Code No: 127AR

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, May/June - 2019
AUTOMATION IN MANUFACTURING
(Mechanical Engineering)

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) Explain any two strategies of automation. [2]
b) Define the following in detail.
(i) Fixed automation (ii) programmable automation [3]
c) Define automated flow lines. [2]
d) Write short notes on partial automation. [3]
e) Explain flexible assembly line. [2]
f) Write the advantages of line balancing in an industry. [3]
g) Explain about work- in-process storage. [2]
h) What are the different types of AGV's? [3]
i) Discuss the classification of sensors. [2]
j) What are the different types of actuators? [3]

PART - B

(50 Marks)

2.a) What are the importance of mechanical feeding devices used in automated systems.
b) Explain and Draw the simple block diagram of pneumatic circuit and label its parts.[5+5]

OR

3.a) What are the different types of automation? Discuss them briefly.
b) What are the important pneumatic components used in automated system. [5+5]

4.a) Illustrate the working of walking beam transfer system with the help of neat sketches.
b) Discuss the advantages and limitations of using buffer storage capacity zones in automated flow lines. [5+5]

OR

5.a) Discuss briefly about the transfer lines with and without buffer storage.
b) What are the various basic approaches used in the analysis of transfer lines without storage. [5+5]

6.a) Enumerate the differences between flexible assembly lines and manual assembly lines.
b) Explain about different line balancing methods. [5+5]

OR

7.a) What is line balancing and explain largest candidate rule is adopted in Line balancing of operations.
b) What is 'manual single station assembly' and 'manual assembly line'? Enumerate the differences between them. [5+5]

8. Discuss the principles of material handling systems. Name and describe any five types of material handling devices. [10]

OR

9.a) Explain material handling system in detail.
b) Discuss the use of automated work-in-process storage system.
c) Explain the advantages of Automated Storage Systems. [10]

10.a) Explain the fundamentals of industrial controls.
b) Explain in detail about the business process Re- engineering. [5+5]

OR

11.a) Discuss briefly about the ERP.
b) Explain the usage of Data communication and LAN in manufacturing. [5+5]

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