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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree (S, FE) Examination December 2023 (2015 Scheme)

Course Code: ME220

Course Name: MANUFACTURING TECHNOLOGY

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks.

Marks

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| 1 | a) How is a hollow casting made? | (3) |
| | b) Explain any two tests on moulding sand, the properties assessed by these tests and the significance of these properties in moulding and casting process. | (7) |
| 2 | a) How is centrifugal casting performed? | (3) |
| | b) Sketch and explain the important components in a gating system. | (7) |
| 3 | a) What is neutral point in rolling? | (3) |
| | b) What are the forces acting on a specimen while it is being rolled? Obtain the condition that is to be satisfied for the rolling operation to be performed. | (7) |
| 4 | a) Suggest some alternatives for reducing power requirement in rolling process. | (3) |
| | b) Sketch and explain the features of thread rolling and ring rolling. | (7) |

PART B

Answer any three full questions, each carries 10 marks.

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| 5 | a) What is common to forging and drawing? | (3) |
| | b) Differentiate between open die forging and closed die forging using neat sketches and give their relative merits and demerits. | (7) |
| 6 | a) What is flash in a forging process? | (3) |
| | b) Sketch and explain the following processes: (i) heading (ii) piercing | (7) |
| 7 | a) What do you mean by degrees of freedom? | (3) |
| | b) Explain the concept of locating from planes and circular surfaces. | (7) |
| 8 | a) Explain the principles of clamping. | (3) |
| | b) Explain any two commonly used clamping methods and their applications. | (7) |

PART C

Answer any four full questions, each carries 10 marks.

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| 9 | a) Differentiate between stretching and drawing. | (3) |
| | b) What is springback? Explain the reasons and consequences of springback. | (7) |

- 10 a) What is deep drawing? (3)
b) Explain the features of a tube bending process and the tooling used in it. (7)
- 11 a) What are the factors impacting weldability of a metal? (3)
b) Explain the metallurgical structure of heat affected zone in a welded joint and its subdivisions. (7)
- 12 a) Explain any three welding defects. (3)
b) What are the different flames used in a gas welding process? How do they differ other than in their appearance? (7)
- 13 a) Give a brief explanation of one welding process each that makes use of a consumable electrode and a non consumable electrode. (3)
b) Why a submerged arc welding process is named so? Sketch and explain the process features. (7)
- 14 a) How is welding heat generated in friction welding? (3)
b) Explain the principle of resistance welding process. Give the classification of different resistance welding processes. (7)
