|BME-011|

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

00672

Term-End Examination

June, 2019

BME-011 : COMPUTER AIDED PROCESS PLANNING

Time : 3 hours   *Maximum Marks : 70*

*Note : Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is permitted.*

1. (a) What is CAPP ? What are the factors considered for preparing the process plan ?   7

   (b) Discuss the various steps involved in automatic process planning.   7

2. (a) Differentiate between process planning and computer aided process planning.   7

(b)   The part shown in figure 1 is to be
-      machined from a mandrel of diameter
       110 mm and length 150 mm.
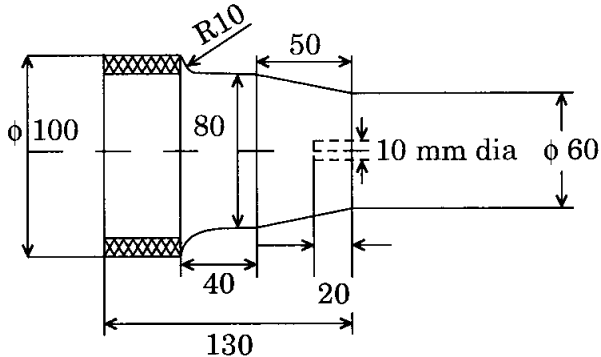

Figure 1

All dimensions are in mm.

Describe the typical sequence of process
required in part fabrication.   7

3. (a) Briefly explain the factors affecting the tool
         life and list the various properties of
         cutting tool materials.   7

    (b) Explain the use of break-even analysis in
         machine tool selection.   7

4. (a) What are the inputs and outputs of a CAPP
         system for machined parts ? Show with the
         help of input and output diagram.   7

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

5. A carbide tool, while machining a mild steel work piece was found to have a life of 1 hour and 40 minutes when cutting at 50 m/min. Find the tool life if the tool is to operate at a speed 30% higher than the previous one. Also calculate the cutting speed if the tool is required to have a life of 2 hours and 45 minutes. Assume Taylor's exponent n = 0·28. *14*

6. (a) Discuss the various costs considered in machine selection under process planning economy. *7*

   (b) Describe the knowledge based (expert) process planning to follow CAPP system. *7*

7. (a) Enlist the various objectives in developing a CAPP system for welding process. *7*

   (b) Explain the relation between the machining cost and cutting speed with the help of graph. *7*

8. Write short notes on any *four* of the following : $4\times3\frac{1}{2}=14$

   (a) Retrieval Type CAPP

   (b) Process Mapping

   (c) Part Print Analysis

   (d) CAD/CAM Integration with CAPP

   (e) Automatic Process Planning

   (f) Standard Deviation