

Ganpat University
M.Tech. Sem. II (AMT) Mechanical Engineering
CBCS Regular Examination May-2014
Sub.:3 ME202 Advanced Metal Casting & Welding 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** **12**
- [a] Explain procedural steps of shell moulding process. Enlist advantages, limitations and applications of process.
 - [b] Differentiate between true centrifugal and centrifuge casting process.
 - [c] Enlist and explain causes and remedies of defects occurred during centrifugal casting.

OR

- Q.1** **12**
- [a] Explain degassing operation in Aluminum alloy melting.
 - [b] Explain grain refinement of Aluminum alloy in detail.
 - [c] Differentiate between micro and macro segregation.
- Q.2** **11**
- [a] Enlist and explain melting practice of gray cast iron.
 - [b] Explain melting practice of stainless steel.
 - [c] What is gating ratio? Differentiate between pressurized and unpressurized gating system.

OR

- Q.2** **11**
- [a] Explain pattern allowances in detail. Also enlist and explain selection of pattern material.
 - [b] Explain with neat sketch following patterns:
i) Gated pattern, ii) Match plate pattern, iii) Sweep pattern
 - [c] Explain functions of riser. Also explain effects of following :
i) Exothermic materials, ii) Chill, iii) Padding
- Q.3** **12**
- Write short notes on any the following:**
- [a] Functions of gating system
 - [b] Defects in die casting
 - [c] Process variables of continuous casting process
 - [d] Riser design

Section - II

- Q.4 12
- [a] Describe the function and characteristics of electrode? What functions do coatings have? How are electrode classified?
 - [b] What are the similarities and differences between consumable and non-consumable electrode?
 - [c] What is an arc blow? Explain with a neat sketch the causes of the arc blow, its effect on welding and the methods to reduce the arc blow problem.

OR

- Q.4 12
- [a] What is welding? Differentiate between soldering and brazing.
 - [b] What is mean by oxy-acetylene gas welding? Explain various flames of oxy-acetylene gas welding.
 - [c] Differentiate between straight and reverse polarity.

- Q.5
- [a] What is distortion? Explain in detail with neat sketch. How longitudinal distortion rectified? 5
 - [b] Explain the principle of resistance welding. What advantages do resistance welding processes have over the other welding processes? 6

OR

- Q.5
- [a] What are the basic joint design differences between designs used with filler metal and that used without filler material? 5
 - [b] Differentiate between TIG and MIG welding process. 6
- Q.6 Write short notes on the following:(Any Three) 12
- [a] Submerged arc welding
 - [b] Weld defects
 - [c] Types of flux
 - [d] Under water welding

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