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Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
Fourth Semester B.Tech Degree Examination July 2021 (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	List any three causes of occurrence of shrinkage in castings.	3
2	Differentiate between composite moulds, permanent moulds and expendable moulds.	3
3	Write down any three practical applications of thermit welding.	3
4	What are the causes of porosity in welds? How can it be controlled?	3
5	Define (a) neutral point and (b) draft in a flat rolling process.	3
6	Represent alligating in rolled sheets with a neat sketch and explain.	3
7	Draw and explain any three defects in forged parts.	3
8	Distinguish between drawing and extrusion processes.	3
9	List any three press tool operations.	3
10	Draw a neat sketch to represent shear action in die cutting operation.	3

**PART B**

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

**Module -1**

- 11 a) Write a note on selection of patterns for castings. Sketch any two types of patterns. 8
- b) Explain i) permeability, ii) cohesiveness and iii) refractoriness of moulding sand. 6
- 12 a) Represent the temperature-time graph of i) pure metal, and ii) alloy. Draw the heat extraction pattern in i) sand mould and ii) metal mould. 8
- b) What are the requirements of an ideal gating system? 6

**Module -2**

- 13 a) Draw a neat sketch of friction welding and explain the mechanisms of welding. 6

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- b) Define weldability. Explain the weldability characteristics of i) stainless steels, 8  
ii) copper alloys and iii) tungsten.
- 14 a) Draw a schematic of various regions in a fusion weld zone. Write a note on 6  
HAZ.
- b) Explain any four destructive tests for testing welded joints. 8

### Module -3

- 15 a) Draw and explain any four roll arrangements in a rolling mill. 8  
b) Write a note on residual stresses developed in rolling. 6
- 16 a) Define hot working. List any four advantages of hot working. 6  
b) Explain Von Mises' maximum distortion energy criterion in plastic flow. Draw 8  
a neat sketch and give an example.

### Module -4

- 17 a) Define and explain forging process. Explain the method of choosing forging 8  
temperature range for metals.
- b) Draw the sketches of any three extrusion-die configurations. 6
- 18 a) Draw a neat sketch of a die used for wire drawing. Write a short note on die 8  
materials.
- b) Distinguish between wet drawing and dry drawing. Write a note on roll 6  
straightening of a drawn round rod.

### Module -5

- 19 a) Draw a neat sketch and explain: i) conical locators, ii) adjustable locators and 6  
iii) profile locators.
- b) Draw and explain: i) location of bar in vee block, ii) location in two vees, 8  
iii) location of a rectangular job and iv) location of a job for drilled holes.
- 20 a) Draw the sketch of a die assembly for press working and explain all the 6  
components.
- b) Draw neat sketches of the following sheet metal bending operations: 8  
i) hemming, ii) flanging, iii) beading and iv) roll forming.

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