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DEPARTMENT OF MECHANICAL ENGINEERING

THIRD YEAR (TY)

SCHEME: I

SEMESTER: V

**NAME OF SUBJECT: ADVANCED
MANUFACTURING PROCESS**

Subject Code: 22563

**UNIT WISE MULTIPLE CHOICE
QUESTIONS BANK**



Question Bank for Multiple Choice Questions

Program: Diploma in Mechanical engineering	Program Code:- ME
Scheme:-I	Semester:- 5
Course:- Advanced Manufacturing Processes	Course Code:- 22563

01 – Non Conventional Machining Processes	Marks:-12
Content of Chapter:- 1.1 Fundamentals of non-conventional methods-Needs & importance of methods. 1.2 Working principle , setup, process parameters of- EDM, WEDM, ECM, PAM, AJM, USM, EBM & LBM. 1.3 Advantages ,limitations and applications of -EDM , WEDM, ECM, PAM, AJM, USM, EBM & LBM.	

1. Which of the following is un-conventional machining process?
- (A) Grinding (B) Milling
(C) Turning (D) Electro chemical machining

Answer: - Option D
Explanation : NA

2. Which of the following is conventional machining process?
- (A) Electro chemical machining (B) Milling
(C) Electron discharge machining (D) None of the mentioned

Answer: - B
Explanation : NA

3. Non-Traditional machining can also be called as?
- (A) Contact Machining (B) Non-contact machining
(C) Partial contact machining (D) Half contact machining

Answer: - Option B
Explanation : NA

4 When the metal is removed by erosion caused by rapidly recurring spark discharges between the tool and

- (A) Electro-chemical machining (B) Electro-discharge machining
(C) Ultra-sonic machining (D) none of these

Answer: - Option B

Explanation : NA

5. Which of the following statement is correct about EDM machining?

- (A) It can machine hardest materials (B) It produces high degree of surface finish.
(C) The tool and work are never in contact with each other (D) all of these

Answer: - Option D

Explanation : NA

6. Non-Traditional machining is recommended when we need which of the following features?

- (A) Complex shapes (B) High surface quality
(C) Low-rigidity (D) All of the mentioned

Answer: - Option D

Explanation : NA

7 In electro-discharge machining dielectric is used to

- (A) help in the movement of the sparks (B) control the spark discharges
(D) act as coolant (D) all of the mentioned

Answer: - Option D

Explanation : NA

8. In which of the following industries, Non-traditional machining methods play an important role?

- (A) Automobile (B) Automobile
(C) Medical (D) All of the mentioned

Answer: - Option D

Explanation : NA

9. Different classifications of Non-traditional machining based on source of energy are ____

- (A) Mechanical (B) Thermal
(C) Chemical and electro-chemical. (D) All of the mentioned

Answer: - Option D

Explanation : NA

10. The Laser Beam Machining process can be carried out, when the media for energy transfer between tool and work piece is

- (A) air (B) liquid
(C) vacuum (D) any of the above medium

Answer: Option D

Explanation : NA

11. What is the reason for using unconventional or advanced machining processes?

- (A) Complex surfaces (B) High accuracy and surface finish
(C) High strength alloys (D) All of the above

Answer: - Option D

Explanation : NA

12. In electro-discharge machining, the tool is connected to cathode.

- (A) Correct (B) Incorrect

Answer: - Option A

Explanation : NA

13. The spark gap in Electrical Discharge Machining (EDM) process is maintained such that

- (A) the gap voltage is around 99% of supply voltage (B) the gap voltage is around 70% of supply voltage
(C) the gap voltage is around 50% of supply voltage (D) the gap voltage is around 10% of supply voltage

Answer: - Option B

Explanation : NA

14. Which of the following materials is/are used for Electrical Discharge Machining (EDM) process?

- (A) Brass (B) Copper
(C) Graphite (D) All of the above

Answer: - Option C

Explanation : NA

15. In Electrical Discharge Machining (EDM) process the metal removal is carried out by

- (A) electrolysis (B) melting and vaporisation
(C) fracture of work material due to impact of grains (D) none of the above

Answer: - Option B

Explanation : NA

16 Which of the following statements are true for Electro-Chemical Machining (ECM)?

- (A) ECM is capable of machining metals and alloys irrespective of their strength and hardness
(B) No cutting forces are involved in ECM process (C) ECM process consumes very high power
(D) Very small space is required to set up ECM process
- a. (1), (2) and (3)
b. (2), (3) and (4)
c. (1), (3) and (4)
d. (1), (2) and (4)

Answer: - Option A

Explanation : NA

17 In machining of a work piece, the material is removed by _____

- (A) drilling action (B) melting action
(C) shearing action (D) using brittleness of the material

Answer: Option C

Explanation : NA

18. The depth that the tool is plunged into the surface is called as _____

- (A) feed (B) depth of cut
(C) depth of tool (D) working depth

Answer: - Option B

Explanation : NA

19. Feed is measured in units of

(A) length/revolution

(B) degree/revolution

(C) length

(D) velocity

Answer: - Option A

Explanation : NA

20. Dielectric is used in

(A) electro-chemical machining

(B) ultra-sonic machining

(C) electro-discharge machining

(D) laser machining

Answer: - Option C

Explanation : NA

21. Which of the following shapes can be produced using Electro discharge machining?

(A) Complex shapes

(B) Simple shapes

(C) Simple and complex shapes

(D) None of the mentioned

Answer: - Option C

Explanation : Electro discharge machining is used to machine complex shapes to a high degree of accuracy.

22. In Electrical Discharge Machining (EDM) process the metal removal is carried out by

(A) Electrolysis

(B) melting and vaporization

(C) fracture of work material due to impact of grains

(D) none of the above

Answer: - Option D

Explanation : For above requirements this machining is used.

