CBCS SCHEME

USN | | | | | | | | | |

15MT562

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

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Define production system. With a neat sketch explain categories of manufacturing system.
   (08 Marks)
   b. Explain Ten strategies of automation and process improvement.   **(08 Marks)**

OR

2 a. Explain with sketch the various functions of a manufacturing system.   **(08 Marks)**
   b. A production machine operates 80hr/week (2 shifts, 5 day) at full capacity. Its production rate is 20 unit/hr during a certain week. The machine produced 1000 parts and was idle the remaining time. Determine:
   i)   Production capacity of machine
   ii) What was the utilization of machine during the week under consideration?   **(08 Marks)**

Module-2

3 a. Describe five level of automation with block diagram.   **(08 Marks)**
   b. Explain with a neat sketch describe a feedback and open control system for automation.
   (08 Marks)

OR

4 a. Describe the Robust-Design a Taguchi loss function.   **(08 Marks)**
   b. Difference between traditional view of quality and modern view of quality.   **(08 Marks)**

Module-3

5 a. Define automated manufacturing system with a neat sketch. Explain single station manned work station.   **(08 Marks)**
   b. Define the following:
   i)   Lean manufacturing
   ii)   Agile manufacturing
   iii) Concurrent Engineering
   iv)   Component in manufacturing.   **(08 Marks)**

OR

6 a. Define process planning. Explain computer aided process planning.   **(08 Marks)**
   b. Describe the manufacturing support system.   **(08 Marks)**

Module-4

7   a.   Describe with a neat sketch explain optical inspection techniques.   (10 Marks)
    b.   The coordinate at the two ends of a certain length dimension of a machined component have been measured by a CMM. The coordinate of the first end are (23.97, 48.11, 0.25) and coordinates of the opposite end are (73.52, 21.70, 60.38). Where the unit are mm. The given coordinate have been corrected by probe radius. Determine the length of dimension that would be computed by the CMM software.   (06 Marks)

OR

8   a.   Explain the application and benefits of Coordinate Measuring Machine (CMM).   (08 Marks)
    b.   Write advantages and disadvantages of coordinate measuring machine.   (08 Marks)

Module-5

9   a.   Define group technology? Explain the benefits of group technology.   (08 Marks)
    b.   Define FMS. Explain basic components of FMS.   (08 Marks)

OR

10   a.   Describe flexible manufacturing system benefits and application.   (10 Marks)
     b.   Describe the cellular manufacturing.   (06 Marks)

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