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BME-004

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

00942

Term-End Examination

December, 2017

BME-004 : CNC TECHNOLOGY AND PROGRAMMING

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any **seven** questions. All questions carry equal marks. Assume missing data, if any.*

1. (a) Briefly explain the process of developing a product from the initial concept stage to final marketing. 5

(b) Explain the elements of an NC machine tool operation. 5

2. (a) Briefly explain the basis of designating the co-ordinate axis in CNC machine tools. 5

(b) Name all the subsystems of a typical CNC machine control unit (MCU). 5

3. (a) Describe the advantages of recirculating ball screws compared to the conventional type of screws. 5

(b) Give a comparison of the encoder and a linear scale as a feedback device for displacement in CNC machine tools. 5

4. (a) In order to write a CNC part program, highlight various types of information that need to be considered by a part programmer. 5

(b) Write the functions of the following ISO codes : 5

(i)	G01	(vi)	M03
(ii)	G05	(vii)	M06
(iii)	G06	(viii)	M08
(iv)	G10	(ix)	M15
(v)	G20	(x)	M19

5. (a) How are the different lengths of the multiple tools used in milling compensated ? Explain the procedure. 6

(b) Describe facing canned cycle, G94 with the help of an example. 4

6. (a) What are the various forms of specifications used for radius / centre with the circular interpolation ? 5

(b) What are the differences between machining centres and turning centres ? 5

7. The component to be machined is shown in Figure 1. The axes to be used are also shown. The initial tool position is assumed to be at (0, 0, 40). Develop the part program. *10*

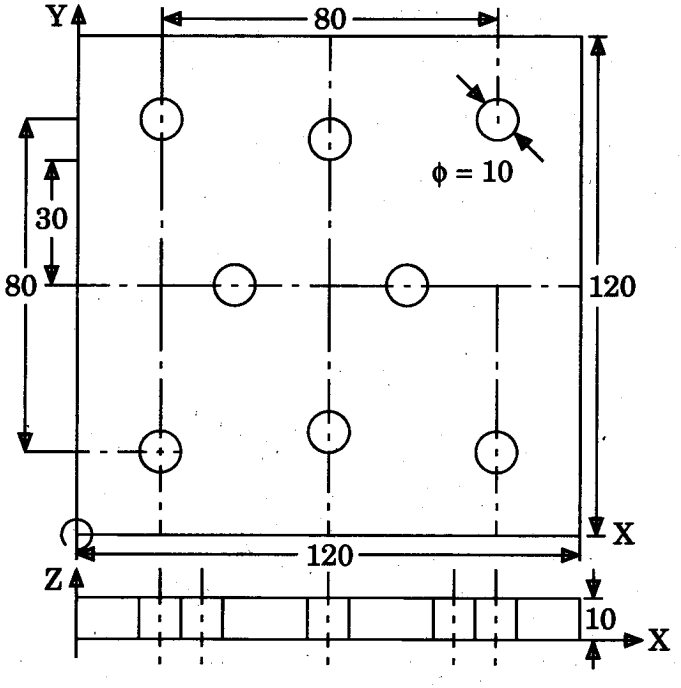

Figure 1

8. (a) Compare serial and parallel communication with reference to the technique used and its application. *5*

(b) Explain the working of a bus network. *5*

9. (a) Describe the word DNC. Explain its applications. *5*

(b) What are the requirements for standardization in communication for a manufacturing shop ? *5*

10. Write short notes on any ***two*** of the following : *2×5*

(a) AS/RS

(b) FMS Control System

(c) Manufacturing Automation Protocol (MAP)
