

GANPAT UNIVERSITY
B. Tech. Semester: VIIth Mechanical Engineering

Regular Examination Nov – Dec 2015

2ME705/1 Foundry Technology

Time: 3 Hours

Total Marks: 70

- Instructions: i) Answer two sections separately.
ii) Figures to the right indicate full marks.
iii) Assume suitable data if necessary.

Section I

- Q.1
- | | |
|--|----|
| [a] Explain the effect of following variables on quality of casting cast by centrifugal casting: | 12 |
| i) Speed of mould rotation, ii) Pouring temperature | 4 |
| [b] Differentiate between true centrifugal, semi centrifugal and centrifuge casting process. | 4 |
| [c] Differentiate between green sand moulding and dry sand moulding process. | 4 |

OR

- Q.1
- | | |
|--|----|
| [a] Explain functions of gating system. What is gating ratio? Differentiate between single gate and multiple gating systems. | 12 |
| [b] Discuss the principles in feeder head design. | 4 |
| [c] Discuss the importance of following terms:
i) Padding, ii) Chills, iii) Insulator | 4 |
- Q.2
- | | |
|---|----|
| [a] Differentiate between CO ₂ moulding and shell moulding process. | 11 |
| [b] Explain production sequence of investment casting process with neat sketch. Also discuss factors influencing casting quality, characteristics and applications of investment casting process. | 3 |
| [c] Explain various aspects of sand reclamation. | 6 |
| | 2 |

OR

- Q.2
- | | |
|--|----|
| [a] Define following defects and also discuss their preventing measures:
i) Blow holes, ii) Shrinkage defects | 11 |
| [b] What is pattern? Discuss pattern allowances in detail. | 4 |
| [c] Discuss moulding sand ingredients in detail. | 4 |
- Q.3
- | | |
|--|----|
| Write short notes on Any Three of following: | 3 |
| [a] Nucleation and Growth | 12 |
| [b] Cores and core making | |
| [c] Die casting | |
| [d] Types of pattern | |

Section - II

Q.4

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|--|--------|
| [a] Discuss gas porosity in Aluminum castings. | 11 |
| [b] Explain importance of following fluxes in Aluminum alloy castings:
i) Covering fluxes, ii) Cleaning fluxes, iii) Dressing –off fluxes | 4
5 |
| [c] Draw a neat sketch of Al-Si phase diagram. Also give broad classification of Al-Si alloys along with microstructural features. | 2 |

OR

Q.4

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|--|--------|
| [a] Define inoculation and explain the role of inoculation of gray cast iron. | 11 |
| [b] Explain melting practice of malleable cast iron along with microstructural features and applications of malleable cast iron. | 4
4 |
| [c] Differentiate between white and malleable cast iron. | 3 |

Q.5

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|--|--------|
| [a] Explain importance of Al-5Ti-1B as grain refiner in Al-Si alloy casting. | 12 |
| [b] Explain effects of strontium in Al-Si alloy metal casting. | 4
4 |
| [c] Define heat treatment. Explain T6 heat treatment process | 4 |

OR

Q.5

- | | |
|--|----|
| [a] What is the principle of ultrasonic testing? Explain ultrasonic flow detection technique in detail. | 12 |
| [b] Discuss the principle and theory of X-ray radiographic test with neat sketch. | 4 |
| [c] What are the advantages of non-destructive testing methods? Also explain visual inspection technique of NDT. | 4 |

Q.6

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|--|----|
| Write short notes on the following:(Any Three) | 12 |
| [a] Sand testing | |
| [b] Continuous casting | |
| [c] Plant equipment and mechanization | |
| [d] Melting process of Brass | |

End of Paper