23. In Ultrasonic Micro Machining, the abrasive slurry usually consists of water medium due to its

(A) low viscosity and low thermal conductivity

(B) high viscosity and high thermal conductivity

(C) high viscosity and low thermal conductivity

(D) low viscosity and high thermal conductivity

Answer: - Option D

Explanation : NA

24. Ultrasonic Micro Machining is a material removal process used to_

(A) corrode

(B) erode

(C) melt

(D) form

Answer: - Option B

Explanation : NA

25. Which type of materials can be machined using Abrasive jet machining?
(A) Glass (B) Ceramics

(C) Hard materials (D) All of the mentioned

Answer: - Option D

Explanation : Materials like ceramics, glass, hard and super hard materials can be machined using Abrasive jet machining.

26. During wire cut EDM, the size of the cavity produced by the wire while machining depends upon.

(A) material of the work piece (B) di-electric fluid used

(C) wire material (D) electric current

Answer: - Option D

Explanation : While machining a high electric current passes through the dielectric fluid and heats the work piece surface from a very small area. The corresponding work piece area melts and what is left, is a small round cavity. The cavity size depends on the electric current and potential.

27. Sparking gap is the distance between

(A) the work piece and the CNC table (B) the work piece and the electrode wire
(C) the electrode wire and the di-electric fluid (D) the work piece and the spark plug

Answer: - Option B

Explanation : The distance between the electrode wire and the work piece is called a sparking gap. The electrode produces shapes that are a sparking gap dimension larger than the programmed shape through which the electrode wire passes.

28. The electrode wires are usually made form

(A) graphite (B) iron
(C) nickel (D) brass

Answer: - Option D

Explanation : Wire used in wire cut EDM are usually made of brass – either zinc-coated or uncoated. Brass wire can be purchased in different hardnesses and different diameters. Zinc coated wire is used in machining high melting point work piece materials.

29. Ultrasonic machining (USM) can be classified as which of the following type of non-traditional machining process?

(A) Electrical (B) optical
(C) mechanical (D) chemical

Answer: - Option C

Explanation : Ultrasonic machining is a non-traditional machining process. USM is grouped under the mechanical group NTM processes. In ultrasonic machining, a tool of the desired shape vibrates at an ultrasonic frequency.

30. In electron beam machine, just after the cathode, there is/are

- (A) deflector coils
- (B) a magnetic lens
- (C) bias grid
- (D) port for vacuum gauge

Answer: - Option C

Explanation : Just after the cathode, there is an annular bias grid. A high negative bias is applied to this grid so that the electrons generated by this cathode do not diverge and approach the next element, the annular anode, in the form of a beam.

31. After the anode, the electron beam passes through

- (A) cathode cartridge
- (B) deflector coils
- (C) bias grid
- (D) a series of lenses

Answer: - Option D

Explanation : After the anode, the electron beam passes through a series of magnetic lenses and apertures. The magnetic lenses shape the beam and try to reduce the divergence.

32. Mechanism of material removal in Laser Beam Machining is due to

- (A) mechanical erosion due to impact of high energy photons
- (B) electro-chemical etching
- (C) melting and vaporisation due to thermal effect of impingement of high energy laser beam
- (D) fatigue failure

Answer: - Option C

Explanation : Laser beam machining is carried out utilizing the energy of coherent photons or laser beam, which is mostly converted into thermal energy upon interaction with most of the materials.

33. Which of the following processes does not use lasers

- (A) Cladding
- (B) Alloying
- (C) Nitriding
- (D) Cutting

Answer: - Option C

Explanation : Laser Beam Machining or more broadly laser material processing deals with machining and material processing like heat treatment, alloying, cladding, sheet metal bending, etc.

34. In electrochemical machining (ECM) removal of metal from the work piece takes place

- (A) anodic dissolution
- (B) abrasive action
- (C) thermal melting
- (D) erosion

Answer: - Option A

Explanation : NA

35. Which of the following process is based on Faradays law of Electrolysis?

- (A) Electron beam Machining
- (B) Laser Beam Machining
- (C) Electrical discharge Machining
- (D) Electrochemical Machining

Answer: - Option D

Explanation : NA

36. In Electrochemical machining the gap maintained between tool and workpiece is of the order of

- (A) 0.05mm (B) 0.1mm
(C) 0.5mm (D) 1mm

Answer: - Option C

Explanation : NA

37. In advanced machining processes, what is the full form of AJM?

- (A) Automatic Jet Manufacturing (B) Abrasive Jet Machine
(C) Automated Jet Machining (D) Abrasive Jet Manufacturing

Answer: - Option B

Explanation : In advanced machining processes, full form of AJM is Abrasive jet machining.

38. In AJM, which of the following materials are used as abrasive grains?

- (A) Al_2O_3 (B) SiC
(C) Glass beads (D) All of the mentioned (B)

Answer: - Option D

Explanation : In Abrasive jet machining, any of the particles mentioned above can be used as abrasive grains.

39. Plasma refers to.

- (A) Hot Ionized gas (B) Electrode Holder
(C) Rectifier (D) Inverter

Answer: - Option A

Explanation : NA

40. The metal is removed in Plasma arc machining due to

- (A) erosion (B) chemical reaction
(C) melting of metal (D) grinding

Answer: - Option B

Explanation : NA

41. Which of the following is not a media of energy transfer on which the advanced machining processes are classified?

- (A) Reactive atmosphere (B) Electrons
(C) Electrolyte (D) Chemical ablation

Answer: - Option D

Explanation : NA

42. Which of the following materials can be machined using Electro discharge machining?

- (A) Heat resistant alloys
(B) Super alloys
(C) Carbides
(D) All of the mentioned

Answer: - Option D

Explanation : EDM is used to machine materials such as carbides, heat resistant and super alloys which are difficult-to-machine materials.

