18/11/13

B.E /B.Tech(Full-Time) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY2013
MATERIALS SCIENCE AND ENGINEERING
SEVENTH SEMSTER-REGULATIONS 2008

ML9403 WELDING METALLURGY

Time: 3Hrs **Max.Marks:100**

Answer All Questions

15

Part –A (10x2=20 Marks)

1. State the significance of edge preparation.
2. Compare between Oxy Acetylene and Arc Welding based on the width of HAZ.
3. Mention some of the uses of TTT diagrams.
4. What do you mean by Acicular ferrite?
5. How Stainless steels are classified?
6. Draw the microstructure of Pearlitic ductile cast iron.
7. List down the typical properties of Aluminium alloys.
8. Why Titanium is preferred for Chemical and Marine applications?
9. Differentiate between the terms defect and defective.
10. List down some popular NDT Techniques which are used to assess the weld quality.

Part – B (5x16 = 80 Marks)

11 Discuss the heat flow and its consequences in the welding of 0.4% plain carbon steel by arc welding processes

12a Draw Iron-Iron carbide diagram, indicate the various phases and explain the invariant reactions in it.

(OR)

12b What do you mean by Hydrogen assisted cracking? How this cracking can be prevented explain in detail?

13a What do you mean by weld decay in stainless steel ? state their harmful effects.How this problems can be minimised?

(OR)

13b A fusion weld is to be carried out on a grey iron casting. Explain the precautions to be adopted to ensure that the welded zone will be of grey cast iron after welding.

14a What are the typical problems encountered while welding Oxygen-bearing Copper, Oxygen-free Copper and Phosphorus-Deoxidized copper? Suggest suitable remedies.

(OR)

14b Discuss on the welding characteristics of Precipitation hardenable Nickel base alloys.

15a List down the common welding defects encountered in arc welding and discuss the causes and cure for any four welding defects .

(OR)

15b Define Weldability and explain any two techniques which can be used to asses weldability.