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# 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
<b>I : PART - A</b>		<b>10</b>			
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
<b>II : PART - B</b>		<b>90</b>			
<b>UNIT - I</b>		<b>18</b>			
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
<b>UNIT - II</b>		<b>18</b>			
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
<b>UNIT - III</b>		<b>18</b>			
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.  
b. With neat sketch, explain friction Stir welding process.  
c. List and explain the factors contribution to weld cracking.

9 L1 CO4 PO2

9 L1 CO4 PO2

9 L2 CO4 PO3

**UNIT - V****18**

- 5 a. Mention advantages and disadvantages of ultrasonic inspection  
method.  
b. Describe with neat sketch. Radiography inspection method.  
c. Discuss in detail weld defects.

9 L1 CO5 PO3

9 L2 CO5 PO2

9 L1 CO5 PO3

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