

HALL TICKET NUMBER

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PACE INSTITUTE OF TECHNOLOGY & SCIENCES::ONGOLE
(AUTONOMOUS)

IV B.TECH I SEMESTER END REGULAR EXAMINATIONS, NOV-2022
MECHATRONICS
(ME Branch)

Time: 3 hours

Max. Marks: 60

Note: Question Paper consists of Two parts (Part-A and Part-B)

PART-AAnswer **all** the questions in Part-A (5X2=10M)

Q.No.	Questions	Marks	CO	KL
1.	a) What are digital signals?	[2M]	1	1
	b) Define logic gate. List logic gates	[2M]	2	1
	c) Performance terminology of sensors	[2M]	3	1
	d) Interfacing in PLC's	[2M]	4	1
	e) Sensors used in engine management system	[2M]	5	1

PART-BAnswer **One Question from each UNIT (5X10=50M)**

Q.No.	Questions	Marks	CO	KL
UNIT-I				
2.	a) What are the key elements of mechatronics system?	[5M]	1	1
	b) Discuss briefly about Electronic control input devices.	[5M]	1	4
OR				
3.	a) Explain what is meant by sequential control with a suitable example.	[5M]	1	2
	b) Illustrate Oscilloscope with neat sketch	[5M]	1	2
UNIT-II				
4.	What are the advantages of using microprocessor in place of mechanical controller for a carburetor in automobile	[10M]	2	1
OR				
5.	a) What are the different addressing modes of 8051 microcontroller?	[5M]	2	1
	b) Discuss about various Bit handling instructions in detail.	[5M]	2	6
UNIT-III				
6.	a) Design a circuit that can be used to start a motor and then after a delay of 100 sec start a pump. When the motor is switched off there should be a delay of 10 sec before the pump is switched off.	[5M]	3	4
	b) Explain the different operations carried out by a PLC in data handling.	[5M]	3	2
OR				
7.	a) What is various Mnemonics used in PLC? Explain with a sample program	[5M]	3	1
	b) What is the need of a counter? Show the basic counting program using a ladder diagram?	[5M]	3	2
UNIT-IV				
8.	a) Describe the principle, construction and working of LVDT with a neat diagram.	[5M]	4	4
	b) What do you mean by light sensors? Explain its types.	[5M]	4	2

OR					
9.	a)	Explain the variable reluctance tacho generator with a neat sketch	[5M]	4	2
	b)	Explain the construction and working principle of a strain gauge load cell.	[5M]	4	2
UNIT-V					
10.	a)	With a neat diagram, describe the working of the solenoid.	[5M]	5	4
	b)	Describe the working of an AC servo motor.	[5M]	5	4
OR					
11.		Discuss the mechatronic design of pick-and-place robot with a neat control circuit.	[10M]	5	4
