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10ME757

# Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020
# Automation in Manufacturing

Time: 3 hrs. Max. Marks:100

**Note:** ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***



## PART – A

1 a. Define Automation. Explain with sketch the various activities in an Information processing cycle in a manufacturing firm. **(10 Marks)**

b. List and explain the strategies for automation and production systems. **(10 Marks)**

2 a. Briefly explain the various manufacturing operations performed in a factory. **(10 Marks)**

b. Differentiate between fixed cost and variable cost with examples. **(04 Marks)**

c. With mathematical expressions, define the following :
(i) Manufacturing Lead Time
(ii) Work-In-Process
(iii) Time In Process Ratio. **(06 Marks)**

3 a. Briefly explain the various Advanced Automation functions. **(10 Marks)**

b. With block diagram, explain the Levels of Automation. **(10 Marks)**

4 a. With sketches explain Variable routing and Fixed routing. **(06 Marks)**

b. List the various functions of computer control system. **(06 Marks)**

c. Briefly explain the three cases of part or product variations present in the manufacturing system. **(08 Marks)**

## PART – B

5 a. Define Group Technology. List and explain the features of parts classification and coding systems. **(08 Marks)**

b. List the benefits of Cellular Manufacturing. **(06 Marks)**

c. With sketch explain the following types of FMS layouts:
(i) Loop layout (ii) Ladder layout **(06 Marks)**

6 a. With the block diagram explain the OFF-Line and ON-Line quality control to improve product design and process design. **(12 Marks)**

b. With sketches explain the following SQC tools:
(i) Control charts
(ii) Defect Concentration Diagram
(iii) Cause and Effect Diagram. **(08 Marks)**

7 a. With sketches explain any two CMM mechanical structures. **(08 Marks)**

b. Briefly explain the categories of Machine Vision Applications **(06 Marks)**

c. With sketch explain Optical Triangulation Techniques. **(06 Marks)**

8 a. List general principles and guidelines to be followed during DFMA process. **(10 Marks)**

b. With block diagram explain the activities of Advanced Manufacturing Planning. **(10 Marks)**

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