

Code No: 07A5EC22

**R07****Set No. 2****III B.Tech I Semester Examinations, November 2010****WELDING TECHNOLOGY****Common to Production Engineering, Metallurgy And Material Technology****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions****All Questions carry equal marks**

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1. (a) Describe the welding consideration for cast iron?  
(b) Explain the following:
  - i. Buttering
  - ii. Studding.[8+8]
2. (a) Explain the theory of diffusion welding?  
(b) Discuss the important parameters of diffusion welding? [8+8]
3. (a) Discuss the concept of dissimilar metal welding?  
(b) Explain the resistance welding of dissimilar metal welding? And also mention the advantages and limitations of this process? [6+10]
4. A dye penetration method may be used for detecting defects in a welded joint:
  - (a) Outline the principle of this method
  - (b) What type of defects may be revealed? [8+8]
5. Write a short note on:
  - (a) Soldering carbon and low alloy steels
  - (b) Soldering of copper and its alloys. [8+8]
6. (a) Explain the principle of operation, equipment and procedure for Manual Metal Arc Welding.  
(b) Explain the modes of transfer of metal during arc welding process? [8+8]
7. Discuss the principle of measuring the hardness of Heat Affected Zone using Jominey hardenability test? Give the advantages and limitations of the test in predicting the HAZ hardness? [16]
8. (a) With neat sketch, describe the principle of operation of any welding fixture which you are acquainted?  
(b) What are the applications of Welding Technology? [10+6]

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**R07****Set No. 4****III B.Tech I Semester Examinations, November 2010****WELDING TECHNOLOGY****Common to Production Engineering, Metallurgy And Material Technology****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions****All Questions carry equal marks**

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1. (a) Write the advantages and limitations of spot welding?  
(b) Explain the important applications of spot welding. [10+6]
2. (a) Discuss the welding characteristics of gray cast iron?  
(b) What different joints are preferred for cast iron welding?  
(c) Explain in detail arc welding of cast iron with the help neat sketch? [5+5+6]
3. Define soldering flux. What are different types of soldering fluxes? Explain them in detail. How and on what the fluxes will be selected? [16]
4. (a) What is the function of electrode in arc welding? Name few commercial coatings used on electrodes. What are their characteristics?  
(b) What characteristics of voltage and current change if we switch over to automatic welding? [8+8]
5. Mention the advantages and limitations of preheating and post heating of weldments. [16]
6. (a) State and explain the factors that must be considered for effective operation of a welding fixture.  
(b) "It is poor practice to weld only one side of a double bevel joint". Comment. [8+8]
7. Explain the following in the welding of aluminum and its alloy? Suggest suitable remedies for the same:  
(a) Liquitation cracking  
(b) Stress corrosion cracking. [8+8]
8. (a) Give examples for joining of dissimilar metals.  
(b) Explain the brazing process for joining of dissimilar metals. [8+8]

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**R07****Set No. 1****III B.Tech I Semester Examinations, November 2010****WELDING TECHNOLOGY****Common to Production Engineering, Metallurgy And Material Technology****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions****All Questions carry equal marks**

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1. (a) Explain equipment used in manual metal arc welding with neat sketch?  
(b) What are the applications, advantages and limitations of manual metal arc welding? [8+8]
2. (a) Discuss the weldability of martensitic stainless steels?  
(b) What is weldability? Explain how and on what basis weldability can be assessed. [8+8]
3. (a) In what way does laser butt welding resembles plasma arc welding?  
(b) What happens during the hold time of spot weld? [8+8]
4. (a) List out factors to be considered for solder joint design?  
(b) List out different solder alloys? What factors should be considered in selection of solder alloy? [6+10]
5. (a) Explain arc welding of welding aluminum and its alloys and also mention relative advantages, limitations and application?  
(b) List out the characteristics of aluminum and its alloys affects the resistance welding? [8+8]
6. Explain following welding techniques in detail:
  - (a) Left ward
  - (b) Right ward
  - (c) Vertical welding.
  - (d) Overhead welding. [16]
7. State how the following may arise in welding practice. Explain how each may be prevented.
  - (a) Grain growth in brass
  - (b) Over ageing of precipitation hardenable aluminum alloys
  - (c) Intergranular corrosion of austenitic stainless steel. [16]
8. List out the metallurgical principles which apply to:
  - (a) Melt

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- (b) The structure as the metal cools at various temperatures and
- (c) The structure and mechanical properties after the metal has cooled to room temperature. [16]

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**R07****Set No. 3****III B.Tech I Semester Examinations, November 2010****WELDING TECHNOLOGY****Common to Production Engineering, Metallurgy And Material Technology****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions****All Questions carry equal marks**

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1. (a) What do you understand by the term soldering?  
(b) Explain the phenomena of brazing. [8+8]
2. (a) Explain the factors to be considered in selection of weld joints.  
(b) Explain various welding positions with neat sketches. [8+8]
3. (a) Compare spot welding with upset welding?  
(b) State the differences between seam and roll welding? [8+8]
4. (a) Distinguish between spray transfer and short circuit transfer of metal?  
(b) What is effect of variation of voltage on weld bead characteristics? [8+8]
5. (a) How Jominey hardenability test is useful at HAZ? Explain.  
(b) What is post weld heat treatment? Describe the reformation of structure. [8+8]
6. (a) Explain the welding process for weathering steels.  
(b) What is stress corrosion cracking? Explain in detail. [8+8]
7. (a) Explain the process of explosive welding for joining of dissimilar metals.  
(b) How do you calculate and control the weld metal composition resulting from dilution of two different metals? [8+8]
8. (a) Give the reasons for porosity in low carbon steel? How to avoid porosity?  
(b) How the cold cracking may arise in welding of low alloy high tensile steel? Explain how it may be prevented ? [8+8]

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