Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S8 (R,S) Examinations April 2026 (2019 Scheme)

Course Code: RAT454
Course Name: CNC MACHINES

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks. Marks

1		Define Computer Numerical Control and mention any two advantages.	(3)
2		List the major components of a CNC machine tool.	(3)
3		State the functions of spindle drives in CNC machine tools.	(3)
4		List any three accessories used in CNC machining centers.	(3)
5		With the aid of 2 examples define the purpose of miscellaneous codes.	(3)
6		Write a short note on electro-magnetic analog position transducers.	(3)
7		What is contouring?	(3)
8		Explain point-to-point programming in CNC machining.	(3)
9		What are programmable machine interfaces?	(3)
10		Shortly explain the functions of CNC systems.	(3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

11	a)	Explain the CNC system overview, including fundamental aspects of machine control with a neat block diagram.	(14)

OR

12	a)	Discuss the construction and operation of turning centers highlighting their advantages over conventional machines.	(14)

Module II

13	a)	Explain in detail the special constructional features of CNC machine tools with neat sketches.	(14)

OR

14	a)	List and explain the different accessories used in machining centers and their purposes.	(14)

Module III

15 a) Explain the working of a Digital Incremental Angular Displacement Measurement System with neat sketches. (14)

OR

16 a) What is manual part program? Write an example of a manual part program for a CNC milling operation (14)

Module IV

17 a) With the help of a block diagram explain the various steps involved in computer aided part programming (14)

OR

18 a) Explain APT language and describe its features and significance. Also, demonstrate any two methods for defining a point, a line, a circle, and a plane in APT programming, using suitable diagrams if required. (14)

Module V

19 a) Describe the major features available in a typical CNC system. (14)

OR

20 a) Discuss interpolation in CNC machines and its types in detail. (14)

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