Course Title: Applied industrial Pneumatics **Course Code: MT101PC**

Time : 3 hours Max. Marks : 60

Note: Answer ALL Questions

Part-A (10 x 1= 10 Marks)

Q. No.	Stem of the question	M	L	CO	PO
	Unit-I				
1.a	List out the merits of fluid power to increase the Productivity in manufacturing industries	1	2	1	2
1.b.	Name any Two Direction control valves used in Pneumatic systems and draw their symbols	1	1	1	1
	Unit-II				
1.c	Define Actuator and Explain different types of Pneumatic Actuators	1	1	2	1
1.d	List out different types of pressure control valves used in pneumatic systems	1	2	2	2
	Unit-III				
1.e	Explain the difference between pneumatic and electro-pneumatic systems	1	2	3	2
1.f	List out different types of Fluid logic elements	1	2	3	1
	Unit-IV				
1.g	Explain the advantages of brushless DC servo motors	1	2	4	2
1.h	List out the advantages of stepper motors	1	2	4	1
	Unit-V				
1.i	Write the applications of PLC	1	1	5	1
1.j	List out different keywords used in Pneumonic Programming	1	2	5	2

Part-B (5 x 10=50 Marks)

Q. No.	Stem of the question	M	L	CO	PO
	Unit-I				
2. a)	Write the advantages and applications of pneumatic systems	5	1	1	1
b)	Function of the Airline installation setup used in industrial pneumatic systems	5	4	1	2
	OR				
2. c)	Describe the working of Twin lobe air compressor with a neat sketch	5	3	1	2
d)	Classify different types of Air Compressors	5	2	1	1
	Unit-II				
3. a)	Describe the working of a reciprocating air compressor with a neat sketch	5	3	2	3
b)	Explain different types of Flow control valves used in Pneumatic Systems	5	2	2	2
	OR				
3. c)	Build and Explain the circuit diagram to control and operate Double acting pneumatic cylinder using 5/2 Push button DCV	5	3	2	3
d)	Compare Pneumatic systems with Hydraulic systems	5	4	2	1
	Unit-III				
4. a)	Explain the use of PLC in controlling the pneumatic systems	5	2	3	2
b)	Explain the use of Fluid logic elements in pneumatic systems to be as direction control valves	5	2	3	2
	OR				
4. c)	Build and explain the circuit diagram to control and operate single acting pneumatic cylinder using 3/2 Push button DCV	5	3	3	3
d)	Explain the working of a Lubricator used in Pneumatic system	5	2	3	2
	Unit-IV				
5. a)	Describe the working of Brushless D.C Servo motor with a neat sketch and list out its applications	5	3	4	3
b)	Explain the working of Full step stepper with a neat sketch and write the applications of stepper motor.	5	3	4	2
	OR				
5. c)	Explain the use of Hall effect sensor in BLDC motor	5	2	4	2
d)	Illustrate the working of Micro-step stepper motor with a neat sketch	5	3	4	3
	Unit-V				
6. a)	Explain the working of programmable logic controller with a neat sketch	5	2	5	2
b)	Describe different types of programming methods used in PLC.	5	3	5	3
	OR				
6. c)	Function of timers and counters in PLC operation	5	4	5	2
d)	Explain the different components of PLC and their function	5	2	5	2

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

MAHATMA GANDHI INSTITUTE OF TECHNOLOGY
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MR-22

M.Tech. I Semester End Examinations

Model Question Paper

Course Title: Applied Industrial Hydraulics **Course Code: MT102PC**

Time : 3 hours Max. Marks : 60

Note: Answer ALL Questions

Part-A (10 x 1 = 10 Marks)

Q. No.	Stem of the question	M	L	CO	PO
	Unit-I				
1.a	Define fluid	1	1	1	1
1.b.	What are the applications of fluid power	1	3	1	1
	Unit-II				
1.c	List out types of hydraulic system	1	4	2	2
1.d	What are the applications of pumps	1	3	2	3
	Unit-III				
1.e	What is hydraulic circuit	1	2	3	1
1.f	List out the functions of hydraulic motor	1	3	3	2
	Unit-IV				
1.g	What is meant by electro-hydraulic system	1	2	4	3
1.h	Sketch proportional valve	1	1	4	4
	Unit-V				
1.i	What is trouble shooting in hydraulics	1	4	5	5
1.j	List out the hydraulic elements getting into trouble shooting	1	6	5	3

