

Ganpat University
M.Tech. Sem. II (AMT) Mechanical Engineering
CBCS (NEW) Regular Examination | April - June 2015
Sub.:3ME202 Advanced Metal Casting & Welding Technology

Time: 3 Hours

Total Marks: 60

- 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 continuous casting process. Also discuss causes and remedies of continuous castings defects. **03**
- [b] Differentiate between gray cast iron and nodular cast iron with respect to microstructure, properties, application and melting practice. **04**
- [c] Explain causes and remedies of following defects occurred during permanent mould casting: **03**
i) Dross and associated gas holes, ii) Misruns

OR

Q.1

- [a] Explain T 6 Heat treatment of Aluminum alloys. **04**
- [b] Explain effects of following in Aluminum melting;
i) Grain refinement ii) Degassing **03**
- [c] Explain effect of modification in Aluminum –Silicon alloys. **03**

Q.2

- [a] What is segregation? Differentiate between micro segregation and macro segregation. **03**
- [b] Explain melting practice of Brass. What is the suitable casting processes used for Brass? **04**
- [c] Discuss the different ingredients of moulding sand. Also compare these ingredients with the ingredients of core sand. **03**

OR

Q.2

- [a] What are pattern allowances? Explain pattern allowances in detail. **03**
- [b] Explain with neat sketch following patterns: **03**
i) Segmental pattern, ii) Follow board pattern, iii) split pattern
- [c] Explain following moulding sand test: **04**
i) Mould hardness test ii) Permeability test

Q.3

- Write short notes on any the following:(Any Two)** **10**
- [a] Induction furnace
- [b] Defects in casting
- [c] Cupola furnace

Section - II

Q.4

- [a] What do you understand polarity in welding? Compare D.C. welding with A.C. welding. 03
- [b] How GTAW and GMAW differentiate from each other on the basis of process parameters, equipment used and applications? 04
- [c] Differentiate between carburizing and oxidizing flames. 03

OR

Q.4

- [a] Explain the effects of alloying of various elements on welding of low alloy carbon steel. 03
- [b] What is arc blow? Discuss the mechanism of arc blow. 03
- [c] What is meant by weld quality? Discuss factors that influence it. 04

Q.5

- [a] Define weldability of materials; mention the factors that influence it. 03
- [b] What are the characteristics of the HAZ? Also explain the factors affecting HAZ. 03
- [c] What is the principle behind Ultrasonic welding? Describe Ultrasonic welding with a neat sketch. 04

OR

Q.5

- [a] What do you mean by Underwater welding? describe in brief. How arc stability could be improved in it? 04
- [b] Why automation is required in welding process? Enlist and explain the work motion devices used in welding process. 03
- [c] Discuss the welding of dissimilar metal with suitable examples. 03

Q.6

- Write short notes on Any Two of following:** 10
- [a] Submerged arc welding
 - [b] Laser beam welding
 - [c] Weld decay
 - [d] Schaeffler diagram

End of Paper