Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S4 (R,S) (FT/WP/PT) Exam April 2025 (2019 Scheme)

Course Code: MET204

Course Name: MANUFACTURING PROCESS

Max. Marks: 100 Duration: 3 Hours

PART A

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

1		What are the considerations for selecting pattern materials?	3
2		Distinguish between internal chills and external chills. Which is more effective?	3
3		Oxidizing flame is desirable during welding of copper alloys. Comment.	3
4		Draw a sketch and explain the principle of arc welding.	3
5		Derive an expression for power required per roll in rolling process.	3
6		List any three methods to reduce roll forces in a rolling process.	3
7		Draw a schematic diagram of a coining process and explain.	3
8		Distinguish between hot forging and cold forging.	3
9		State three basic rules of clamping.	3
10		Define and explain limiting drawing ratio in deep drawing process.	3

PART B

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

Module -1

11	a)	Write a note on design and positioning of risers.	7
	b)	Sketch any three types of cores. Explain the process of core making.	7
12	a)	With a block diagram, explain production steps in sand casting operation.	8
	b)	Write a note on i) inspection of castings, and ii) casting defects.	6

Module -2

13	a)	Draw a schematic of a shielded metal-arc welding process. Why is it known as stick welding? List any four practical applications of the process.	7

	b)	Draw the general view and cross-sectional view of a torch used in oxyacetylene welding.	7
14	a)	Draw a neat sketch of a resistance spot welding process. Write a note on process capability of spot welding.	7
	b)	What are the methods for testing defects in welds? Prepare a chart showing any three defects in welding and the corresponding method of testing of defects.	7

Module -3

15	a)	Draw a neat sketch and explain the hot rolling process. Distinguish between hot rolling and cold rolling.	7
	b)	Define thread rolling. With the help of schematics, explain the steps in thread rolling process. Give any two applications of thread rolling.	7
16	a)	Write a note on i) heat generation and ii) heat transfer in metal forming.	7
	b)	Draw a neat sketch and explain the metal flow pattern in bulk deformation of metals. Discuss how to calculate force and power in a typical bulk deformation process.	7

Module -4

17	a)	Differentiate between hubbing, incremental forging and isothermal forging. Represent using neat sketches.	7
	b)	Draw neat schematics and explain any two extrusion defects.	7
18	a)	Define wire drawing. Derive an expression for drawing force, assuming frictionless conditions.	6
	b)	Draw a neat sketch and explain rotary-swaging process. Write a note on swaging of tubes.	8

Module -5

19	a)	Explain the basic principle of location using a neat sketch.	7
	b)	Distinguish between hydraulic clamping and pneumatic clamping.	7
20	a)	Draw neat sketches of any three stretch forming operations.	6
	b)	Draw sketches and explain i) compound die, ii) progressive die.	8

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