Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fourth Semester B.Tech Degree Regular and Supplementary Examination June 2023 (2019 Scheme)

Course Code: RAT204

Course Name: MANUFACTURING PROCESSES

Max. Marks: 100 Duration: 3 Hours

PART A

(Answer all questions; each question carries 3 marks) Marks

1		Differentiate between liquid shrinkage and solid shrinkage as related to casting	3
2		What are the advantages of cold rolling than hot rolling?	3
3		List out the fluxes commonly used in soldering process.	3
4		Define the term weldability?	3
5		Differentiate between up milling and down milling	3
6		What is centre less grinding?	3
7		Describe any two methods of specifying a line in an APT language	3
8		What is the function of G-code in manual part programming? Write any five.	3
9		What are the characteristics of Electro Discharge Machining (EDM)?	3
10		Write any six-material addition process in Additive Manufacturing	3

PART B

(Answer one full question from each module, each question carries 14 marks)

Module -1

11	a)	What are the desirable properties of moulding sand?	6
	b)	Describe the construction and working of two high and three high roll mills with simple sketches.	8
12	a)	Differentiate between direct extrusion and indirect extrusion process with simple sketches.	8
	b)	Describe any 4 types of casting defects.	6

Module -2

13	a)	With neat sketch explain characteristics of an oxy -acetylene flame in gas welding.	6
	b)	With the help of neat sketches describe the step-by-step procedure of a friction welding process. Write its advantages.	8
14	a)	Compare DCSP and DCRP in arc welding.	6

b) Explain how TIG welding is carried out. Write the advantages and disadvantages of TIG welding. 8

Module -3

15 a) Illustrate the differential indexing mechanism used in milling with an example. 6

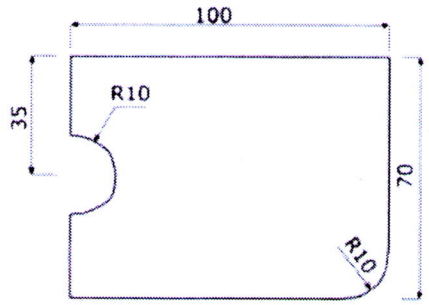
b) With a neat sketch explain the principal parts of a column and knee type milling machine 8

16 a) Enlist the different taper turning methods used in lathe. Explain any two with sketch 6

b) With neat sketch explain any four operations that can be carried out in drilling machine 8

Module -4

17 a) Write a manual part program for milling the shape given in figure. Thickness of work piece is 20 mm. All dimensions are in mm 10



b) Differentiate between absolute and incremental programming. 4

18 a) What are the different motion control systems in NC machine? Explain with Figures. Give example for each system 8

b) Differentiate between NC and CNC 6

Module -5

19 a) Describe the method of spark formation in Electro Discharge Machining (EDM)? 6

b) What are the functions of electrolyte in ECM? What are the properties to be considered while selecting electrolytes in ECM? 8

20 a) What are the different methods of for making metal powders in Powder metallurgy? 8

b) What is material addition process? Name different material addition processes. Explain any one with neat sketch. 6

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