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NPTEL

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Courses » Welding of Advanced High Strength Steels for Automotive Applications

Announcements

**Course**

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## Unit 4 - Week 2

### Course outline

How to access the portal

### Pre-requisite Assignment

#### Week 1

#### Week 2

- Quiz : Assignment 2
- Thermal and Mechanical Processing of TRIP and Hot Forming Steels
- Introduction to Welding Processes in Automotive Industries
- Principles of Resistance Spot Welding (RSW)
- Process Characteristics of Resistance Spot Welding - Part - I
- Process Characteristics of Resistance Spot Welding - Part - II
- Week 2 - Feedback - Welding of Advanced High Strength Steels for Automotive Applications

#### Week 3

#### Week 4

## Assignment 2

The due date for submitting this assignment has passed. **Due on 2018-09-12, 23:59 IST**  
As per our records you have not submitted this assignment.

Answer all the questions.

If the questions have multiple correct answers, all the answers should be provided.

Choose the best answer

1) Allotropic phase boundary is at a given temperature 1 point

- in which austenite carbon concentration reduces below ferrite concentration
- Gibbs energy of austenite reduces below the Gibbs energy of ferrite
- carbon concentration of ferrite and austenite at which both phases have same Gibbs energy
- in which Gibbs energy of ferrite reduces below the Gibbs energy of austenite.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*carbon concentration of ferrite and austenite at which both phases have same Gibbs energy*

2) Heat generation in resistance spot welding is mainly dictated by 1 point

- resistance of the electrodes
- bulk resistance of the sheets to be welded
- contact resistance of the interfaces between the sheets to be welded
- none of the above.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*contact resistance of the interfaces between the sheets to be welded*

3) When electrode force in resistance spot welding increases 1 point

- contact resistance between the faying interfaces decreases
- weld nugget diameter increases
- heat generation does not significantly change
- bulk resistance of the electrodes increases.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*contact resistance between the faying interfaces decreases*

4) Preheat time in enhanced resistance spot welding thermal cycle is to 1 point

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- reduced the temperature gradients before the onset of welding
- reduced the cooling rate upon welding
- refine the grain size
- to reduce expulsion.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*reduced the temperature gradients before the onset of welding*  
*reduced the cooling rate upon welding*

5)  $I_{max}$  in resistance spot welding is ?

- current at which weld nugget diameter equals to  $4\sqrt{thickness}$
- current at which weld nugget diameter increases to  $4\sqrt{thickness}$
- current at which expulsion of melt occurs
- maximum current that can be supplied by a spot welding machine

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*current at which expulsion of melt occurs*

6) Weld time of resistance spot welding is

- directly proportional to current
- directly proportional to thickness of the sheet
- inversely proportional to thickness of the sheet
- not related to thickness of the sheet.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*directly proportional to thickness of the sheet*

7) In full interface failure of resistance spot welds, plug ratio is

- 0
- infinity
- 0.5
- 1

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*0*

8) The deterioration of copper electrodes life while welding galvanised steels is mainly due to

- melting of electrodes
- diffusion of zinc to electrode surface
- oxidation of copper
- diffusion of copper to steel.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*diffusion of zinc to electrode surface*

9) When the ultimate tensile strength of the steel increases, failure of resistance spot welds

- changes from full plug to interface failure



1 point

1 point

1 point

1 point

1 point

- plug ratio remains the same
- changes from interface failure to full plug failure
- plug ratio increases.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*changes from full plug to interface failure*

10) Generally alternating current is preferred for resistance spot welding to,

- reduce the heat input
- increase the heat input
- overcome shunt effect
- overcome Peltier effect

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*overcome Peltier effect*



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