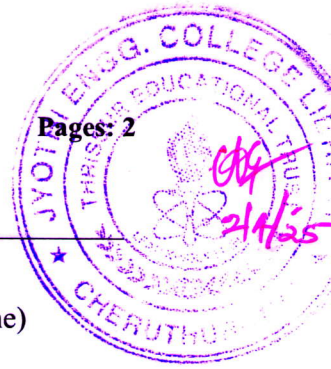Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree 7th semester (S,FE) Exam April 2025 (2019 Scheme)

Course Code: MRT401

Course Name: ADVANCED AUTOMATION SYSTEMS

Max. Marks: 100   **Duration: 3 Hours**

PART A
Answer all questions, each carries 3 marks.   Marks

1	What is a programmable automation and explain its features?	(3)
2	List the limitations of a manufacturing system.	(3)
3	Explain the modes of operation typically used in modern maintenance and repair diagnostics subsystem.	(3)
4	Differentiate between continuous and discrete control systems	(3)
5	Define Learning curves.	(3)
6	Identify the components of manufacturing system.	(3)
7	What is production flow analysis?	(3)
8	What are the benefits and application of coordinate measuring machine?	(3)
9	What are the objectives when implementing cellular manufacturing?	(3)
10	Compare Lean and Agile manufacturing?	(3)

PART B
Answer any one full question from each module, each carries 14 marks.

Module I

11	a)	What do you mean by production quantity?	(4)
	b)	Elaborate the relationship between product variety and production quantity in discrete product manufacturing.	(10)

OR

12	a)	What is a USA principle? what does each of the letters stand for?	(4)
	b)	List and explain the reasons for automation.	(10)

Module II

13	List and explain the features of work cycle programs used in Automation systems.	(14)

OR

14 With the help of a neat sketch briefly explain the basic elements of closed loop   (14)
    control system.

Module III

15 a) Describe Reconfigurable manufacturing system.   (7)

    b) Explain the three types of production machines based on worker participation.   (7)

OR

16 a) Elaborate the material handling functions in a manufacturing system.   (6)

    b) Briefly explain the components of a manufacturing system.   (8)

Module IV

17 What are three methods for solving the problem of grouping parts part families?   (14)

OR

18 a) Explain contact and non- contact inspection techniques with an appropriate   (6)
    technique.

    b) Classify the types of machine cell in cellular manufacturing.   (8)

Module V

19 a) Elaborate the functions of Machine Vision.   (7)

    b) Explain the FMS and describe its types and components.   (7)

OR

20 a) What is mean by flexibility in FMS?   (4)

    b) List and explain the Five FMS Layouts typically used as the Primary Handling   (10)
    System.

****