43. Which of the following are the applications of Electro discharge machining?

- (A) Holes (B) Slots
(C) Texturing (D) All of the mentioned

Answer: Option D

Explanation: Micromachining of holes, slots, dies, texturing, milling, surface modification and mechanical pulsing are some typical applications of Electro discharge machining.

Answer: Option D

44. State whether the following statement is true or false regarding the applications of EDM. "In advanced machining processes, the incorporation of EDM with CIM increased the length of time for unit operation."

- (A) True (B) False

Answer: Option B

Explanation: The incorporation of EDM in CIM reduced the length of time per unit operation.

45. Which type of electrode is used for drilling in Electro discharge machining?

- (A) Flat electrode (B) Cuboidal electrode
(C) Tubular electrode (D) Spherical electrode

Answer: Option C

Explanation: Tubular electrode is mostly preferred in Electro discharge machining, for drilling purpose.

46. Which type of holes can be produced through drilling using Electro discharge machining?

- (A) Irregular (B) Curved
(C) Tapered (D) All of the mentioned

Answer:D

Explanation: Drilling of work piece using EDM produced holes which can be irregular, curved, tapered as well as inclined holes.

47. What are the values of general feed rates used for drilling in EDM?

- (A) 0.1 mm/min (B) 0.3 m/min
(C) 0.5 mm/min (D) 0.7 mm/min

Answer:A

Explanation: Usually a feed rate of 0.10 mm/min is used for drilling the work piece using Electro discharge machining.

48. What are range of diameter values obtained by drilling using EDM?

- (A) 0.01 to 0.05 mm (B) 0.1 to 0.5 mm
(C) 1 to 5 mm (D) 10 to 15 mm

Answer:B

Explanation: Diameter values while drilled using Electro discharge machining, ranges from 0.10 to 0.50 mm.

49. What are the values of overcuts left behind after drilling of work piece?

- (A) 0.01 to 0.05 mm (B) 0.1 to 0.5 mm

(C) 1 to 5 mm

(D) 10 to 15 mm

Answer:A

Explanation: Overcut values from 0.01 to 0.05 mm are obtained after the drilling process in EDM.

50. What are the values of dimensional accuracy obtained while machining spherical surfaces?

(A) $\pm 1 \mu\text{m}$

(B) $\pm 3 \mu\text{m}$

(C) $\pm 5 \mu\text{m}$

(D) $\pm 7 \mu\text{m}$

Answer:A

Explanation: Dimensional accuracy of $\pm 1 \mu\text{m}$ is obtained while machining spherical surfaces using EDM.

51. What are the surface roughness values obtained while machining spherical surfaces using Electro discharge machining?

(A) $<0.1 \mu\text{m}$

(B) $<0.3 \mu\text{m}$

(C) $<0.5 \mu\text{m}$

(D) $<0.7 \mu\text{m}$

Answer:A

Explanation: The surface roughness values obtained while machining of spherical surfaces are $<0.1 \mu\text{m}$ in Electro discharge machining.

52. Which motion of tool is used for machining spherical surfaces in Electro discharge machining?

(A) Oscillatory

(B) Vibratory

(C) Rotary

(D) All of the mentioned

Answer:C

Explanation: The rotary motion tool is used for machining spherical surfaces of conducting ceramic materials in EDM.

53. Which type of cavities can be machined using milling process by Electro discharge machining?

(A) Complex cavities

(B) Simple cavities

(C) Simple & Complex cavities

(D) None of the mentioned

Answer:C

Explanation: Simple cavities and complex cavities are machined by successive NC sweeps of electrode over the desired path.

54. The simple electrodes are rotated at which speed for milling of work pieces in Electro discharge machining?

(A) Very low

(B) Low

(C) Medium

(D) High

Answer:D

Explanation: Simple electrodes are rotated at high speeds for milling in Electro discharge machining same as that of conventional milling.

55. What happens to the dielectric flushing while milling tool is rotated at a high speed in EDM?

(A) Improved

(B) Worsen

(C) Reduced

(D) All of the mentioned

Answer:A

Explanation: Milling by electro discharge machining enhances the dielectric flushing due to high speed rotation of tool.

56. State whether the following statement is true or false regarding the applications of EDM. "In EDM, milling process can machine complex shapes with sharp corners."

- (A) True (B) False

Answer: B

Explanation: EDM milling has a main limitation i.e., it cannot machine complex shapes with sharp tools because of rotating tool.

57. Wire EDM is a special form of Electro discharge machining which contains _____ electrode.

- (A) Continuously moving (B) Periodically moving
(C) Discontinuously moving (D) All of the mentioned

Answer: A

Explanation: Wire EDM is a special type of EDM which uses a continuously moving electrode for removal of material.

58. Which path of the components in wire EDM determines the path to be machined?

- (A) Horizontal worktable movement (B) Vertical worktable movement
(C) Horizontal & Vertical worktable movement (D) None of the mentioned

Answer: A

Explanation: Horizontal movement of the work table determines the path to be machined in Wire Electro discharge machining.

59. Which of the following materials are machined using Wire Electro discharge machining?

- (A) Polycrystalline diamond (B) Cubic Boronitride
(C) Matrix composites (D) All of the mentioned

Answer: D

Explanation: Polycrystalline diamond (PCD), cubic boron nitride (CBN) and other matrix composites are the material than can be machined using wire EDM.

60. How much amount of burr is produce when we use Wire Electro discharge machining for machining of work pieces?

- (A) 10% (B) 20%
(C) No burr (D) Small amount

Answer: C

Explanation: In Wire Electro discharge machining no burr is produced without any distortion while machining work pieces.

61. Which of the following industries use wire EDM for different applications?

- (A) Chemical industry (B) Aerospace industry
(C) Automobile industry (D) All of the mentioned

Answer: D

Explanation: Industries such as chemical, aerospace, automobile, nuclear etc..., use wire EDM for a wide variety of applications in their industries.

