Code No: RR410310 **RR** **Set No. 2**

IV B.Tech I Semester Examinations,NOVEMBER 2010
AUTOMATION IN MANUFACTURING
Common to Mechanical Engineering, Production Engineering
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Discuss the advantages and limitations of using buffer storage capacity zones in automated flow lines.
   (b) Explain the working principle of the following transfer mechanisms and enumerate the differences between them:
      i. Walking Beam mechanism
      ii. Geneva mechanism [6+10]
2. (a) Explain the advantages of implementing various principles of material handling.
   (b) Describe the following conveyors used in material transport systems:
      i. In-floor tow-line conveyor
      ii. Overhead trolley conveyor. [8+8]
3. (a) Explain the various operation parameters that can be measured in grinding operation to use them in adaptive control systems.
   (b) Briefly discuss the applications of Adaptive Control is drilling process. [8+8]
4. (a) Define 'Fixed Automation' and 'Flexible Automation'. Enumerate the differences between them.
   (b) What are the important mechanical feeding devices used in automated systems? Discuss them briefly. [8+8]
5. (a) Define the following terms used in automated flow lines and write their mathematical expressions:
      i. Average Production Time
      ii. Line Efficiency
      iii. Down Time
   (b) An eight-station rotary indexing machine operates with an ideal cycle time of 20 s. The frequency of line stop occurrences is 0.06 stops/cycle on the average. When a stop occurs, it takes an average of 3 min to make repairs. Determine the following:
      i. Average production time
      ii. Average production rate
      iii. Line efficiency
      iv. Proportion of downtime [6+10]

6. (a) What is stereo lithography? Describe the stereo lithography with the help of neat sketch.
   (b) What is Concurrent Engineering and what are its important components? [8+8]

7. (a) What are the problems encountered in interfacing AS/RS units to the manufacturing function? How these can be overcome?
   (b) Define 'work-in-process' and discuss use of automated work-in-process storage systems. [8+8]

8. Discuss briefly the following line balancing methods:
   (a) Ranked Positional Weights Method
   (b) Largest Candidate Rule Method
   (c) Computer Assembly Line Balancing (CALB). [16]

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Code No: RR410310 **RR** **Set No. 4**

IV B.Tech I Semester Examinations,NOVEMBER 2010
AUTOMATION IN MANUFACTURING
Common to Mechanical Engineering, Production Engineering
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Define 'Fixed Automation' and 'Flexible Automation'. Enumerate the differences between them.
   (b) What are the important mechanical feeding devices used in automated systems? Discuss them briefly. [8+8]
2. (a) What is stereo lithography? Describe the stereo lithography with the help of neat sketch.
   (b) What is Concurrent Engineering and what are its important components? [8+8]
3. (a) Explain the various operation parameters that can be measured in grinding operation to use them in adaptive control systems.
   (b) Briefly discuss the applications of Adaptive Control is drilling process. [8+8]
4. (a) Discuss the advantages and limitations of using buffer storage capacity zones in automated flow lines.
   (b) Explain the working principle of the following transfer mechanisms and enumerate the differences between them:
      i. Walking Beam mechanism
      ii. Geneva mechanism [6+10]
5. (a) Explain the advantages of implementing various principles of material handling.
   (b) Describe the following conveyors used in material transport systems:
      i. In-floor tow-line conveyor
      ii. Overhead trolley conveyor. [8+8]
6. (a) Define the following terms used in automated flow lines and write their mathematical expressions:
      i. Average Production Time
      ii. Line Efficiency
      iii. Down Time
   (b) An eight-station rotary indexing machine operates with an ideal cycle time of 20 s. The frequency of line stop occurrences is 0.06 stops/cycle on the average. When a stop occurs, it takes an average of 3 min to make repairs. Determine the following:

i. Average production time
ii. Average production rate
iii. Line efficiency
iv. Proportion of downtime [6+10]

7. (a) What are the problems encountered in interfacing AS/RS units to the manufacturing function? How these can be overcome?
   (b) Define 'work-in-process' and discuss use of automated work-in-process storage systems. [8+8]

8. Discuss briefly the following line balancing methods:
   (a) Ranked Positional Weights Method
   (b) Largest Candidate Rule Method
   (c) Computer Assembly Line Balancing (CALB). [16]

