R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, January/February - 2023
AUTOMATION IN MANUFACTURING
(Mechanical Engineering)

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

Note: i) Question paper consists of Part A, Part B.
    ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
    iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)   Mention the function of hydraulic pump   [2]
  b)   List the basic components of pneumatic system   [3]
  c)   Classify the two ways in which transfer of work-part takes place between workstations? [2]
  d)   Determine the Buffer storage? Explain the reasons for the use of Buffer storage zones [3]
  e)   State Line Balancing in Automation?   [2]
  f)   Recall quick reasons for downtime on an Automated Production line?   [3]
  g)   Discuss the four main components of an automated guided vehicle system?   [2]
  h)   Write a note on AGVS Forklift Trucks?   [3]
  i)   What is a Sensor? How LAN is used in manufacturing?   [2]
  j)   Contrast the terms data communication and logistics.   [3]

PART – B

(50 Marks)

2.   Elucidate the role of automation in production system.   [10]
OR
3.a)   Discuss briefly fixed, programmable and flexible automated production systems?
  b)   Draw in-line configuration of automated flow line.   [5+5]

4.   What is meant by mechanical buffer storage control function? Explain in detail.   [10]
OR
5.   What is meant by implementation of automated flow lines? Explain.   [10]

6.a)   Classify the different manual methods for solving the line balancing problems? Briefly discuss any one method?
  b)   What is 'Upper-bound approach' used in the analysis of transfer lines?   [5+5]
OR
7.   Enumerate the differences between flexible assembly lines and manual assembly lines.
                                                                                                                                [10]

8.a)   Determine the important factors to be considered in material handling system design.
  b)   Identify the possible mechanisms to overcome the problems that are encountered in interfacing AS/RS units to the manufacturing function?   [5+5]

OR

9.a)   Discuss the safety issues for the AGVS to operate efficiently.
  b)   With neat sketch, explain about fork lift truck.   [5+5]

10.   List the types of Actuators? Mention the functions of actuators in automation.   [10]

OR

11.   Mention the advantages of ERP in manufacturing.   [10]

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