62. While machining insulating ceramic materials using EDM, where is the sheet metal placed?

- (A) Over material (B) Below material

(C) Under material

(D) None of the mentioned

Answer:A

Explanation: Sheet metal is placed over the material in machining of insulating materials using EDM.

63. Sparks occur between which of the following components?

(A) Work piece and sheet metal

(B) Tool electrode and sheet metal

(C) Work piece and electrode

(D) None of the mentioned

Answer:B

Explanation: Sparks occur between sheet metal and tool electrode for machining insulating ceramics.

64. What are the values of hole diameters obtained using Wire electro discharge grinding?

(A) 1 μm

(B) 3 μm

(C) 5 μm

(D) 7 μm

Answer:C

Explanation: Values of hole diameters up to 5 μm can be obtained using Wire electro discharge grinding process.

65. Ultrasonic Machining can be used for which of the following processes and applications?

(A) Drilling

(B) Sinking and contouring

(C) Polishing

(D) All of the mentioned

Answer:D

Explanation: Ultrasonic Machining can be used for drilling holes, sinking, contouring and many more wide variety of applications.

66. What is the limit of surface area that is to be machined using USM?

(A) $<100 \text{ mm}^2$

(B) $<500 \text{ mm}^2$

(C) $<1000 \text{ mm}^2$

(D) $<1500 \text{ mm}^2$

Answer:C

Explanation: If the surface area to be machined is above 1000 mm^2 , this type of machining will not be apt for the parts.

67. Drilling in Ultrasonic Machining is done, by which motion of the tool?

(A) Only rotation

(B) Only oscillation

(C) Oscillation and rotation

(D) None of the mentioned

Answer:C

Explanation: The process, which uses USM for drilling, is known as Rotary Ultrasonic Machining (RUM).

68. Which of the following use ECM for different applications?

(A) Gas turbines

(B) Jet engines

(C) Bio medical implants

(D) All of the mentioned

Answer:D

Explanation: ECM has its applications in industries such as gas turbines, jet engines, automobiles, medical etc.

69. Which of the following processes can be done using ECM?

(A) Die sinking

(B) Profiling and contouring

(C) Drilling and trepanning

(D) All of the mentioned

Answer:D

Explanation: ECM can be used for die sinking, trepanning, drilling, contouring, grinding and profiling.

70. Which of the following material cannot be machined using ECM?

- (A) High strength alloys
- (B) Hardened steels
- (C) Non conductive materials
- (D) All of the mentioned

Answer:C

Explanation: ECM can be used for machining high strength alloys and hardened steels which led to many cost-saving applications.

71. ECM is used to _____ the sharp edges produced after rough cuts.

- (A) Enhance
- (B) Dull
- (C) Improve
- (D) None of the mentioned

Answer:B

Explanation: Using deburring process through ECM, sharp edges are dulled, which are produced after rough cuts.

72. ECM is usually characterized as low accuracy machining, for which of the following reason?

- (A) Narrow gap width
- (B) Wider gap width
- (C) High current densities
- (D) All of the mentioned

Answer:B

Explanation: ECM is usually characterized as low accuracy machining because of its wider machining gap.

73. Which of the following are the applications of Laser Beam Machining?

- (A) Drilling
- (B) Cutting
- (C) Texturing
- (D) All of the mentioned

Answer:D

Explanation: Drilling, cutting and grooving, texturing and structuring, milling and dressing etc., are the applications of Laser beam machining process.

74. State whether the following statement is true or false regarding the drilling using LBM. "Compared to LBM, conventional machining is more accurate and efficient."

- (A) True
- (B) False

Answer:B

Explanation: Conventional machining is less sufficient than Laser Beam machining because of their material toughness.

75. Other non-conventional processes lay behind Laser beam machining in drilling process because of which factors below?

- (A) High cost
- (B) Long lead times
- (C) Low machining speeds
- (D) All of the mentioned

Answer:D

Explanation: Other non-conventional processes need high costs for tools, long lead times, and low machining speeds when compared to LBM.

76. Laser drilling has proven to be more efficient in which of the following factors?

- (A) Cost
- (B) Quality
- (C) Reliability
- (D) All of the mentioned

Answer:D

Explanation: Laser drilling has proven to be an efficient one in terms of cost, quality, and reliability for large-scale production applications.

77. Which of the following are the other applications of LBM?

- (A) Dressing of grinding wheels (B) Scribing
(C) Micromachining (D) All of the mentioned

Answer:D

Explanation: Dressing of grinding wheels, scribing, micromachining, controlled fracturing are some of the other applications of Laser beam machining.

78. Which of the following materials can be easily separated by laser scribing?

- (A) Silicon (B) Glass
(C) Ceramic (D) All of the mentioned

Answer:D

Explanation: Brittle materials such as silicon, glass and ceramics may be effectively shaped or separated by laser scribing.

79. Which type of holes can be drilled using Nd-YAG laser?

- (A) Ruby laser (B) Nd-YAG laser
(C) Ruby & Nd-YAG laser (D) None of the mentioned

Answer:C

Explanation: Both Ruby and Nd-YAG laser can be used for direct (percussion) drilling purpose.

80. Which of the following lasers is used for cutting thick materials in LBM?

- (A) CO₂ + gas assisted (B) CO₂ only
(C) Nd-YAG (D) Ruby

Answer:A

Explanation: CO₂ + gas assisted laser is used for cutting thicker materials in Laser beam machining process.

81. Which of the following lasers is used for slitting of thin metallic materials in LBM?

- (A) CO₂ + gas assisted (B) CO₂ only
(C) Nd-YAG (D) Ruby

Answer:C

Explanation: Nd-YAG laser is used for slitting of thin metallic materials in Laser beam machining process.

