Subject Code: KOE091

PAPER ID-420316

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

BTECH
(SEM VIII) THEORY EXAMINATION 2021-22
AUTOMATION AND ROBOTICS

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

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

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

Q.no	Questions	Marks	CO
(a)	Mention objective of the Robotics.	2	2
(b)	What is the need of Automation?	2	1
(c)	What do you mean by accuracy of a Robot?	2	2
(d)	Differentiate between Automation and Robotics.	2	1
(e)	Discuss how to select the Robotic drive?	2	3
(f)	What are the functions of a Hydraulic fluid?	2	3
(g)	Discuss the applications of Robotic system in assembly line.	2	4
(h)	State the advantages of Rectangular Coordinates.	2	4
(i)	Write a short note on Robot vision?	2	5
(j)	Explain the working of an Electromagnetic Relay.	2	5

SECTION B

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

Q.no	Questions	Marks	CO
(a)	Explain the various drive systems for robot end effectors. How are grippers classified? Explain any one of them.	10	5
(b)	Differentiate between online and offline programming. What are the advantages of offline programming over online programming?	10	2
(c)	Describe in detail about any one of the following. (i) CNC Machine tools. (ii) Robot vision.	10	3
(d)	Enlist the laws of robotics. Discuss various types of robots in detail along with their applications.	10	4
(e)	Discuss in detail the integration of mechanical systems with electronics and computer system.	10	1

SECTION C

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

Q.no	Questions	Marks	CO
(a)	What are the various types of Power sources used in robots? Discuss their relative merits and demerits.	10	5
(b)	Describe about the various levels of Robot Programming.	10	2

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

Q.no	Questions	Marks	CO
(a)	Discuss about the Trajectory Planning and Control in Robot Coordinate Systems.	10	1
(b)	What do you mean by Robot cell design? What are the considerations that must be kept in mind during designing a Robot cell? Discuss in brief.	10	3

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

Q.no	Questions	Marks	CO
(a)	Differentiate between External and Internal Sensors with suitable examples in support.	10	4
(b)	Discuss about the Application of Robot in Welding.	10	5

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

Q.no	Questions	Marks	CO
(a)	Discuss about the Homogenous Transform and its Inverse in Robot Elements.	10	2
(b)	Describe in detail about any one of the following. (i) Robot Time estimation in manufacturing. (ii) Programmable Robot.	10	1

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

Q.no	Questions	Marks	CO
(a)	What do you understand by Robot Coordinate System representation?	10	3
(b)	What do you understand byCollision Free Motion Planning in Robot Programming?	10	4