17527

11718

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) 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)   How are nontraditional machining processes classified? State its importance.

(ii) Differentiate between absolute and incremental coordinate system used in CNC part programming with an example.

(iii) Describe the prime features of horizontal boring machine.

(iv) Explain the principle of EDM with neat sketch. Give two applications of EDM.

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

(i)   Explain the different process parameters considered in EDM process. How these parameters affect on EDM process.

(ii) Explain the closed loop control system with block diagram and state the functions of each element.

Marks

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

   a) Explain LBM with neat sketch.

   b) Explain the use of following codes in CNC part programming.

       G80, G91, M03, M98

   c) Explain with neat sketch rack cutter gear generating process.

   d) Differentiate between gear hobbing process and gear shaping
       process.

   e) Explain the concept of repair cycle analysis and repair complexity.

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

   a) Write part program for a job as shown in Fig. No. 1. Take
       only finish cut. Spindle speed is 1200 rpm and feed rate is
       150 mm/rev. Assume suitable machining data, if necessary.
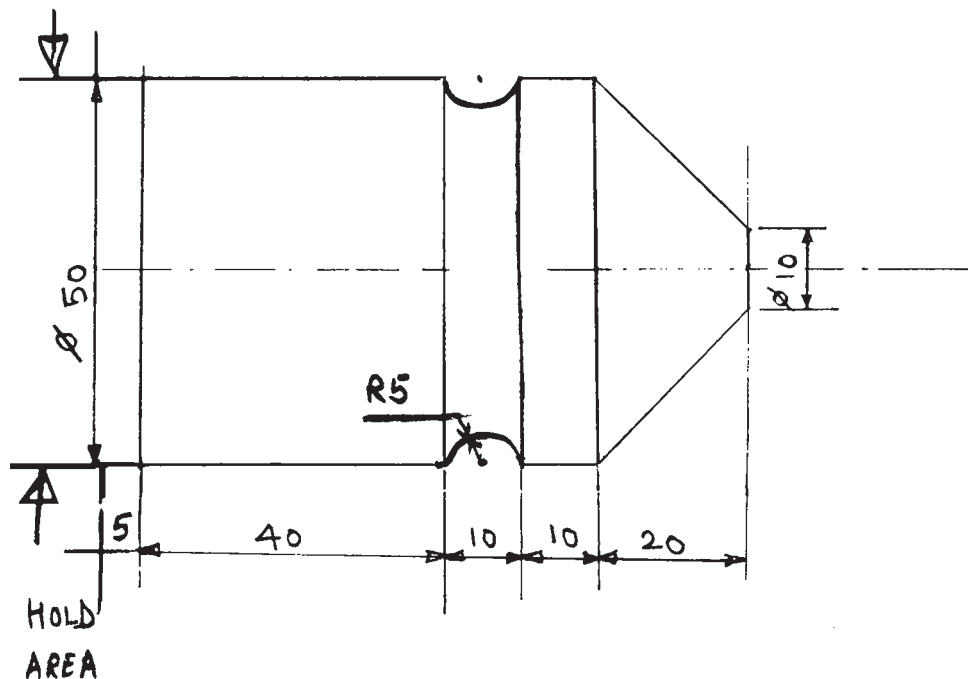

Fig. No. 1

   b) Explain the working principle of PAM with a neat sketch.
       Disadvantages and applications of PAM.

   c) Explain the cutting parameters in milling machine. How is the
       machining time calculated on a milling machines.

Marks

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

    (i) Differentiate between plain milling machine and universal milling machine.

    (ii) Explain the steps of compound indexing with suitable example.

    (iii) Explain the dressing and trueing of grinding wheel with neat sketches.

    (iv) Differentiate between breakdown maintenance and preventive maintenance.

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

    (i) Differentiate between up milling and down milling with neat sketches.

    (ii) What are precision grinders? Explain with a neat sketch the working of centerless grinding machine.

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

  a) Explain the maintenance manual.

  b) Differentiate between honing and lapping.

  c) Why balancing of grinding wheels is essential? State safety precautions while performing grinding operations.

  d) Differentiate between surface and cylindrical grinding process.

  e) Compare the pull broach and push broach.

  f) State applications and advantages of broaching machine, over other similar processes.

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

  a) List the basic parts of column and knee type of milling machine. State the function of each part.

  b) Give classification of broaching machines.

  c) State the basic maintenance practices for chains in chain drives.

  d) Differentiate between capstan and turret lathe.

  e) Define part program. Explain the term preparatory functions and miscellaneous functions in the context of CNC programming.

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