

M.E. PRODUCTION ENGINEERING FIRST YEAR FIRST SEMESTER EXAMINATION – 2025**COMPUTER INTEGRATED MANUFACTURING****Time: 3 hours****Full Marks: 100****Answer any TEN questions.**

1. Discuss the relationship diagram of CIM and the production control system. Describe the automated storage and retrieval system. **(5+5)**
2. What is variant computer-aided process planning and write down the advantages and drawbacks? **(7+3)**
3. Explain the flow operation of the CIM system. Describe the computer-aided process planning system using a suitable flow chart. **(4+6)**
4. Explain the block diagram of a flexible manufacturing cell. Write down about different sub-systems of FMS. What are the benefits of FMS? **(4+4+2)**
5. Discuss how group technology is used in designing manufacturing cells. Explain the structure of a cellular manufacturing system. **(5+5)**
6. Apply the rank order clustering technique to the part-machine incidence matrix shown below. **(10)**

Machines	Parts								
	A	B	C	D	E	F	G	H	I
1	1			1				1	
2					1				1
3			1		1				1
4		1				1			
5	1							1	
6			1						1
7		1				1	1		

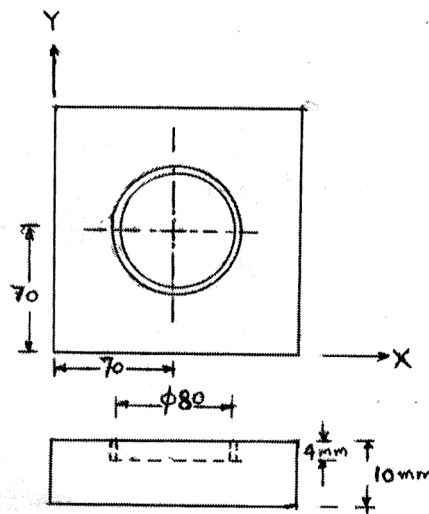
7. Suppose four machines, 1, 2, 3, and 4, are identified as belonging to a GT machine cell. An analysis of 50 parts processed on these machines has been summarized in the from-To chart presented below. Additional information is that 50 parts enter the machine grouping at machine 3, 20 parts leave after processing at machine 1, and 30 parts leave after machine 4. Determine a logical machine arrangement using the Hollier method. **(10)**

[Turn over

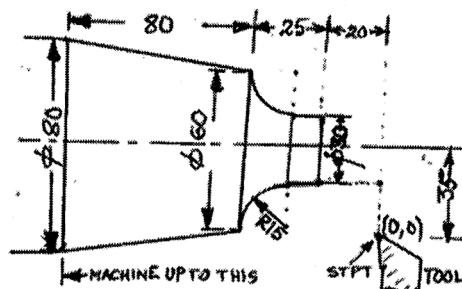
From-To Chart

	To:	1	2	3	4
From: 1		0	5	0	25
2		30	0	0	15
3		10	40	0	0
4		10	0	0	0

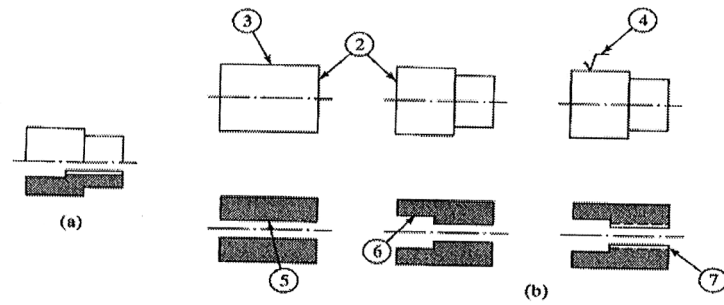
8. Write a manual part program to machine a circular slot as shown in fig in a CNC milling machine using an end-milling cutter. (10)



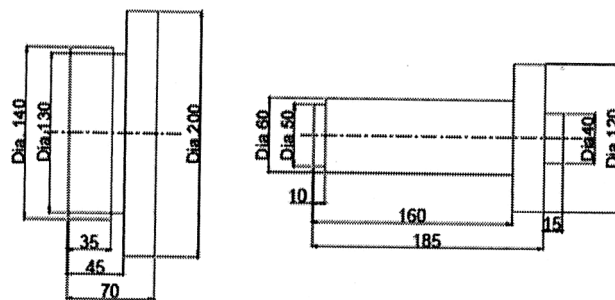
9. Write a manual part program for the finishing cycle of turning a job as shown in Fig to be machined in a CNC lathe. (STPT indicates start point, all dimensions are in mm.) (10)



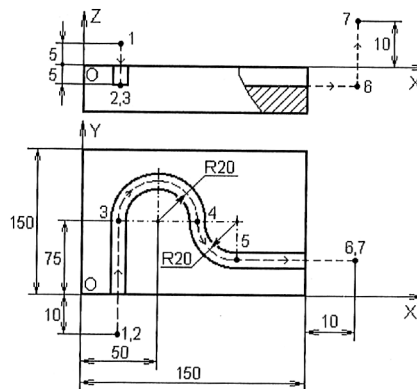
10. Explain OPTIZ classification system? The composite parts figure showing some numbers, from that number, find out
- 1) Design Feature
 - 2) Corresponding manufacturing operations.
- (10)



11. Two Rotational components are shown in Fig. Do they belong to the same part family? Discuss. (10)



12. Write down the CNC program following absolute and incremental procedures. (10)



13. Write down the ATP programing following the diagram. (10)

