APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY

08 PALAKKAD CLUSTER

Name: .....

Q. P. Code: IAR0823311C-1 (Pages: 2)

Reg. No: .....

THIRD SEMESTER M.TECH. DEGREE EXAMINATION DECEMBER 2022

Branch: Mechanical Engineering **Specialization: Industrial Automation and Robotics**

08ME7311(C) Numerical Control of Machine Tools

Time: 3 hours **Max. Marks: 60**

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q. No.	Module 1	Marks
1. a	Differentiate between NC & CNC.	3
	Answer b or c	
b	What is the general configuration of CNC?	6
c	Differentiate Hybrid CNC and Straight CNC.	6

Q. No.	Module 2	Marks
2. a	What is servo mechanism in CNC?	3
	Answer b or c	
b	Give a comparison of the encoder and liner scale as a feedback device for displacement in CNC machine tools.	6
c	How is direction of slide movement sensed in an incremental measuring system?	6

Q. No.	Module 3	Marks
3. a	What is DDA algorithm?	3
	Answer b or c	
b	Explain the various interpolation methods used in CNC.	6
c	Compare open loop control system with closed loop control system.	6

Q. No.	Module 4	Marks
4. a	Write the various types of Machining Centres.	3
	Answer b or c	
b	Describe with sketch the working and construction of recirculating ball screw used in CNC machine tools.	6
c	List out the requirements of structure in the CNC machine tools.	6

Q. No.	Module 5	Marks
5. a	What is the importance of using Do-loop and subroutines in a part programme?	4
	Answer b or c	
b	Write a part program for drilling the part shown in Fig. 1. The plate thickness is 20 mm.	8

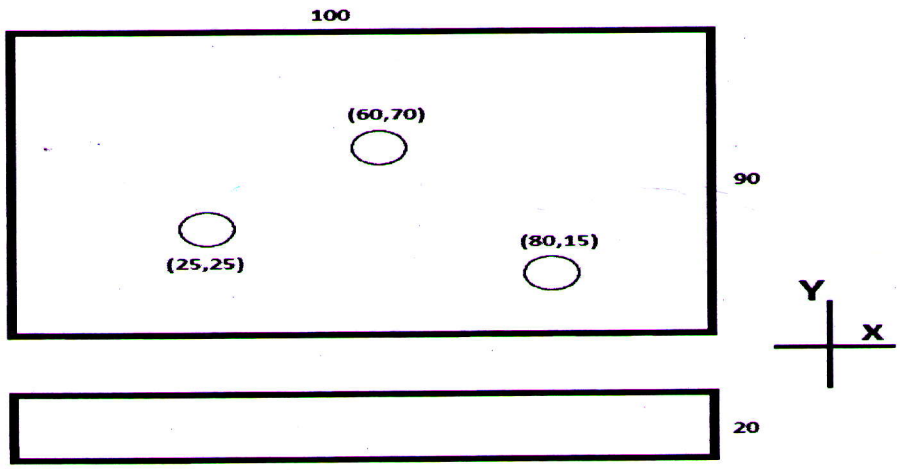

Fig. 1

c	What are canned cycles? Explain the different types of canned cycles.	8

Q. No.	Module 6	Marks
6. a	What is adaptive control in CNC?	4
	Answer b or c	
b	With a block diagram, explain the general configuration of DNC.	8
c	Explain the generative CAPP system.	8