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Code No: RR410310 **RR** **Set No. 1**

IV B.Tech I Semester Examinations,NOVEMBER 2010
AUTOMATION IN MANUFACTURING
Common to Mechanical Engineering, Production Engineering
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Discuss briefly the following line balancing methods:
   (a) Ranked Positional Weights Method
   (b) Largest Candidate Rule Method
   (c) Computer Assembly Line Balancing (CALB). [16]
2. (a) Define 'Fixed Automation' and 'Flexible Automation'. Enumerate the differences between them.
   (b) What are the important mechanical feeding devices used in automated systems? Discuss them briefly. [8+8]
3. (a) Define the following terms used in automated flow lines and write their mathematical expressions:
      i. Average Production Time
      ii. Line Efficiency
      iii. Down Time
   (b) An eight-station rotary indexing machine operates with an ideal cycle time of 20 s. The frequency of line stop occurrences is 0.06 stops/cycle on the average. When a stop occurs, it takes an average of 3 min to make repairs. Determine the following:
      i. Average production time
      ii. Average production rate
      iii. Line efficiency
      iv. Proportion of downtime [6+10]
4. (a) Discuss the advantages and limitations of using buffer storage capacity zones in automated flow lines.
   (b) Explain the working principle of the following transfer mechanisms and enumerate the differences between them:
      i. Walking Beam mechanism
      ii. Geneva mechanism [6+10]
5. (a) What are the problems encountered in interfacing AS/RS units to the manufacturing function? How these can be overcome?
   (b) Define 'work-in-process' and discuss use of automated work-in-process storage systems. [8+8]

6. (a) Explain the various operation parameters that can be measured in grinding operation to use them in adaptive control systems.
   (b) Briefly discuss the applications of Adaptive Control is drilling process. [8+8]

7. (a) Explain the advantages of implementing various principles of material handling.
   (b) Describe the following conveyors used in material transport systems:
      i. In-floor tow-line conveyor
      ii. Overhead trolley conveyor. [8+8]

8. (a) What is stereo lithography? Describe the stereo lithography with the help of neat sketch.
   (b) What is Concurrent Engineering and what are its important components? [8+8]

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Code No: RR410310 **RR** **Set No. 3**

IV B.Tech I Semester Examinations,NOVEMBER 2010
AUTOMATION IN MANUFACTURING
Common to Mechanical Engineering, Production Engineering
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What is stereo lithography? Describe the stereo lithography with the help of neat sketch.
   (b) What is Concurrent Engineering and what are its important components? [8+8]
2. (a) Explain the various operation parameters that can be measured in grinding operation to use them in adaptive control systems.
   (b) Briefly discuss the applications of Adaptive Control is drilling process. [8+8]
3. (a) Define the following terms used in automated flow lines and write their mathematical expressions:
      i. Average Production Time
      ii. Line Efficiency
      iii. Down Time
   (b) An eight-station rotary indexing machine operates with an ideal cycle time of 20 s. The frequency of line stop occurrences is 0.06 stops/cycle on the average. When a stop occurs, it takes an average of 3 min to make repairs. Determine the following:
      i. Average production time
      ii. Average production rate
      iii. Line efficiency
      iv. Proportion of downtime [6+10]
4. (a) What are the problems encountered in interfacing AS/RS units to the manufacturing function? How these can be overcome?
   (b) Define 'work-in-process' and discuss use of automated work-in-process storage systems. [8+8]
5. Discuss briefly the following line balancing methods:
   (a) Ranked Positional Weights Method
   (b) Largest Candidate Rule Method
   (c) Computer Assembly Line Balancing (CALB). [16]
6. (a) Discuss the advantages and limitations of using buffer storage capacity zones in automated flow lines.

(b) Explain the working principle of the following transfer mechanisms and enumerate the differences between them:

i. Walking Beam mechanism

ii. Geneva mechanism [6+10]

7. (a) Explain the advantages of implementing various principles of material handling.

(b) Describe the following conveyors used in material transport systems:

i. In-floor tow-line conveyor

ii. Overhead trolley conveyor. [8+8]

8. (a) Define 'Fixed Automation' and 'Flexible Automation'. Enumerate the differences between them.

(b) What are the important mechanical feeding devices used in automated systems? Discuss them briefly. [8+8]

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