

**P.E.S. College of Engineering, Mandya - 571 401***(An Autonomous Institution affiliated to VTU, Belagavi)***Eighth Semester, B.E. - Mechanical Engineering****Semester End Examination; July / August - 2022****Foundry and Welding Technology**

Time: 3 hrs

Max. Marks: 100

Course Outcomes*The Students will be able to:**CO1: Define and explain concept of solidification of metal solidification of pure metals nucleation homogeneous are self-nucleation.**CO2: Describe gating system requirements, purpose of functions of the gating system pouring cups and basins-spruers- gates, their characteristics and different types.**CO3: Explain shakeout modern developments, punch out machines, shakeout tables and decks, high frequency shakeouts, vibrating shakeout conveyors.**CO4: Describe special welding processes, electron beam welding, laser beam welding, friction Stir welding, and identify cracks in welding.**CO5: Classify weld defects in other arc welding processes: Resistance welding defects, defects in friction welding, defects in welds of other welding processes.***Note:** I) **PART - A** is compulsory. **Two** marks for each question.II) **PART - B:** Answer any **TWO** sub questions (from a, b, c) for Maximum of **18 marks** from each unit.

Q. No.	Questions	Marks	BLs	COs	POs
I : PART - A		10			
I a.	What are the functions of gating system?	2	L1	CO1	PO1
b.	What is die casting?	2	L1	CO2	PO1
c.	Define solidification.	2	L2	CO3	PO1
d.	Classify weld defects.	2	L1	CO4	PO2
e.	Define Hot and Cold crack.	2	L2	CO5	PO1
II : PART - B		90			
UNIT - I		18			
1 a.	Describe the concept of solidification of metal.	9	L2	CO1	PO2
b.	Explain different types of nucleation.	9	L2	CO1	PO2
c.	Discuss the mechanism of dendrite formation and dendrite growth	9	L1	CO1	PO2
UNIT - II		18			
2 a.	Describe the different functions and requirements of gating system.	9	L2	CO2	PO2
b.	Explain various types of Risers with their advantages and limitations.	9	L2	CO2	PO2
c.	Explain with neat diagram blind riser.	9	L2	CO2	PO2
UNIT - III		18			
3 a.	Describe the different defects in casting. What are the causes and remedies?	9	L2	CO3	PO2
b.	Discuss steps involved in metal casting process, with the flow diagram.	9	L1	CO3	PO2

- c. Define pattern. What are the materials used for making pattern?
Explain briefly.

9 L2 CO3 PO2

UNIT - IV

18

- 4 a. With neat sketch, discuss laser welding process.

9 L1 CO4 PO2

- b. With neat sketch, explain friction Stir welding process.

9 L1 CO4 PO2

- c. List and explain the factors contribution to weld cracking.

9 L2 CO4 PO3

UNIT - V

18

- 5 a. Mention advantages and disadvantages of ultrasonic inspection method.

9 L1 CO5 PO3

- b. Describe with neat sketch. Radiography inspection method.

9 L2 CO5 PO2

- c. Discuss in detail weld defects.

9 L1 CO5 PO3

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