Unit 10 - Week 8 - Abrasive water jet machining and Ultrasonic Machining

Assignment 8

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-03-25, 23:59 IST.

Assignment 8

1) Which of the following is not true for ion milling? *1 point*

- Mean free path is comparable to chamber size.
- Highly anisotropic process.
- Ion impact energy is high.
- Plasma is used to abrade the substrate by sputtering.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Highly anisotropic process.

2) Which of the following is not true corresponding to thermal oxidation of silicon wafer? *1 point*

- In dry oxidation, pure oxygen reacts with silicon at high temperatures.
- In wet oxidation, water vapors react with silicon at high temperatures.
- Silicon oxide cannot be deposited by the CVD process.
- All of the above statements are true.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Silicon oxide cannot be deposited by the CVD process.

3) What is the mechanism of material removal in AJM? *1 point*

- Material removal by a brittle fracture due to the impingement of fine abrasive particles.
- Material removal by thermal breakdown of the medium.
- Material removal by metal evaporation.
- Material removal by vibrational tool impinging abrasive grains on the workpiece.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Material removal by a brittle fracture due to the impingement of fine abrasive particles.

4) What is the behavior of MRR in AJM with respect to the mixing ratio? *1 point*

- It initially decreases and increases afterward.
- It remains constant irrespective of the mixing ratio.
- It keeps increasing continuously.
- It initially increases and decreases afterward.

No, the answer is incorrect.
Score: 0
Accepted Answers:
It initially increases and decreases afterward.

5) During AJM, the mixing ratio used is 0.1. Calculate mass ratio if the ratio of the density of abrasive and density of carrier gas is equal to 15. *1 point*

- 0.6
- 0.4
- 0.3
- 0.8

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.6

6) Which among the following is the preferred material for the nozzle in AJM? *1 point*

- Copper
- Graphite
- Sapphire
- Gold

No, the answer is incorrect.
Score: 0
Accepted Answers:
Sapphire

7) What is the most important requirement for the USM process? *1 point*

- Tool must be ductile and tough.
- Continuous flow of abrasive slurry is a must requirement.
- Preferred workpiece, in this case, is a hard and brittle material.
- All of the above statements are true.

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of the above statements are true.

8) Which of the following is not true corresponding to the formulation of the material removal rate in USM? *1 point*

- MRR is directly proportional to (feed force)^0.75
- MRR is inversely proportional to (abrasive concentration)^0.75
- MRR is directly proportional to (amplitude of vibration)^0.75
- MRR is directly proportional to the frequency of vibration

No, the answer is incorrect.
Score: 0
Accepted Answers:
MRR is inversely proportional to (abrasive concentration)^0.75

9) What is the frequency at which the tool head should vibrate to obtain efficient machining in USM? *1 point*

- 100-200 Hz
- 100-200 kHz
- 15-30 kHz
- 15-30 MHz

No, the answer is incorrect.
Score: 0
Accepted Answers:
15-30 kHz

10) In the case of a hollow tool, the wall thickness should be at least _____ . *1 point*

- 0.001-0.01 mm
- 1-3 mm
- 0.5-0.8 mm
- 1-2 cm

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.5-0.8 mm