Part-B (5 x 10=50 Marks)

Q. No.	Stem of the question	M	L	CO	PO
	Unit-I				
2. a)	What is the importance of Industrial hydraulics	5	1	1	1
b)	Draw symbolic representation of any five hydraulic elements	5	2	1	3
	OR				
2. c)	Mention the advantages of fluid power	5	3	1	2
d)	How to represent the motors in symbols and its uses in hydraulics	5	2	1	3
	Unit-II				
3. a)	How do you classify the pumps	5	4	2	4
b)	What is the role of the valves in hydraulic systems	5	5	2	3
	OR				
3. c)	Describe various hydraulic accessories used in hydraulic system	5	1	2	1
d)	What are the advantages of hydro-pneumatic system	5	2	2	2
	Unit-III				
4. a)	Describe vane motor	5	4	3	3
b)	Differentiate between hydraulic and pneumatic system	5	3	3	4
	OR				
4. c)	Discuss on hydraulic circuit usage in machining applications	5	1	3	2
d)	Write a short note on hydraulic fluids	5	2	3	3
	Unit-IV				
5. a)	Differentiate between hydraulic and electro hydraulic systems	5	3	4	2
b)	What is servo valve and explain it.	5	2	4	3
	OR				
5. c)	What are the features of proportional valves	5	4	4	3
d)	Write a note on cartridge valves	5	6	4	1
	Unit-V				
6. a)	What are the troubles occurs in hydraulic cylinder	5	4	5	1
b)	What are the remedial measures for troubles in pumps	5	3	5	2
	OR				
6. c)	What are the troubles occurs in valves	5	3	5	3
d)	Explain different methods used in trouble shooting of hydraulic system	5	4	5	12

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MAHATMA GANDHI INSTITUTE OF TECHNOLOGY
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M.Tech. I Semester End Examinations
(Model Question Paper)

MR-22

Course Title: Industrial Electrical & Electronics **Course Code: MT111PE**
Time: 3 hours Max. Marks: 60

Note: Answer ALL Questions
Part-A (10 x 1 = 10 Marks)

Q. No.	Stem of the Question	M	L	CO	PO
	Unit-I				
1. a)	What is the necessity of starter for any motor?	1	1	1	1
1. b)	What are the applications of Induction Generator	1	1	1	1
	Unit-II				
1. c)	List out the advantages of Doubly Fed Induction Generator.	1	1	1	1
1.d)	What is the principal of switched reluctance motor?	1	2	1	2
	Unit-III				
1. e)	List out the applications of Linear Induction motor.	1	1	1	1
1.f)	What is the difference between Linear Induction motor and Linear Synchronous Motor?	1	1	2	1
	Unit-IV				
1. g)	What is an electric drive?	1	1	2	1
1.h)	What are the advantages of Closed loop control?	1	1	2	1
	Unit-V				
1. i)	What is the difference between semiconductor devices and Power Semiconductor Devices?	1	2	2	1
1.j)	What are the applications of avalanche photo diodes?	1	1	2	1

Part-B (5 x 10=50 Marks)

Q. No.	Stem of the Question	M	L	CO	PO
	Unit-I				
2. a)	Starting from fundamentals derive the expression for Armature Torque Equation of DC Motor?	5	2	1	1
2. b)	Explain The characteristics of ac Motor.	5	3	1	1
	OR				
2. c)	What are the self-excitation requirements of Induction Generator?	5	2	1	1
2.d)	List out various types of Special purpose machines.	5	1	1	1
	Unit-II				
3. a)	Explain the Power flow in Doubly Fed Induction Machine?	5	3	1	3
3. b)	List out the advantages of BLDC Motor.	5	3	1	3
	OR				
3. c)	Explain the operation of Cascaded doubly fed induction machine?	5	2	1	1
3.d)	List out the applications of Switched Reluctance Motor.?	5	2	1	1
	Unit-III				
4. a)	Explain the construction of Linear Induction Machine.	5	2	2	2
4. b)	Write short note on Magnetic Materials.	5	2	2	2
	OR				
4. c)	Explain the speed control of Permanent Magnet DC Motor.	5	3	1	1
4.d)	Explain the Construction of PM synchronous machine?	5	2	1	1
	Unit-IV				
5. a)	List out the advantages of electrical drives	5	2	2	2
5. b)	Explain Nature and Classification of Load Torques?	5	2	2	2
	OR				

