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BTECH
(SEM V) THEORY EXAMINATION 2023-24
INDUSTRIAL AUTOMATION AND CONTROL

TIME: 3 HRS

M.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.	What do you mean by Industrial Automation?	2	1
b.	What are the advantages of Industrial Automation?	2	1
c.	What are the difference between relay and contactors?	2	2
d.	Realize OR gate in Ladder Programming?	2	2
e.	Explain MATH instruction in PLC programming.	2	3
f.	What do you mean by I/O's in PLC?	2	3
g.	What are the benefits of HART protocol?	2	4
h.	What are the advantages and disadvantages of 4-20 mA loops?	2	4
i.	What do you mean by dew Point?	2	5
j.	Explain absolute humidity and relative humidity.	2	5

SECTION B

2. Attempt any three of the following:

10 x 3 = 30

a.	What are the major functions of a SCADA System?	10	1
b.	What do you mean by DOL starter? Explain DOL circuit implementation using contactor.	10	2
c.	Explain the concept of Sourcing and sinking in PLC.	10	3
d.	Explain HART Protocol and its working in detail.	10	4
e.	Explain components of a Pneumatic system with the help of proper block diagram.	10	5

SECTION C

3. Attempt any one part of the following:

10 x 1 = 10

a.	What do you mean by SCADA? Explain its components also.	10	1
b.	Explain the Components of PLC with the help of Block diagram.	10	1

4. Attempt any one part of the following:

10 x 1 = 10

a.	What do you mean by Contactor? Explain its Construction and Working.	10	2
b.	Explain the history and current trends of PLC.	10	2

5. Attempt any one part of the following:

10 x 1 = 10

a.	Explain Different types of programming language for PLC.	10	3
b.	Explain timers instructions in PLC with their timing diagrams.	10	3

6. Attempt any one part of the following:

10 x 1 = 10

a.	Explain Working of Inductive sensor and Capacitive sensor.	10	4
b.	Explain different modes of communication for HART devices.	10	4

7. Attempt any one part of the following:

10 x 1 = 10

a.	Explain Working of different types of Compressor used in pneumatic system.	10	5
b.	Realize AND & OR gate using 2/2 or 3/2 valve.	10	5