PAPER ID-310769

Subject Code: KME052

Roll No: | | | | | | | | | | | | | |

B TECH
(SEM-V) THEORY EXAMINATION 2020-21
MECHATRONICS SYSTEM

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

Q.no.	Question	Marks	CO
a.	Define mechatronics systems.	2	1
b.	What is bionics also write their applications.	2	1
c.	What is Stepper Motors?	2	3
d.	What are Basic elements of Mechatronic Systems?	2	1
e.	What is Electro Mechanical Actuation?	2	3
f.	What are avionics also write their applications	2	1
g.	Write Scope and Application Areas of Mechatronics.	2	1
h.	What is Solenoid Operated Direction Control Valves?	2	3
i.	Define counters with an example.	2	5
j.	What is an accumulator?	2	3

SECTION B

2. Attempt any *three* of the following: 3 x 10 = 30

Q.no.	Question	Marks	CO
a.	Explain the working LVDT and also write its applications.	10	2
b.	Write Principle of working and application of Inductive Proximity sensor.	10	2
c.	Explain principle and working of ultrasonic sensor.	10	2
d.	Write the static and dynamic characteristics of sensor?	10	2
e.	Explain Photoelectric and Hall effect. State their application as sensor.	10	2

SECTION C

3. Attempt any *one* part of the following:

Q.no.	Question	Marks	CO
a.	Explain the working of automatic car park system.	10	4
b.	Explain use of PLC for extending and retracting pneumatic pistons and their different combinations.	10	4

4. Attempt any *one* part of the following:

Q.no.	Question	Marks	CO
a.	State principle of working of following motors: i) 3 Phase Induction Motor ii) Stepper motors iii) Servo Motors	10	3
b.	What is Electro Mechanical Actuation? What is Solenoid Operated Direction Control Valves?	10	3

5. Attempt any *one* part of the following:

Q.no.	Question	Marks	CO
a.	Define timers in PLC ladder logic with an example.	10	5
b.	Explain the working of PLC and also define scan cycle.	10	5

6. Attempt any *one* part of the following:

Q.no.	Question	Marks	CO
a.	What is latching or holding? Write the ladder program for latching using single push button for on and off the output.	10	5
b.	Write the ladder program for Traffic Light for instruction given below	10	5

Time in seconds	**Red**	**yellow**	**green**
0-15	on	off	off
15-20	on	on	off
20-35	off	off	on
35-40	off	on	on
>=40 timer reset and cycle repeat			

7. Attempt any *one* part of the following:

Q.no.	Question	Marks	CO
a.	How does Domestic washing machine work?	10	4
b.	Explain the operations of bottling plant.	10	4