5. c)	Explain the Components of electrical drives?	5	4	2	2
5.d)	Explain the Closed Loop Current –limit control of an Electric Drive?	5	3	2	2
Unit-V					
6. a)	Explain the Characteristics of PN Junction Diode?	5	2	2	2
6. b)	Write Short Note on AC power supplies?	5	4	2	2
OR					
6. c)	Write short Note on avalanche photo diodes?	5	2	2	2
6.d)	What is the need for A/D Conversion? Explain with an Example.	5	5	2	2

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MR-22

Course Title: Instrumentation & Sensor Technology **Course Code: MT114PE**
Time: 3 hours Max. Marks : 60

Note: Answer ALL Questions
Part-A (10 x 1 = 10 Marks)

Q. No.	Stem of the Question	M	L	CO	PO
	Unit-I				
1. a)	What is impedance loading and impedance matching?	1	2	1	1
1. b)	Explain Resolution and Sensitivity.	1	1	1	1
	Unit-II				
1. c)	Write a short note on Bimetallic Strip Element for Temperature measurement.	1	1	2	1
1. d)	Mention the types of Proximity sensors along with their premier functionality.	1	2	2	2
	Unit-III				
1. e)	Define Gauge Factor of a Resistance Strain Gauge.	1	2	3	1
1. f)	Explain thermoelectric phenomena using a circuit diagram.	1	3	3	2
	Unit-IV				
1. g)	Indicate the basic characteristics of an Operational Amplifier.	1	2	4	2
1. h)	What is multiplexer and demultiplexer.	1	2	4	1
	Unit-V				
1. i)	Explain the principle of Feedback system	1	2	5	1
1. j)	What are the merits of Magnetic Tape recorders.	1	3	5	1

Part-B (5 x 10=50 Marks)

Q. No.	Stem of the Question	M	L	CO	PO
	Unit-I				
2. a)	Explain the basic and auxiliary elements of an instrumentation and measurement system by taking an example of a Bourdon gauge.	5	1	1	2
2. b)	What are the types of Errors in measurement systems.	5	2	1	12
	OR				
2. c)	List out the static and Dynamic Characteristics of the measurement system.	5	2	1	2
2. d)	Draw and explain the frequency response of First and second order systems in detail.	5	2	1	2
	Unit-II				
3. a)	Explain the various Force measurement transducers.	5	2	2	1
3. b)	Explain the working and construction of Turbine Flow Meter.	5	3	2	1
	OR				
3. c)	Explain the working of Inductive proximity sensors along with their merits and demerits.	5	2	2	2
3. d)	Explain the various transducers used for Torque measurement.	5	1	2	2
	Unit-III				
4. a)	Explain the fundamental difference between Seebeck, Peltier and Thompson effects. How do you classify the thermocouples ?	5	3	3	2
4. b)	Explain the construction and operation of LVDT along with its applications.	5	4	3	3
	OR				
4. c)	What are the differences between Thermistors, Thermocouples and	5	4	3	4

	RTD's.				
4. d)	Explain the functionality of different piezo electric transducers with mathematical equations.	5	5	3	4
Unit-IV					
5. a)	Write notes on pneumatic and electrical data transmission elements.	5	3	4	5
5. b)	List down the important features of LCD's and LED's and compare them.	5	3	4	4
OR					
5. c)	How is an opamp used as a/an (i) inverting and non-inverting amplifier. (ii) summing amplifier. (iii) integrator. (iv) differentiator (v) comparator.	5	4	4	3
5. d)	Explain the principle of operation of a dot matrix printer. What are the main advantages of a dot matrix printer over other printers.	5	3	4	2
Unit-V					
6. a)	Explain the operating principle of a true RMS voltmeter. Compare a true RMS voltmeter with an ac voltmeter.	5	3	5	2
6. b)	Write a short note on Analogue and Digital Display devices.	5	3	5	12
OR					
6. c)	Explain the types of feedback in control systems with the help of diagrams.	5	3	5	2
6. d)	Explain the concept of Magnetic Tape Recorder with a circuit diagram.	5	3	5	2

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