82. Which of the following lasers is used for slitting of plastic metallic materials in LBM?

- (A) CO₂ + gas assisted (B) CO₂ only
(C) Nd-YAG (D) Ruby

Answer:B

Explanation: CO₂ laser is used for slitting of thin plastic materials in Laser beam machining process.

83. Which of the following lasers is used for organics and non-metallic materials in LBM?

- (A) CO₂ + gas assisted (B) Pulsed CO₂
(C) Nd-YAG (D) Ruby

Answer:B

Explanation: Pulsed CO₂ laser is used for organics and non-metallic materials in Laser beam machining process.

84. Which of the following lasers is used for ceramic materials in LBM?

- (A) Pulsed CO₂ (B) Nd-YAG
(C) Pulsed CO₂ & Nd-YAG (D) None of the mentioned

Answer:C

Explanation: Both pulsed CO₂ and Nd-YAG lasers can be used for ceramic materials in LBM.

85. Which of the following, are the processes and applications in which Abrasive jet machining can be applied?

- (A) Drilling (B) Cutting
(C) Deburring (D) All of the mentioned

Answer:D

Explanation: Abrasive jet machining can be used for cutting, drilling, deburring and cleaning processes.

86. In Abrasive jet machining, intricate shapes and holes are machined on which type of materials?

- (A) Brittle (B) Thin
(C) Difficult to machine (D) All of the mentioned

Answer:D

Explanation: Abrasive jet machining is used to machine, intricate shapes and holes in brittle, thin and difficult to machine materials.

87. State whether the following statement is true or false, about Abrasive jet machining. "Using Abrasive jet machining, micro deburring of hypodermic needles can take place."

- (A) True (B) False

Answer:A

Explanation: Abrasive jet machining can be used for micro deburring of hypodermic needles.

88. What are the type of materials that can be machined using Abrasive jet machining?

- (A) Glass (B) Sapphire
(C) Quartz (D) All of the mentioned

Answer:D

Explanation: In Abrasive jet machining, the above mentioned materials can be machined, which are heat sensitive and brittle.

89. What is the amount of material utilizes when we machine parts using Abrasive jet machining?

- (A) Very low (B) Low
(C) Medium (D) High

Answer:D

Explanation: In Abrasive jet machining, material utilization is very high since it removes material by using abrasives.

90. After how much time tool has to be changed in AJM?

- (A) 1 hr (B) 2 hr
(C) 5 hrs (D) No tool change required

Answer:D

Explanation: In Abrasive jet machining, tool changes are not required.

91. By using Abrasive jet machining, how much amount of hardening does the materials experience?

- (A) No hardening (B) Very less hardening
(C) Average hardening (D) High hardening

Answer:A

Explanation: In Abrasive jet machining, hardening is not experienced by the machined materials.

92. Which type of materials cannot be machined using Abrasive jet machining?

- (A) Soft materials (B) Hard materials
(C) Difficult to machine materials (D) None of the mentioned

Answer:A

Explanation: Soft materials such as candy bars, thin softwood etc., cannot be machined using AJM.

93. Which of the following materials in Abrasive jet machining can be a health hazard?

- (A) Abrasive grains (B) Air carrier
(C) Silica dust (D) None of the mentioned

Answer:C

Explanation: Silica dust, that occurs after machining can be a health hazard in AJM.

94. In AJM, air filters are used to remove which of the following?

- (A) Moisture (B) Oil
(C) Other dust particles (D) All of the mentioned

Answer:D

Explanation: Before machining, air has to be filtered to remove dust, moisture and oil in the machining system.

95. Which of the following are the applications of EBM?

- (A) Hole drilling (B) Slotting
(C) Perforation of thin sheets (D) All of the mentioned

Answer:D

Explanation: Drilling, perforation of thin sheets, slotting and integrated circuit fabrication are some of the applications of Electron beam machining.

96. What is the value of largest diameter of the hole drilled on EBM?

- (A) 0.5 mm (B) 1.0 mm
(C) 1.5 mm (D) 2.0 mm

Answer:C

Explanation: The maximum value of diameter that can be drilled using Electron beam machining is about 1.5 mm.

97. What is the value of maximum depth of the hole drilled on EBM?

- (A) 10 mm (B) 20 mm

(C) 30 mm

(D) 40 mm

Answer:C

Explanation: Value of the maximum depth that can be drilled using Electron beam machining is about 10 mm.

98. What is the range of depth-to-diameter ratio in Electron beam machining?

(A) 2:5 to 2:11

(B) 1:1 to 1:15

(C) 3:4 to 3:20

(D) 4:5 to 4:19

Answer:B

Explanation: The depth to diameter ratio in Electron beam machining will vary between 1:1 and 1:15.

99. How many holes can be produced in perforation of thin sheets using EBM?

(A) 10^1 to 10^2

(B) 10^2 to 10^3

(C) 10^3 to 10^4

(D) 10^4 to 10^5

Answer:D

Explanation: Number of holes produced range from 10^4 to 10^5 per second in perforation using EBM.

100. What is the value of energy required for bond breaking?

(A) 10 to 20kV

(B) 20 to 30kV

(C) 30 to 40kV

(D) 40 to 50Kv

Answer:A

Explanation: Value of the beam energy used for breaking bonds or cross linking them range from 10 to 20kV.

101. What is the value of pulse time used in EBM?

(A) 0.004 to 0.064 μ s

(B) 0.04 to 0.64 μ s

(C) 0.4 to 640 μ s

(D) 4 to 64000 μ s

Answer:D

Explanation: Value of the pulse time of beam ranges from 4 to 64000 μ s.

102. What is the value of frequency used in EBM?

(A) 0.001 – 0.016 Hz

(B) 0.01 – 16 Hz

(C) 0.1 – 16000 Hz

(D) 10 – 1600 kHz

Answer:C

Explanation: The frequency of the pulse range between 0.1 and 16000 Hz in Electron beam machining.

