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BME-011

01585

BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

June, 2012

BME-011 : COMPUTER AIDED PROCESS PLANNING

Time : 3 hours *Maximum Marks : 70*

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

(ii) Assume suitable value for any missing data.

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

1. (a) Explain criteria for selecting CAPP system.

   (b) Differentiate between variant and knowledge based process planning. **2x5=10**

2. (a) Differentiate between Expandable mold and Permanent mold processes. **2x5=10**

   (b) Explain the use of CAPP in Drawing and Extrusion processes.

3. (a) Explain the various properties of engineering materials. **2x5=10**

   (b) Explain the process of computer aided material selection.

4. (a) Explain tolerance/cost relationship using graph. **2x5=10**

(b) Define the term process capability and explain its application in CAPP.

5. (a) An existing hole of 140 mm diameter is to be finish bored to 150 mm diameter in a gray cast iron casting to a depth of 300 mm. The operation is to be performed in four passes two rough and two finish. The depth of cut for rough boring is to be kept as 2 mm and that for finish boring as 0.5 mm. Calculate the machining time required for boring this hole assuming a cutting speed of 80 rpm and a feed of 2 mm/rev. for rough work and 0.25 mm/rev. for finish boring.

(b) What are the various cost elements to be considered while estimating the machining cost for a particular process ? **6+4=10**

6. (a) Write differences between process planning and computer aided process planning. **2x5=10**

(b) What factors do you consider while performing computer aided process planning of a welding process ?

7. (a) The following equation for tool life is given for a turning operation : **2x5=10**

$VT^{0.13} f^{0.77} d^{0.37} = C$

A 60 min. tool life was obtained while cutting at V = 30 m/min. f = 0.3 mm/rev. and d = 2.5 mm.

Determine the change in tool life when the cutting speed, feed and depth of cut are increased by 20%.

(b) Explain the CAPP process for deep drawing in brief.

8. (a) When varient process planning is used, a GT code may fit several part family matrices ? How can one resolve this problem ? **2x5=10**

(b) List down the activities carried out by planning engineers in a foundary environment, which form the basis for developing a CAPP system ?

9. Write short notes on the following : **5x2=10**

(a) Group Technology

(b) CAD/CAM integration

(c) Spot welding

(d) Seam welding

(e) Die casting.