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Courses » Advances in Welding and Joining Technologies

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Unit 4 - Week 3: Solid State Welding Processes

Course outline

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Assignment 3

The due date for submitting this assignment has passed. **Due on 2018-02-25, 23:59 IST.**

Submitted assignment

1) Which one of the following is **NOT** a solid-state welding process? 1 point

- Friction stir welding
- Ultrasonic welding
- Gas tungsten arc welding
- Explosive welding

No, the answer is incorrect.

Score: 0

Accepted Answers:

Gas tungsten arc welding

2) Out of the given process parameters below, which one of the following is **NOT** relevant to ultrasonic welding? 1 point

- Clamping force
- Welding time
- Frequency
- Tool rotation

No, the answer is incorrect.

Score: 0

Accepted Answers:

Tool rotation

3) Why is friction stir welding known as “green technology”? 1 point

- It uses a green colored tool
- Due to its energy efficiency and environmental friendliness
- Due to its process efficiency
- It can be used to join dissimilar materials

No, the answer is incorrect.

Score: 0

Accepted Answers:

Due to its energy efficiency and environmental friendliness

4) Which material cannot be weld using friction stir welding process? 1 point

- Steel
- Aluminum

Week 6: Welding Metallurgy

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- Magnesium
- Gold

No, the answer is incorrect.
Score: 0

Accepted Answers:
Gold

5) What is the range of sonic velocity of metals? 1 point

- 1000 – 2000 m/s
- 2000 – 6000 m/s
- 9000 – 10000 m/s
- 0 – 500 m/s

No, the answer is incorrect.
Score: 0

Accepted Answers:
2000 – 6000 m/s

6) In cold welding process, at what temperature coalescence of metals is produced? 1 point

- Room temperature
- Above recrystallization temperature
- At melting temperature
- At recrystallization temperature

No, the answer is incorrect.
Score: 0

Accepted Answers:
Room temperature

7) Which one of the following is **NOT** a part of ultrasonic welding system? 1 point

- Anvil
- Transducer
- Booster
- Welding torch

No, the answer is incorrect.
Score: 0

Accepted Answers:
Welding torch

8) Which one of the following options is **NOT** true about friction stir welding 1 point

- Fine microstructure is produced.
- Good dimensional stability and repeatability is obtained.
- Absence of cracking in welds.
- Shielding gas is used.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Shielding gas is used.

9) Which one of the following is **NOT** a process parameter of electromagnetic pulse welding process? 1 point

- Tool traverse rate
- Frequency
- Voltage
- Current

No, the answer is incorrect.

Score: 0

Accepted Answers:

Tool traverse rate

10) Wedge reed system is relevant to which one of the solid-state welding process? 1 point

- Ultrasonic welding
- Diffusion welding
- Cold welding
- Friction welding

No, the answer is incorrect.

Score: 0

Accepted Answers:

Ultrasonic welding

11) During the friction stir welding of Aluminum plates (Yield strength: 240 MPa), 2 points
the tool rotates at 1500 rpm with shoulder and pin diameter of 7 mm and 3 mm respectively. The heat generation on the shoulder surface due to sticking condition is

- 1.8 kJ
- 1.6 kJ
- 1.2 kJ
- 1.4 kJ

No, the answer is incorrect.

Score: 0

Accepted Answers:

1.8 kJ

12) Which one of the following gives correct relationship between temperature and 2 points
diffusion coefficient for the diffusion bonding process? (where D = diffusion coefficient;
 D_0 = diffusion constant; Q = activation energy; T = absolute temperature; K = Boltzmann
constant).

- $D = D_0 e^{\frac{-Q}{KT}}$
- $D = D_0 e^{\frac{Q}{KT}}$
- $D = D_0 e^{\frac{KT}{Q}}$
- $D = D_0 e^{\frac{-KT}{Q}}$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$$D = D_0 e^{\frac{-Q}{KT}}$$

13) In friction stir welding, the following metallurgical zones are produced: A - 2 points
preheating zone, B - forging zone, C - extrusion zone, D - cool down zone, and E - initial
deformation zone

Arrange different zones in correct special sequence

- D - E - C - B - A
- D - C - E - A - B
- A - E - C - B - D
- A - B - C - D - E

No, the answer is incorrect.

Score: 0

Accepted Answers:

A – E – C – B – D

14 In an explosive welding process, the detonation velocity is 2500 m/s and dynamic bend angle is 15°. The flyer plate velocity is **2 points**

- 533.34 m/s
- 652.63 m/s
- 445.51 m/s
- 333.69 m/s

No, the answer is incorrect.

Score: 0

Accepted Answers:

652.63 m/s

15 In an electromagnetic pulse welding process, the force generated between two infinitely long parallel conductors, while carrying 100 amperes of current with a separation gap of 0.15 meter between them, is (Permeability of the free space: henry per meter) **2 points**

- 0.0133 N/m
- 0.133 N/m
- 1.33 N/m
- 13.33 N/m

No, the answer is incorrect.

Score: 0

Accepted Answers:

0.0133 N/m

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