103. What is the tolerance value obtained in EBM?

(A) ± 10 %

(B) ± 20 %

(C) ± 30 %

(D) ± 40 %

Answer:A

Explanation: The tolerances obtained in Electron beam machining is about ± 10 % of the depth of cut.

104. Which of the following are the advantages of EBM process?

(A) Drilling rates

(B) No distortion

(C) High accuracy

(D) All of the mentioned

Answer:D

Explanation: The main advantages of Electron beam machining are high drilling rates, no mechanical distortion, high accuracy and repeatability.

105 There is no limitation imposed on which of the following factors in EBM?

- (A) Material ductility (B) Surface hardness
(C) Surface reflectivity (D) All of the mentioned

Answer:D

Explanation: In Electron beam machining, no limitation is imposed by work piece hardness, ductility, and surface reflectivity.

106. How much is the capital equipment cost of equipment used in EBM?

- (A) Very low cost (B) Low cost
(C) Moderate cost (D) High cost

Answer:D

Explanation: The capital equipment cost of the Electron beam machining is high compared to other machining processes.

107. How are the production times for a material in electron beam machining?

- (A) Very small (B) Small
(C) Moderate (D) Long

Answer:D

Explanation: In Electron beam machining, long production times are required due to the generation of vacuum in the chamber for machining purpose.

108. Which type of thin cast layer is produced when we use EBM?

- (A) Thin layer (B) Thick layer
(C) No layer (D) All of the mentioned

Answer:A

Explanation: Thin recast layer is produced in Electron beam machining which an added disadvantage to the machining process.

109. Which of the following is not an advantage of LBM?

- (A) Rapid machining (B) Low operating cost
(C) High equipment cost (D) No tool wear

Answer:C

Explanation: Rapid machining, low operating cost and no tool wear are some of the advantages of Laser beam machining.

110. Which of the following systems is used for locating the hole accurately for alignment?

- (A) Mechanical control system (B) Optical laser system
(C) Measurement system (D) Alignment system

Answer:B

Explanation: Holes can be accurately located using optical laser system for alignment in Laser beam machining.

111. Very _____ holes with a _____ aspect ratio can be produced using Laser beam machining.

- (A) Small, small (B) Small, large
(C) Large, small (D) Large, large

Answer:B

Explanation: In Laser beam machining, very small holes with large aspect ratios can be produced.

112. How are the machining times in Laser beam machining?

- (A) Very slow machining times (B) Slow machining times
(C) Moderate machining times (D) Fast machining times

Answer:D

Explanation: Machining is very much rapid and the setup times are economical in Laser beam machining.

113. How is the operating cost of the machines used in Laser beam machining?

- (A) Low (B) Moderate
(C) High (D) Very high

Answer:A

Explanation: The operating cost of the machines in LBM is low but the equipment cost itself is of high cost.

114. State whether the following statement is true or false regarding the advantages of LBM.
"In LBM, difficult to cut machine material can also be machined."

- (A) True (B) False

Answer:A

Explanation: A large variety of hard and difficult to cut materials can be machined using LBM.

115. How much amount of tapers are occurred in Laser drilled holes?

- (A) No taper (B) Negligible amount of taper
(C) Some amount (D) None of the mentioned

Answer:C

Explanation: Tapers are generally occurred in the direct drilling of holes using Laser beam machining.

116. What is to be done to the adherent material which are found at exit holes?

- (A) Shape them (B) Leave away
(C) Remove them (D) Flatten them

Answer:C

Explanation: Adherent material found at the exit of holes has to be removed in LBM.

117. What is the maximum depth up to which holes can be drilled using LBM?

- (A) 10 mm (B) 30 mm
(C) 50 mm (D) 70 mm

Answer:C

Explanation: The thickness of the material that can be laser drilled is restricted to 50 mm.

118. In machining system of AJM, which is the medium of carrying the abrasive grains for machining?

- (A) Liquids (B) Gases
(C) Any fluids (D) None of the mentioned

Answer:B

Explanation: In AJM, different types of gases are used as the medium for carrying abrasives.

119. In machining system of AJM, what is/are the gas/es used for carrying the abrasives?

- (A) CO₂ (B) Air
(C) Nitrogen (D) All of the mentioned

Answer:D

Explanation: In AJM, gases like CO₂, air or nitrogen are used to carry the abrasives.

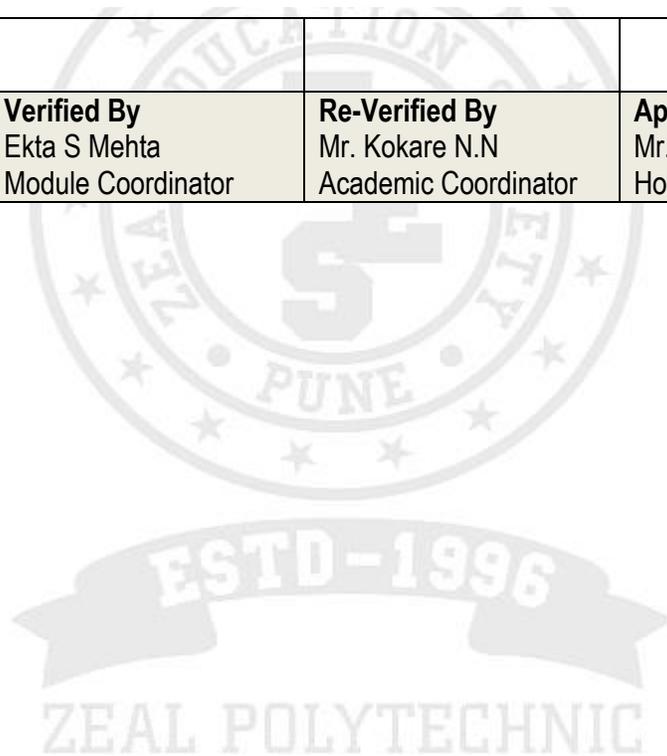
120. What is the pressure of gas that is to be supplied, for carrying the abrasives?

