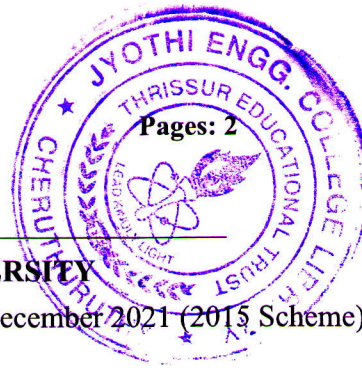


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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh Semester B.Tech Degree Regular and Supplementary Examination December 2021 (2015 Scheme)

Course Code: MR401

Course Name: Advanced Automation Systems

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks.

- | | | Marks |
|---|--|-------|
| 1 | What is discrete control system? Write a short note on it | (5) |
| 2 | What is the USA Principle? What does each of the letters stand for? | (5) |
| 3 | What is the type 3 product variety explain with example? | (5) |
| 4 | Differentiate between a process parameter and a process variable? | (5) |
| 5 | Define Metrology and measurement | (5) |
| 6 | Define coordinate measuring machines and list its components | (5) |
| 7 | What are the benefits of a successful FMS installation | (5) |
| 8 | In a flexible manufacturing system, what are the five functions of the material handling and storage system? | (5) |

PART B

Answer any three full questions, each carries 10 marks.

- | | | |
|----|---|------|
| 9 | a) List and explain the ten strategies for automation and process improvement | (10) |
| 10 | a) What is automation? Explain the various elements of Automation with block diagram | (10) |
| 11 | a) Identify and explain the five levels of automation in a production plant with a neat block diagram | (10) |
| 12 | a) Define the Manufacturing System | (3) |
| | b) Explain Briefly the material handling system and the computer control system. | (7) |
| 13 | a) What is group technology? What are the applications of group technology? | (10) |

PART C

Answer any two full questions, each carries 15 marks.

- | | | |
|----|---|------|
| 14 | a) The operation of a machine vision system can be divided into three functions. Name and briefly describe them with a neat block diagram | (15) |
|----|---|------|

- 15 a) Define Coordinate Measuring Machine. (3)
- b) The methods of operating and controlling a CMM can be classified into four categories, Name & explain them. (12)
- 16 a) What is flexible Manufacturing System? (5)
- b) What are the various types of Flexible manufacturing System? Explain mentioning its various features (10)
- 17 a) What is lean production, compare with agile manufacturing. (7)
- b) State and explain the four principles of agile manufacturing. (8)
