[Time: 3 Hours]   **[Marks:80]**
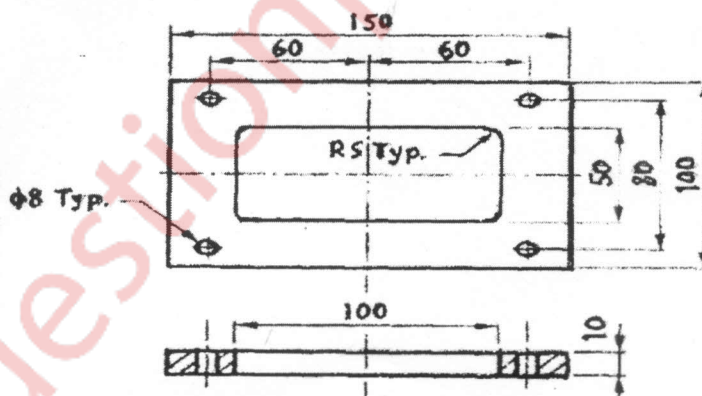
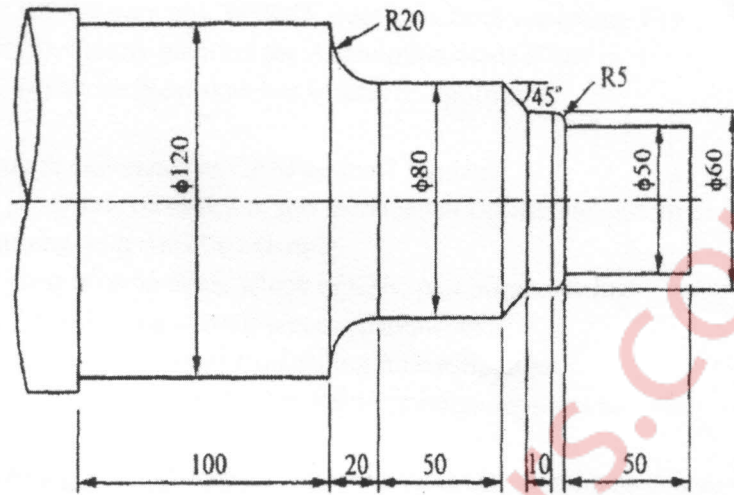**Please check whether you have got the right question paper.**

N.B: (1) Question No.1 is Compulsory.

(2) Attempt any **THREE** questions from remaining **FIVE** questions.

(3) Clearly mention the Assumption made if any.

(4) Draw Neat sketches wherever Applicable.

Q.1	a) Which are the elements of CAM system? Explain.	04
	b) Write a short note on absolute and incremental coordinate system of part programming with suitable example.	04
	c) Write a short note on Basic Block of CNC part programming.	04
	d) Explain the following cutting process parameters: (a) Milling time estimation (b) Drilling time estimation	04
	e) Discuss various steps involved in Rapid prototyping manufacturing.	04
Q.2	a) What is Rapid tooling? Explain Selective laser sintering method with neat sketch, its advantages and disadvantages.	10
	b) What are the features and advantages of DNC machine tool?	10
Q.3	a) Explain with neat sketches, different FMS layouts for automated flow.	08
	b) Write NC part program in absolute mode for the following component shown in figure. Assume the plate thickness as 10 mm. The milling cutters are of 25 mm diameter and 10 mm diameter and for drilling operation a drill of 8 mm diameter is available. Material is En 8.	12

Q.4	a) State the function of actuation system in CNC Machine. Explain recirculating ball screw with neat sketch.	10
	b) What is cutter compensation? Explain Cutter diameter, cutter length compensations.	10

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Q.5   a)   List and explain the AGV guidance Technology.   08

       b)   Develop an APT part program to machine the part shown in following figure.   12
           Assume suitable speed as 300 rpm, and feed rate as 0.3 mm/rev.

Q.6   a)   List the different types of AS / RS and explain in brief the components of it.   08

       b)   What are the requirements of tool presetting in CNC? Explain any one tool   06
           presetter.

       c)   Enlist and explain the functions of elements of CNC.   06

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