- (A) 0.1 to 1.0 kg/cm² (B) 2.0 to 8.0 kg /cm²
(C) 10.0 to 18.0 kg/cm² (D) 25.0 to 35.5 kg/cm²

Answer:B

Explanation: The pressure of the carrying gas should range between 2 to 8 kg/cm².

Prepared By Ekta S Mehta	Verified By Ekta S Mehta Module Coordinator	Re-Verified By Mr. Kokare N.N Academic Coordinator	Approved By Mr. Khorane R.S HoD ME





Question Bank for Multiple Choice Questions

Program: Diploma in Mechanical engineering	Program Code:- ME
Scheme:-I	Semester:- 5
Course:- Advanced Manufacturing Processes	Course Code:- 22563

02 –Milling Machines and Milling Processes	Marks:-12
Content of Chapter:-	
2.1 Milling -Working Principle of milling machine, types of milling machines.	
2.2 Milling Cutters- Different types of cutters used in milling , face milling cutter, end milling cutter. Staggered tooth milling Cutter , side & Face milling cutter, form milling cutter, metal slitting saw etc.	
2.3 Milling Processes- Plain milling , Face milling, Side milling, end milling. Straddle milling, gang milling, slotting, slitting, Up milling & down milling.	
2.4 Cutting Parameters - Cutting speed, feed.	
2.5 Dividing Head –types, Function of dividing head , Method of Indexing, Index plates.	

1. In a plain milling machine, the table can be moved

- (A) Longitudinally (B) Crosswise
 (C) Vertically (D) All of these

Answer: - Option D

Explanation : NA

2. Shaping can be performed more effectively by _____ milling machine.

- (A) horizontal (B) vertical
 (C) can't say anything (D) none of the mentioned

Answer: - Option B

Explanation : Vertical milling machines are of two types: bed mill and turret mill and due to its construction features these vertical type milling machines can performed shaping easily.

3. surfacing can be performed more effectively by _____ milling machine.

- (A) horizontal (B) vertical
 (C) can't say anything (D) none of the mentioned

Answer: - Option B

Explanation : Surfacing can be performed more effectively by vertical milling machine. This machine has a spindle. It rotates in vertical direction over the table.

4. Form cutting can be performed more effectively by _____ milling machine.

- (A) horizontal (B) vertical
(C) can't say anything (D) none of the mentioned

Answer: - Option A

Explanation : Form cutting can be performed more effectively by horizontal milling machine. The spindle in the horizontal milling machine is mounted on the horizontal arbor above table.

5. Slab milling can be performed more effectively by _____ milling machine.

- (A) horizontal (B) vertical
(C) can't say anything (D) none of the mentioned

Answer: - Option A

Explanation : Slab milling can be performed more effectively by horizontal milling machine. This slab mill is also used in gang milling.

6. Drilling can be performed more effectively by _____ milling machine.

- (A) horizontal (B) vertical
(C) can't say anything (D) none of the mentioned

Answer: - Option B

Explanation : In vertical milling, the workpiece is held by a horizontal table and this horizontal table rotates about a vertical axis. There are non-rotating tools which can be fed by crossrail and then drilling operation is performed which is more effective in nature.

7. Dovetailing can be performed more effectively by _____ milling machine.

- (A) horizontal (B) vertical
(C) can't say anything (D) none of the mentioned

Answer: - Option B

Explanation : As per the classification of milling operations. Dovetailing means joint something like link together with the help of dovetail.

8. Straddle milling can be performed more effectively by _____ milling machine.

- (A) horizontal (B) vertical
(C) can't say anything (D) none of the mentioned

Answer: - Option A

Explanation : Sometimes we machine two or more vertical parallel surfaces at a single cut, this type of operation is known as straddle milling. Horizontal milling can perform it more nicely.

9. **Angular milling can be performed more effectively by _____ milling machine.**

- (A) horizontal (B) vertical
(C) can't say anything (D) none of the mentioned

Answer: - Option C

Explanation : Angular milling is a type of milling that mills flat surfaces which are neither parallel or perpendicular to the axis of milling cutter. It is performed more accurately by both milling machines: horizontal and vertical.

10. **Slab mill cutter is an example of _____ milling cutter..**

- (A) arbor type (B) shank type
(C) special type (D) none of the mentioned

Answer: - Option A

Explanation : Slab mill is the milling which is mainly used for the purpose of rapid machining of large and broad surfaces.

11. **End mill cutter is an example of shank type milling cutter..**

- (A) true (B) false

Answer: - Option A

Explanation : As per the classification of milling cutters. These cutters are used in applications such as tracer milling, profile milling and plunging

12. **Plain milling cutter is an example of _____ milling cutter.**

- (A) arbor type (B) shank type
(C) special type (D) none of the mentioned

Answer: - Option C

Explanation : It is categorized under special type. Flat surfaces can be milled by this cutter. Apart from it it can perform other some simple milling operation.

13. **Side milling cutter is an example of _____ milling cutter.**

- (A) arbor type (B) shank type
(C) special type (D) none of the mentioned

Answer: - Option C

Explanation : As per the classification of milling cutters. This cutter can handle deep and long open slots in a more comfortable manner, which increase the productivity.

14. **Slitting saw cutter is an example of _____ milling cutter.**

- (A) arbor type (B) shank type
(C) special type (D) none of the mentioned

Answer: - Option C

Explanation : It is type of special purpose because it is not used for removing lots of material. It is used for the purpose of cutting a narrow slit into material.

15. **Carbide and ceramic tips are used in _____**

- (A) slab mill (B) face mill
(C) fly mill (D) none of mentioned

Answer: - Option B

Explanation : Face mill is the cutter which uses multiple disposable carbide and ceramic tips. These are mounted on its cutter body .

