



VIT

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Continuous Assessment Test-II - March 2025

Programme	: B.Tech Mechanical	Semester	: Winter 2024-2025
Course Code	: BMEE302L	Class ID	: CH2024250501070 CH2024250501071 CH2024250501074
Course Title	: Metal Casting and Welding	Slot	: C1+TC1
Faculty(s)	: Dr. Giridharan A, Dr. Manoj Kumar R, and Dr. Bhupesh Singh Katiyar		
Time	: 18.03.2025 (2:00 PM – 3:30 PM)	Max. Marks	: 50

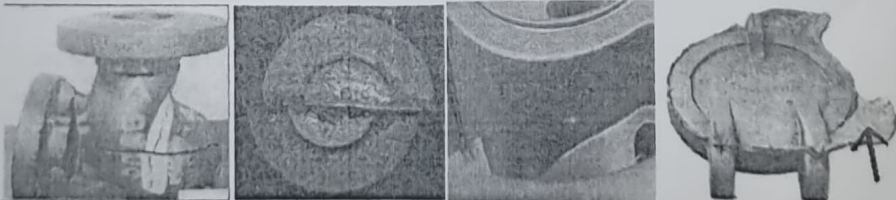
Answer ALL the Questions

Course Outcomes:

CO1: Interpret the solidification characteristics for designing gating system.

CO3: Use various melting practices and explore casting defects.

CO4: Apply suitable welding process for different functional requirements

Q. No.	Sub. Sec.	Question Description	Marks	CO
1.		Design a gating system for a casting of size 500 x 300 x 50 mm made up of cast iron. The casting has four fins on its sides. The dimension of each fin is 260 x 60 x 3 mm. The density of solid cast iron = 7.86 g/cc, density of liquid cast iron = 6.9 g/cc, Fluidity length = 0.65 mm and height of the cope = 100 mm.	10	1
2.		Three metal pieces being cast have the same volume but different shapes such as a sphere, a cube and the other a cylinder with its height equal to its diameter (Assume that $n = 2$). Which of these shapes will solidify the fastest and which one the slowest?.	10	1
3.		Identify the type of casting defects from the following images. Explain the root cause and remedial measures to overcome it. 	10	3
4.		A cupola of 100 mm diameter has melting ratio of 10:1. The weight of regular charge of coke is 35 kg. Calculate i. Air required for complete combustion ii. Air required to melt 500 kg of iron at this ratio iii. The coke required to melt 500 kg of iron if melting ratio is 4:1 and 12:1 iv. If the melting ratio is 12:1, what is volume of air required for complete combustion.	10	3
5.		Illustrate schematically the various types of flame obtained from an oxyacetylene welding process. Can we use all types of flames to weld any metal. If not why?	10	4

