No. of Printed Pages : 3

BME-011

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

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Term-End Examination

December, 2014

BME-011 : COMPUTER AIDED PROCESS PLANNING

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any* ***five*** *questions. Use of scientific calculator is allowed.*

1. (a) Explain the various steps in process planning. 7

(b) What are the information required to decide the operation sequence ? Explain them. 7

2. (a) Explain the working of Generative CAPP. 7

(b) Using Taylor's equation for tool wear, let n = 0·4 and c = 400. What is the percentage increase in tool life if the cutting speed is reduced by 20% ? 7

3. (a) Discuss the factors influencing the cutting tool selection. 7

(b) Explain all the 7 parameters of tool geometry of single point cutting tool. 7

4. (a) With the help of a suitable chart give the general classification of Bulk-forming processes. 7

(b) List and discuss the important factors to be considered in material selection to satisfy a particular design requirement. 7

5. (a) Compare the relative merits and demerits of unilateral and bilateral tolerances with suitable applications. 7

(b) Find the values of allowance, hole tolerance and shaft tolerance for the following dimensions of mated parts according to basic hole system. 4

Hole : 37·50 mm Shaft : 37·48 mm

37·52 mm 37·45 mm

(c) Differentiate between drawing and extrusion processes with suitable examples. 3

6. (a) A hole of 60 mm diameter and 80 mm depth is to be drilled in a mild steel component. The cutting speed can be taken as 60 m/min and feed rate as 0·2 mm/rev. Calculate the machining time and MRR. 7

(b) A plate of dimensions 300 mm × 100 mm × 40 mm is to be shaped along its wider face. Calculate the machining time taking approach = 20 mm, over travel = 20 mm, cutting speed = 10 m/min, return speed = 20 m/min, allowance on either side of the plate width = 5 mm and feed per cycle = 1 mm. 7

7. (a) How do you decide that process is under control or out of control using control charts for variables ? 7

(b) What do you mean by process capability ? How do you calculate process capability index ? 7

8. (a) Discuss the objectives in developing CAPP. 7

(b) Discuss generative type CAPP. 7
