BME-011

BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

December, 2013

BME-011 : COMPUTER AIDED PROCESS PLANNING

Time : 3 hours   *Maximum Marks : 70*

Note :   (i)   *Attempt **any seven** questions.*

(ii)   *Assume suitable value for **any** missing data.*

(iii) *Use of scientific calculator is **permitted**.*

1. (a) Describe production planning, process planning and operation planning.   **6**

(b) State four different processes identified to manufacturing a part. Give suitable examples.   **4**

2. (a) Write the steps involved in automated process planning.   **5**

(b) Mention the advantages and disadvantages of CAPP   **5**

3. (a) Give brief description of the retrieval type of computer aided process planning.   **5**

(b) Briefly explain the guidelines for implementing group technology.   **5**

4. (a) Enlist the various factors influencing the selection of tools. 5

(b) Name atleast eight cutting tool materials in increasing order of their hardness. 5

5. An HSS slab mill of 150mm diameter and 200mm width is used on a horizontal milling machine to mill C50 steel. The milling cutter has 10 teeth, calculate the machining time assuming that the entire stock can be removed in one depth of 2.5mm. The cutting speed V=20m/min and feed rate $f = 0.15$mm/tooth. The cut length $= 150$mm. 10

6. (a) Distinguish clearly between drop forging and press forging processes with reference to the process and products obtained. 5

(b) Explain how a tube can be manufactured from sheet by a suitable welding processes. 5

7. (a) Describe geometrical tolerances with suitable examples. 5

(b) Compare the relative merits and demerits of unilateral and bilateral tolerances with suitable applications. 5

8. (a) A hallow workpiece of 80mm outside diameter and 200mm length is held on a mandrel between centers and turned all over in 4 passes. If the approach $length = 20$mm, over $travel = 12$mm, average $feed = 0.8$mm/rev, cutting $speed = 40$mm/min, estimate the machining time. 5

(b) Discuss the components associated with the total production cost of machined components. 5

9. (a) Discuss the role of process planning in   5
        CAD/CAM integration.
    (b) Describe the importance and objectives of   5
        Production Flow Analysis (PFA).

10. (a) Mention the important functional modules   5
        in a welding CAPP system.
    (b) Enlist the broad objectives in developing a 5
        CAPP system for sheet metal forming.

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