

Unit 13 - Week 11 - Laser Beam and Electron Beam Machining Processes

Course outline

How does an NPTEL online course work?

Week 0

Week 1 - Basics of Manufacturing Processes

Week 2 - Introduction to casting process

Week 3 - Gating Systems and Rate of solidification

Week 4 - Estimation of solidification time with different conditions and Riser design

Week 5 - Machining Processes

Week 6 - Cutting tool life estimation

Week 7 - Introduction to Micro-Systems Fabrication Technology

Week 8 - Abrasive water jet machining and Ultrasonic Machining

Week 9 - Introduction to Electrochemical Machining

Week 10 - Electro-discharge Machining Process

Week 11 - Laser Beam and Electron Beam Machining Processes

- Effect of various parameters on EDM Process
- Tool Electrodes and Dielectric fluids & Electron Beam Machining
- Mechanics of Electron Beam Machining Process
- Functional Characteristics of EBM Process
- Introduction of Laser Beam Machining Process
- Material removal rate of LBM
- Heat conduction and Temperature rise during LBM
- Modelling of LBM processes
- Quiz : Assignment 11

Assignment 11 solution

Manufacturing Process Technology I and II: Feedback For Week 11

Week 12 - Metal Forming Processes

Text Transcripts

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Assignment 11

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

Due on 2020-04-15, 23:59 IST.

Assignment 11

1) Which of the following controls the quality of the surface in EDM? 1 point

- Gap between workpiece and tool
- Type of workpiece
- Size of the crater
- Type of tool

No, the answer is incorrect.
Score: 0

Accepted Answers:
Size of the crater

2) In Electron beam machining, as the electrons strikes the work piece: 1 point

- Their kinetic energy is converted into heat.
- They get scattered.
- Mechanical erosion in work piece takes place.
- Electro-chemical etching takes place.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Their kinetic energy is converted into heat.

3) Electron beam machining is most appropriate for: 1 point

- Machining flat surfaces.
- Drilling holes and cutting narrow slots.
- Patterning large area in one step.
- All of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Drilling holes and cutting narrow slots.

4) In Electron beam machining, the order in which electrons pass after being emitted by the filament cathode: 1 point

- Anode—Electromagnetic focusing lens—Beam control.
- Electromagnetic focusing lens—Anode—Beam control.
- Beam control—Anode— Electromagnetic focusing lens.
- Any of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Anode—Electromagnetic focusing lens—Beam control.

5) Emission current in Electron beam machining depends up on which of the following factors? 1 point

- Cathode material
- Temperature
- Voltage supply
- All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
All of the above

6) In Electron beam machining, the depth of the penetration of the melting temperature is _____ to the melting temperature of the workpiece? 1 point

- Directly proportional
- Inversely proportional
- Directly proportional of the square
- Inversely proportional of the square

No, the answer is incorrect.
Score: 0

Accepted Answers:
Inversely proportional

7) The Laser Beam Machining process can be carried out, when the media for energy transfer between tool and workpiece is: 1 point

- Air
- Liquid
- Vacuum
- Any of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Any of the above.

8) Which of the following are the properties of a laser? 1 point

- Highly collimated.
- Monochromatic.
- Coherent light beam.
- All of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:
All of the above.

9) Laser beam machining uses which type of power sources for machining? 1 point

- Very low power
- High power
- Medium power
- Low power

No, the answer is incorrect.
Score: 0

Accepted Answers:
High power

10) The effective usable wavelength range (due to power requirement in machining) in laser beam machining is: 1 point

- 0.1-70 microns
- 100-120 microns
- 0.4-0.6 microns
- 0.01-0.1 microns

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.4-0.6 microns