1. What is the primary mechanism of metal removal in Electric Discharge Machining (EDM)?

a) Abrasive wear
b) Melting
c) Chemical dissolution
d) Mechanical chipping

Answer: b) Melting

Explanation: In EDM, metal removal primarily occurs through the localized melting of the workpiece material caused by electric discharges between the electrode and the workpiece.

2. Which component controls the feed of the electrode in Electric Discharge Machining (EDM)?

a) Dielectric fluid
b) Servo motor
c) Electrode generator
d) Electrod feed control

Answer: d) Electrod feed control

Explanation: The electrod feed control mechanism regulates the movement of the electrode during EDM to ensure precise material removal.

3. What purpose does dielectric fluid serve in Electric Discharge Machining (EDM)?

a) Lubrication

b) Cooling
c) Insulation
d) All of the above

Answer: d) All of the above

Explanation: Dielectric fluid in EDM serves multiple purposes including lubrication, cooling, and insulation, facilitating the machining process and improving efficiency.

4. Which process involves non-thermal generation of plasma for metal removal?

a) Electric Discharge Machining (EDM)
b) Plasma Arc Machining (PAM)
c) Electron Beam Machining (EBM)
d) Laser Beam Machining

Answer: b) Plasma Arc Machining (PAM)

Explanation: PAM utilizes non-thermal methods to generate plasma, which is then used for material removal through ionization and kinetic energy transfer.

5. What is the primary method of local heating in Laser Beam Machining?

a) Conduction
b) Convection
c) Radiation
d) Induction

Answer: c) Radiation

Explanation: Laser Beam Machining employs highly concentrated beams of light (laser) which primarily heat the material through radiation, causing localized melting or vaporization for material removal.

6. In Electric Discharge Machining (EDM), what controls the movement of the electrode in vibrating electrode systems?

a) Mechanical springs
b) Hydraulic actuators
c) Piezoelectric elements
d) Magnetic fields

Answer: c) Piezoelectric elements

Explanation: Vibrating electrode systems in EDM utilize piezoelectric elements to control the movement of the electrode, enabling precise and controlled material removal.

7. What is the primary process capability of Electron Beam Machining (EBM)?

a) High-speed cutting
b) Non-contact machining
c) Ultra-precision drilling
d) Surface polishing

Answer: b) Non-contact machining

Explanation: EBM enables non-contact machining, where material removal occurs due to the kinetic energy transfer of high-velocity electrons without physical contact with the workpiece.

8. Which thermal metal removal process involves the use of a neutral particle etching?

a) Electric Discharge Machining (EDM)
b) Plasma Arc Machining (PAM)
c) Electron Beam Machining (EBM)
d) Laser Beam Machining

Answer: c) Electron Beam Machining (EBM)

Explanation: Electron Beam Machining (EBM) utilizes neutral particle etching as a method of material removal, where high-velocity electrons bombard the workpiece surface, causing atoms to be dislodged.

9. What parameter is crucial for accuracy in Electric Discharge Machining (EDM)?

a) Voltage
b) Current
c) Electrode material
d) Spark gap

Answer: d) Spark gap

Explanation: The spark gap, the distance between the electrode and the workpiece, is critical for accuracy in EDM as it determines the precision of material removal.

10. Which metal removal process involves the utilization of plasma generated by an electric arc?

a) Electric Discharge Machining (EDM)
b) Spark Erosion
c) Plasma Arc Machining (PAM)
d) Electron Beam Machining (EBM)

Answer: c) Plasma Arc Machining (PAM)

Explanation: Plasma Arc Machining (PAM) utilizes plasma generated by an electric arc to achieve material removal through ionization and high-velocity plasma flow.

11. In Electric Discharge Machining (EDM), what role does flushing play?

a) Controlling electrode movement
b) Cooling the workpiece
c) Removing debris
d) Regulating voltage

Answer: c) Removing debris

Explanation: Flushing in EDM involves the use of dielectric fluid to remove debris and maintain a clean machining environment, ensuring efficient material removal.

12. What parameter is crucial for controlling the accuracy of material removal in Plasma Arc Machining (PAM)?

a) Voltage
b) Current
c) Gas flow rate
d) Electrode material

Answer: c) Gas flow rate

Explanation: The gas flow rate in PAM is crucial for controlling the accuracy of material removal by regulating the plasma flow and distribution over the workpiece surface.

13. What is the primary method of metal removal in Spark Erosion?

a) Melting
b) Abrasion
c) Chemical dissolution
d) Mechanical cutting

Answer: a) Melting

Explanation: Spark Erosion primarily relies on the localized melting of the workpiece material through electric discharges for material removal.

14. Which process utilizes electron beam generation and control for material removal?

a) Electric Discharge Machining (EDM)
b) Spark Erosion
c) Electron Beam Machining (EBM)
d) Plasma Arc Machining (PAM)

Answer: c) Electron Beam Machining (EBM)

Explanation: Electron Beam Machining (EBM) involves the generation and control of high-velocity electrons for precise material removal through kinetic energy transfer.

15. What is the primary function of the spark erosion generator in Electric Discharge Machining (EDM)?

a) Generating dielectric fluid
b) Producing high-frequency sparks
c) Controlling electrode movement
d) Regulating voltage

Answer: b) Producing high-frequency sparks

Explanation: The spark erosion generator in EDM is responsible for producing high-frequency electric sparks between the electrode and the workpiece, facilitating material removal through localized melting.

16. In Plasma Arc Machining (PAM), what is the primary role of dielectric fluid?

a) Insulation
b) Lubrication
c) Cooling
d) Material removal

Answer: a) Insulation

Explanation: Dielectric fluid in PAM primarily serves as an insulator to maintain the integrity of the electric arc and plasma generation process.

17. What aspect of the electrode is crucial for controlling the accuracy of material removal in Electric Discharge Machining (EDM)?

a) Size
b) Material
c) Shape
d) Surface finish

Answer: c) Shape

Explanation: The shape of the electrode in EDM plays a crucial role in controlling the accuracy of material removal, as it determines the geometry of the machined features.

18. What parameter is critical for controlling the depth of material removal in Electric Discharge Machining (EDM)?

a) Voltage
b) Current
c) Electrode material
d) Pulse duration

Answer: d) Pulse duration

Explanation: Pulse duration, the duration of each electric discharge, is critical for controlling the depth of material removal in EDM by regulating the amount of energy transferred to the

workpiece.

19. Which thermal metal removal process involves the use of an electron beam for material removal?

a) Electric Discharge Machining (EDM)
b) Spark Erosion
c) Electron Beam Machining (EBM)
d) Plasma Arc Machining (PAM)

Answer: c) Electron Beam Machining (EBM)

Explanation: Electron Beam Machining (EBM) utilizes an electron beam for material removal through high-velocity kinetic energy transfer without physical contact with the workpiece.

20. What parameter is crucial for controlling the accuracy of material removal in Laser Beam Machining?

a) Laser power
b) Beam diameter
c) Workpiece material
d) Electrode shape

Answer: b) Beam diameter

Explanation: The beam diameter in Laser Beam Machining is crucial for controlling the accuracy of material removal, as it determines the size and precision of machined features.

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