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BTECH
(SEM VIII) THEORY EXAMINATION 2023-24
AUTOMATION AND ROBOTICS

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.	List the type of automation.	2	1
b.	What are the applications of fluid power in the automotive industry?	2	1
c.	Write the applications of transfer machines.	2	2
d.	What is an automated feeding system?	2	2
e.	Name the important specifications of an industrial robot.	2	3
f.	Write about origin of robot.	2	3
g.	What are pneumatic and hydraulic actuators in robotics?	2	4
h.	What is walkthrough method of robot programming?	2	4
i.	What are machine loading and unloading applications?	2	5
j.	Give the advantages of robot arc welding.	2	5

SECTION B

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

a.	Give the benefits of automation. Write the practical significance of automation in today's age.	10	1
b.	With diagram explain single station assembly machine.	10	2
c.	Write short notes on: (i) Joint notation scheme (ii) Work volume	10	3
d.	With suitable illustration explain working on external and internal grippers.	10	4
e.	Explain the working of Force and Torque sensor in detail with advantages and disadvantage	10	5

SECTION C

3. Attempt any one part of the following: 10 x 1 = 10

a.	Explain advantages and disadvantages of Pneumatic over the hydraulics.	10	1
b.	Discuss in detail the role of PLC in automation and robotics.	10	1

4. Attempt any one part of the following: 10 x 1 = 10

a.	How you will configurations of automated flow line? Describe.	10	2
b.	Explain the analysis of transfer lines with no internal parts storage.	10	2

5. Attempt any one part of the following: 10 x 1 = 10

a.	Sketch and explain the four basic robot configurations classified according to the coordinate system.	10	3
b.	Explain co-ordinate frame assignment of DH representation. List the steps involved in DH convention.	10	3



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6. Attempt any one part of the following: 10 x 1= 10

a.	Justify whether the following statement is true or false. Degrees of freedom depend upon the number of actuators used in a robot.	10	4
b.	Explain working principle, salient features and applications of A.C. and D.C. Servo motor as robot drive system.	10	4

7. Attempt any one part of the following: 10 x 1= 10

a.	Write a VAL robot program to perform pick and place operation on the conveyer system	10	5
b.	Explain with neat sketch In-Line Robot Cell and Mobile Robot Cells.	10	5

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