17527

16172

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

Instructions – (1) All Questions are *Compulsory*.

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

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

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

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any THREE of the following:** **12**

(i) Differentiate between AJM and WJM.

(ii) State advantages and applications of broaching machines.

(iii) Define gear cutting. State gear manufacturing methods.

(iv) Explain the use of following codes in part programming G95, G41, M06, M98

b) **Attempt any ONE of the following:** **6**

(i) Draw neat labelled sketch of centreless grinding. Explain its working.

(ii) Define:

1) maintenance manual

2) maintenance records. State the types of maintenance.

Marks

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

a) Explain the concept of:

(i) Repair cycle analysis

(ii) Repair complexity

b) Explain:

(i) Honing

(ii) Lapping

c) State any four needs for non-traditional machining process.

d) Differentiate between planer and planomiller.

e) State meaning of absolute and incremental coordinate system.

f) Explain LBM with suitable neat sketch.

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

a) Prepare a part program for machining component as shown in Fig. No. 1. Use following data: cutting speed : 1200 rpm, feed : 60 mm/min, thickness of component 3 mm, Tool reference position is 4 mm above the surface of the workpiece. Assume suitable data if any. Neglect cutter radius compensation.

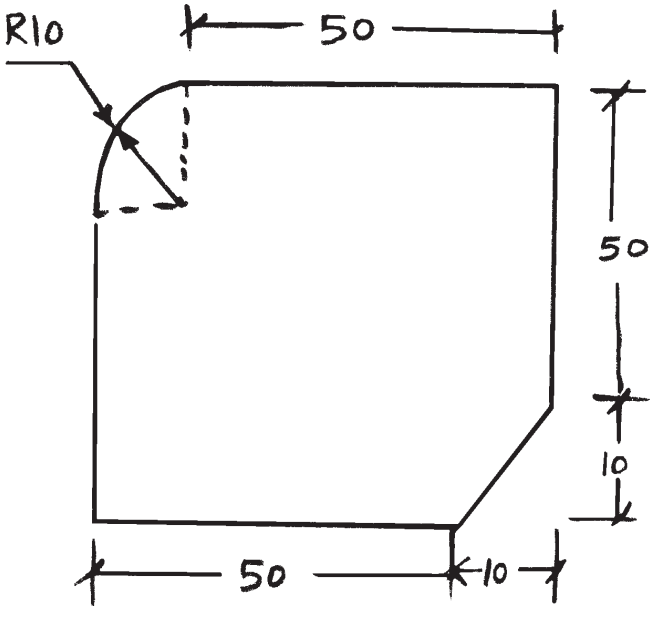

Fig. No. 1

Marks

b) Prepare a part program to machine the workpiece shown in Fig. No. 2 on CNC lathe.

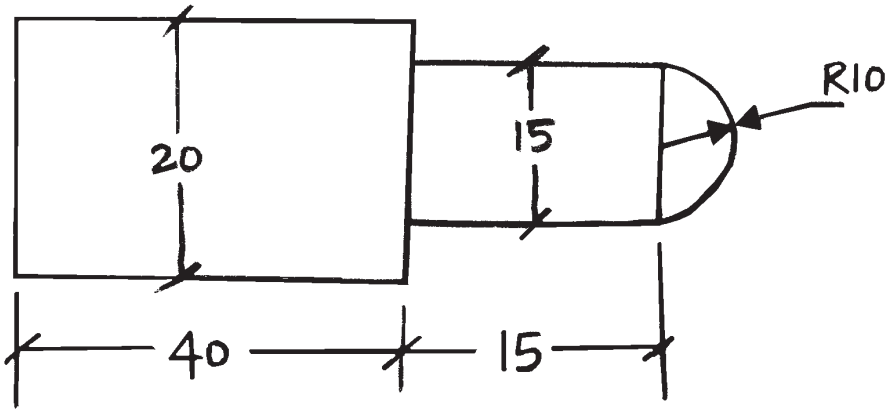

Fig. No. 2

c) With suitable example, explain the steps for compound indexing.

4. a) **Attempt any THREE of the following:** **12**

(i) Following are the machining requirements, select non traditional machining process for each with justification:

1) Machining profile of glass

2) Cutting internal threads in hard materials

3) Cutting of hot extrusion components.

(ii) Sketch milling cutters for following:

1) Side milling

2) Facing

3) Plain milling

(iii) Explain how grinding wheels are specified with suitable example.

(iv) Explain the following terms in CNC machine programming:

1) Dry run

2) Jog mode

3) Block by Block execution

Marks

b) **Attempt any ONE of the following:** **6**

(i) How hexagonal head of a bolt is prepared by using straddle milling operation.

(ii) Compare capstan and turret lathe.

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

a) Give the maintenance practice for bearings and chains in machine.

b) Define:

(i) PAM

(ii) WEDM

c) Explain in short:

(i) Burnishing

(ii) Buffing

d) Explain gang milling.

e) What is universal dividing head? State its function.

f) State how maintenance of gears and machine belts are done.

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

a) Define boring, State its types.

b) Explain slot milling.

c) Explain:

(i) Open loop control

(ii) Closed loop control in CNC

d) Draw neat sketch of any two boring tools.

e) Compare pull broach and push broach.

f) State safety precautions in grinding.

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