17556

21718

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks

1. Attempt any FIVE of the following : **20**

(a) What is the necessity of non-traditional machining process, in today's manufacturing era ?

(b) Explain close loop control system, with suitable example.

(c) State classification of broaching machines.

(d) Differentiate between up milling and down milling. (Four points each.)

(e) State the selection criteria of a grinding wheel, for any specific application.

(f) Explain preventive maintenance, with its importance.

(g) Explain working principle of AJM, with neat sketch.

2. Attempt any FOUR of the following : **16**

(a) State advantages and disadvantages of PAM.

(b) Explain with sketch, how axes are identified in a CNC machine.

(c) Draw a neat & labelled sketch of a capstan lathe.

(d) Explain a suitable method to index a gear blank into 68 divisions.

(e) What is wheel dressing & why it is required ?

(f) What is the need to carry out maintenance ? State various types of maintenance.

3. Attempt any TWO of the following : **16**

(a) Explain with neat sketch construction and working of EDM. Also state its any two applications.

(b) Prepare a program to machine a workpiece shown in figure 1 on CNC milling. Assume suitable data.

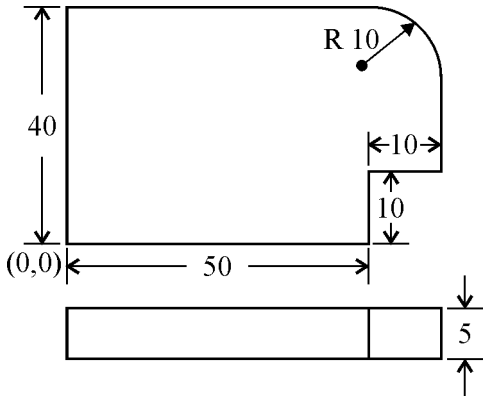

Fig. 1

All dimensions are in mm.

Speed = 1200 rpm

Feed = 10 mm / min

Depth of cut = 5 mm

Tool position from the surface of workpiece is 15 mm above.

(c) Draw neat sketch of a horizontal broaching machine & explain function of each part. Also state four applications of broaching.

4. Attempt any TWO of the following : **16**

(a) Explain with neat sketch construction and working of LBM & state any four applications.

(b) (i) Differentiate between absolute and incremental coordinate system.

(ii) State the safety procedures to be followed, while using CNC machines.

(c) Explain gear hobbing process with neat sketch. Give it's advantages and limitations also.

5. Attempt any TWO of the following : **16**

(a) Explain following milling operations with suitable sketches :

(i) Side milling

(ii) Straddle milling

(iii) Gang milling

(iv) Slot milling

(b) With suitable sketch, explain

(i) gear grinding

(ii) gear burnishing

(c) Explain lapping process with neat sketch. State four advantages and four applications of lapping. **(4+2+2)**

P.T.O.

6. Attempt any FOUR of the following : **16**

(a) Explain working principle of Jig boring with neat sketch.

(b) Differentiate between a capstan & turret lathe. (Four points)

(c) Explain the grinding process for a cylindrical pin.

(d) Explain the maintenance procedure for a bearing.

(e) With suitable example explain repair cycle analysis.

(f) State and explain the various process parameters of WJM.
