12247

15116

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) 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) Explain product cycle with the help of block diagram.

(ii) State the requirements of geometric modeling.

(iii) Differentiate between NC and CNC machines.

(iv) Explain manual part programming with the help of example.

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

(i) Explain various memory storage devices used in computers.

(ii) Explain classification of geometric models with neat sketch.

Marks

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

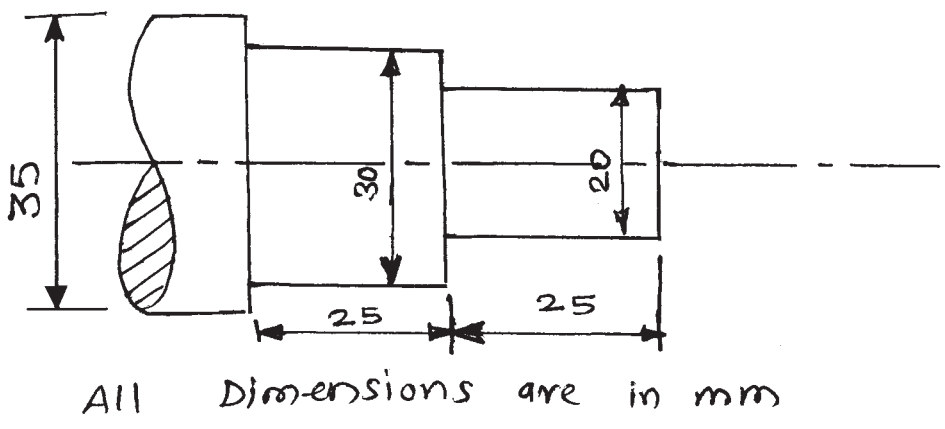
a) Explain point to point and straight line motion control systems with neat sketch.

b) Define subroutine. Explain the use of DO LOOP in NC part programming.

c) Draw a cylindrical coordinate robot and describe the degrees of freedom.

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

a) Write an NC part program for the following part. The raw material size is ϕ 35 × 50 mm long (Refer Figure No. 1)



(Use G91 for the part program)

Fig. No. 1

b) Explain the construction of a robot used in material transfer operations.

c) What is FMS? Explain its scope and benefits.

Marks

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

(i) Describe rapid prototyping with neat sketch.

(ii) Differentiate between absolute and incremental system.

(iii) Name the functions of the following codes G04, G71, G91, M06.

(iv) Explain the technical feature of a robot - speed of movement.

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

(i) Explain the use of boolean operations in solid modeling with neat sketch.

(ii) Draw the configuration of DNC system and state the function of each component.

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

a) Write down the advantages and disadvantages of CAD/CAM system.

b) Explain any four motion commands used in APT language.

c) What are end effectors in robots?

d) Explain Lean manufacturing.

e) Explain computer integrated manufacturing.

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

a) Enlist various input and output devices used in computers.

b) Define primitives in solid modeling. State its uses.

c) What are automated guided vehicles? State its uses.

d) Enlist the advantages of automation.

e) State the major levels of automation.