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Courses » Advances in Welding and Joining Technologies

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Unit 2 - Week 1: Fundamentals of Welding and Joining

Course outline

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Week 1: Fundamentals of Welding and Joining

- Lesson 1: Fundamentals of Welding and Joining Part I
- Lesson 2: Fundamentals of Welding and Joining Part II
- Lesson 3: Fundamentals of Welding and Joining Part III
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- Lesson 5: Fundamentals of Welding and Joining Part V
- Quiz : Assignment 1
- Lecture Content (WEEK 1)
- Assignment 1 (Solution)

Week 2: Laser and Electron Beam Welding

Week 3: Solid State Welding Processes

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Assignment 1

The due date for submitting this assignment has passed. **Due on 2018-02-21, 23:59 IST.**

Submitted assignment

- 1) Arrange the following welding processes in the order of decreasing power density. 1 point
- (i) Laser beam welding (ii) Electron beam welding (iii) Gas metal arc welding
- (i)>(iii)>(ii)
 (iii)>(i)>(ii)
 (i)>(ii)>(iii)
 (ii)>(i)>(iii)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(i)>(ii)>(iii)

- 2) In which one of the following area, soldering is primarily used? 1 point
- Construction sites
 Electronics industries
 Joining railway tracks
 Joining of shafts

No, the answer is incorrect.

Score: 0

Accepted Answers:

Electronics industries

- 3) Which one of the following is false statement about plasma arc welding (PAW)? 1 point
- Torch is water cooled to increase the life of nozzle and electrode.
 Same gas can be used as plasma and shielding gas.
 Keyhole mode is not possible in PAW.
 It uses non-consumable tungsten electrode.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Keyhole mode is not possible in PAW.

- 4) Which one of the following statements is incorrect about Brazing? 1 point

**Welding
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Processes****Week 6: Welding
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and Joining of
Non-Metals****Week 8: Metal
Transfer in
Welding and
Metal Printing**

- A lower melting point material is drawn into the gap between the components by capillary action.
- There is no melting of the metals to be joined.
- Brazing is done at a temperature lower than 450°C.
- The gap between the parent metal influence the joint strength.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Brazing is done at a temperature lower than 450°C.

5) Which one of the following statements is not true about adhesive bonding? **1 point**

- Larger molecules causes better adhesion, hence organic adhesives are commonly used.
- The liquid adhesive is used to wet the surfaces to be bonded.
- Curing is not possible at relatively low temperature
- It relies on attractive forces between the molecules at the surface of the adhesive and the surface to be joined.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Curing is not possible at relatively low temperature

6) Which one of the following type of flame produces hard carbides of steel during gas welding? **1 point**

- Oxidising flame
- Carburizing flame
- Neutral flame
- No flame produces

No, the answer is incorrect.

Score: 0

Accepted Answers:

Carburizing flame

7) The temperature of a carburizing flame in Oxy-acetylene gas welding is that of neutral flame? **1 point**

- Lower than
- Higher than
- Equal to
- Unrelated to

No, the answer is incorrect.

Score: 0

Accepted Answers:

Lower than

8) The voltage - current characteristics of constant current power source for the arc welding must be **1 point**

- Exponentially rising
- Drooping
- Straight line
- Parabolic

No, the answer is incorrect.

Score: 0

Accepted Answers:

Drooping

9) The mode of failure of adhesive bonding which involves internal failure of the substrate close to **1 point**

- Structural failure
- Cohesive failure
- Adhesive failure
- Interfacial failure

No, the answer is incorrect.

Score: 0

Accepted Answers:

Structural failure

10) Practically, welding of Titanium is challenging task due to **1 point**

- Its light weight
- Formation of brittle structure as a result of oxide, nitride etc.
- Increasing ductility behavior at high temperature
- Due to non-amorphous behavior

No, the answer is incorrect.

Score: 0

Accepted Answers:

Formation of brittle structure as a result of oxide, nitride etc.

11) Which one of the following characteristics are true for Submerged Arc welding? **2 points**

- Electrode: non-consumable; Thermal insulator: flux; Welding rate: low; Suitability: thick plate.
- Electrode: consumable; Thermal insulator: flux; Welding rate: high, Suitability: thick plate.
- Electrode: consumable; Thermal insulator: flux; Welding rate: low; Suitability: thin plate.
- Electrode: non-consumable; Thermal insulator: flux; Welding rate: high; Suitability: thin plate.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Electrode: consumable; Thermal insulator: flux; Welding rate: high, Suitability: thick plate.

12) Choose the correct match for different brazing: **2 points**

- | | |
|-------------------------|---|
| i. Torch brazing | 1. Used to braze oxidation sensitive alloy. |
| ii. Induction brazing | 2. Fuel gas flame like hydrogen is used for brazing. |
| iii. Continuous furnace | 3. Involves preheating, heating and post-heating zones. |
| iv. Vacuum furnace | 4. Electric coil used to heat filler material for tube to tube brazing. |

- i-2, ii-4, iii-3, iv-1
- i-3, ii-2, iii-1, iv-4
- i-1, ii-2, iii-4, iv-3
- i-4, ii-3, iii-1, iv-2

No, the answer is incorrect.

Score: 0

Accepted Answers:

i-2, ii-4, iii-3, iv-1

13 Correlate the energy source used for joining process with corresponding welding techniques. *2 points*

- | | |
|------------------------|-------------------------|
| i. Optical Sources | 1. Electro-slag welding |
| ii. Electrical sources | 2. Explosion welding |
| iii. Chemical sources | 3. Thermite welding |
| iv. Mechanical Sources | 4. Laser beam welding |

- i-1, ii-4, iii-3, iv-4
 i-4, ii-1, iii-3, iv-2
 i-3, ii-2, iii-4, iv-1
 i-2, ii-3, iii-1, iv-4

No, the answer is incorrect.

Score: 0

Accepted Answers:

i-4, ii-1, iii-3, iv-2

14 The bonding mechanism “Interfacial Morphology” is unique characteristics of which solid-state welding process? *2 points*

- Explosive welding
 Diffusion welding
 Cold welding
 Friction welding

No, the answer is incorrect.

Score: 0

Accepted Answers:

Explosive welding

15 For a DCEN configuration, what is the correct sequence of various zones in an arc gap from the electrode? *2 points*

- Anode drop zone - Cathode drop zone- Plasma- Cathode spot- Anode spot
 Anode drop zone - Anode spot - Plasma- Cathode spot- Cathode drop zone
 Anode drop zone - Anode spot - Cathode spot - Plasma - Cathode drop zone
 Cathode spot- Cathode drop zone - Plasma- Anode drop zone - Anode spot

No, the answer is incorrect.

Score: 0

Accepted Answers:

Cathode spot- Cathode drop zone - Plasma- Anode drop zone - Anode spot

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