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1000MRT401112402



Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh Semester B.Tech Degree (R, S) Examination November 2024 (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 | List the limitations and capabilities of manufacturing plant | (3) |
| 2 | How manufacturing industries are classified | (3) |
| 3 | Explain about error detection and recovery | (3) |
| 4 | Explain the levels of automation | (3) |
| 5 | List out the main material handling functions | (3) |
| 6 | Explain how manufacturing industries are classified based on part or product variety | (3) |
| 7 | Define part families | (3) |
| 8 | Distinguish contact and non-contact inspection methods | (3) |
| 9 | Classify FMS | (3) |
| 10 | List down application of machine vision | (3) |

PART B

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

Module I

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|----|--|------|
| 11 | a) Explain about automation in production system | (4) |
| | b) List out ten strategies of automation | (10) |

OR

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|----|---|-----|
| 12 | a) Common on three phases of automation migration strategy | (6) |
| | b) Define production system elaborating in detail the manufacturing system and manufacturing support system | (8) |

Module II

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|----|---|-----|
| 13 | a) Explain in detail the elements of automated system | (7) |
| | b) Distinguish continuous control and discrete control system | (7) |

OR

- 14 a) Explain advanced automation functions in detail (7)
b) Explain about computer process control, numerical control, PLC and robotics (7)

Module III

- 15 a) Explain about main components of manufacturing system (14)

OR

- 16 a) Define manufacturing progress function and learning curve (8)
b) Explain type 1, type 2 and type 3 manufacturing system (6)

Module IV

- 17 a) Define part classification and coding, and describe in detail about the two methods used for it? (8)
b) List out CMM controls and programming methods (6)

OR

- 18 a) Define CMM, explain the construction of CMM (8)
b) List out CMM software, applications and benefits (6)

Module V

- 19 a) "Machine vision is a non-contact inspection method" state whether the statement is true or false. Explain various steps involved in machine vision technique (14)

OR

- 20 a) Explain FMS planning and implementation issues (4)
b) Explain in detail about components of FMS (10)
