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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 - 2021

Foundry and Welding Technology

Time: 3 hrs

Max. Marks: 100

Note: Answer any FIVE full questions.

- 1 a. Explain the cooling and super cooling curve of pure metal during solidification process. 10
- b. Write a note on;
 - i) Dendrite formation 10
 - ii) Solute Distribution
- 2 a. Explain free energy changes in homogeneous nucleation. 10
- b. Discuss the properties of cast steel by controlling the carbon content with phase diagram. 10
- 3 a. With a neat sketch, explain the top gate and list advantages, disadvantages and applications. 10
- b. Differentiate pressurized and un-pressurized gating system. 10
- 4 a. Explain the general principles consider in feeder head design. 10
- b. With a neat sketch, explain the blind riser and list the advantages and disadvantages. 10
- 5 a. List the methods used for removing feeding and gating system. Explain any two. 10
- b. Explain the following design construction:
 - i) Economic consideration 10
 - ii) Dimensional tolerance
- 6 a. Explain the following shakeout techniques in casting process:
 - i) Vibrating shakeout conveyers 10
 - ii) Rotary seperators
- b. Explain different finishing operation carried out in casting process. 10
- 7 a. Define welding. Classify the welding process. 8
- b. With a neat sketch, explain the resistance seam welding and spot welding process. 12
- 8 a. Sketch and explain the Electro slag welding process. 10
- b. Explain hot crack and cold crack in welding process. 10
- 9 a. List welding defects. Explain any five defects with its causes and remedies. 10
- b. Compare the destructive and non-destructive test. 10
- 10 a. With a neat sketch, explain the working principle of ultrasonic testing. 10
- b. Explain the working principle of magnetic particle testing in weld inspection. 10

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