16. **Form cutter is an example of arbor type milling cutter..**

- (A) true (B) false

Answer: - Option B

Explanation : This is false. As per the classification of milling cutters, form cutter is an example of special type milling cutter.

17. **The various milling process may be classified in _____ categories.**

- (A) 1 (B) 2
(C) 3 (D) none of the mentioned

Answer: - Option B

Explanation : Various milling process may be classified in 2 categories: peripheral milling and face milling

18. **Upmilling and down milling are the subtype of _____ milling process..**

- (A) peripheral milling (B) face milling
(C) both peripheral milling and face milling (D) none of the mentioned

Answer: - Option A

Explanation : Peripheral milling is the type of milling in which produced machine surface remains parallel to the axis of cutter.

19. **Which of the following milling is known as conventional milling?.**

- (A) up milling (B) down milling

(C) both up milling and down milling

(D) none of the mentioned

Answer: - Option A

Explanation : Up milling is also known as conventional milling as in this process metal is removed by cutter which rotates in the opposite direction of the travel of the work piece.

20 Which of the following process is also known as climb milling?

(A) up milling

(B) down milling

(C) both up milling and down milling

(D) none of the mentioned

Answer: - Option B

Explanation : Down milling is also known as climb milling as in this process metal is removed by cutter which rotates in the same direction of the travel of the work piece.

21. The thickness of the chip in up milling is _____ at the beginning of the cut.

(A) minimum

(B) maximum

(C) zero

(D) none of the mentioned

Answer: - Option A

Explanation : As per the working of the up milling, at the beginning the the thickness of chip is minimum as cutting force vary from zero to maximum in up milling. So intially thickness of chip is minimum.

22. The thickness of the chip in up milling is _____ in when the cut terminates.

(A) minimum

(B) maximum

(C) zero

(D) none of the mentioned

Answer: - Option B

Explanation : The cutting force vary from zero to maximum in up milling. At the end due to maximum force chip thickness is high.

23. The cutting force is directed _____ and this tends to lift the work from the fixture in up milling.

(A) upward

(B) downward

(C) can't say anything

(D) none of the mentioned

Answer: - Option A

Explanation : This is the disadvantage of this process. The extra clamping forces may be required to fix the job on the table.

24. The cutting action can be done from both sides of the table to finish the job. This is the advantage of _____ process.

- (A) up milling (B) down milling
(C) can't say anything (D) none of the mentioned

Answer: - Option B

Explanation : This is the advantage of down milling process. Its cutter turn are in similar direction.

25 **More depth of cut can be used in _____milling process..**

- (A) up milling (B) down milling
(C) can't say anything (D) none of the mentioned

Answer: - Option B

Explanation : This is the advantage of down milling process. The cutting force vary from maximum to zero in this process.

26. **The indexing is the operation of dividing the periphery of a piece of work into any number of equal parts.**

- (A) true (B) false

Answer: - Option A

Explanation : It is the definition of indexing .It is generally used for milling machine but it has also some application in boring, grinders, drill presses etc.

27. **The indexing operation can also be adapted for producing _____ headed bolts.**

- (A) hexagonal (B) square
(C) both hexagonal and square (D) none of the mentioned

Answer: - Option C

Explanation : The indexing operation can also be adapted for producing hexagonal and square headed bolts. It is versatility of this method and that's the reason why it is largely used.

28. **In cutting spur gear, equal spacing of teeth on the gear blank can't be performed by indexing..**

- (A) true (B) false

Answer: - Option B

Explanation : In cutting spur gear, equal spacing of teeth on the gear blank can be performed by indexing.

29. **Indexing is accomplished by using a special attachment known as_**

- (A) dividing head (B) index head
(C) both dividing head and index head (D) none of the mentioned

Answer: - Option C

Explanation : Indexing head is also known as dividing head and this driving head is also known as indexing head.

30. **The dividing heads are of _____ types.**

(A) 1

(B) 2

(C) 3

(D) none of the mentioned

Answer: - Option C

Explanation : The dividing heads are of 3 types: universal driving head, optical driving head and plain driving head.

31. Which of the following is not the type of dividing heads?

(A) plain dividing head

(B) universal dividing head

(C) optical dividing head

(D) all of the mentioned

Answer: - Option A

Explanation : Plain dividing head is also known as simple dividing head. It performs simple not too complicated tasks.

32. Which of the following is the most common type of indexing arrangement used in workshops?

(A) plain dividing head

(B) universal dividing head

(C) optical dividing head

(D) all of the mentioned

Answer: - Option B

Explanation : As per the application of universal dividing head. It is very versatile and can perform various operation that's why it is used in industry.

33. Universal index head can be used to execute all form of indexing.

(A) true

(B) false

Answer: - Option A

Explanation : This is the advantage of this head. Due to its versatility it can perform the tasks of other indexing methods and can execute all form of indexing.

34. Which of the following is the important part of universal head?

(A) worm

(B) index plate

(C) sector arm

(D) all of the mentioned

Answer: - Option D

Explanation : Worm, sector arm, index plate, sector arch ,sector ram, crank, taper hole, spindle etc. are the main parts of universal head .

35. Which of the following has single start threads in universal dividing head?

(A) worm

(B) index plate

(C) sector arm

(D) all of the mentioned

Answer: - Option A

Explanation : As per the construction of universal dividing head, worm has single start threads. It has to allow the spindle to pass through it during the rotation of spindle.

36. In universal dividing head, the worm wheel has 40 teeth.

- (A) true (B) false

Answer: - Option A

Explanation : As per the construction of worm wheel, worm wheel has 40 teeth for the better function. Taper hole spindle passes through it.

37. The crank is used to rotate the spindle of the dividing head in universal dividing head.

- (A) true (B) false

Answer: - Option A

Explanation : Crank is used for this purpose. It is the main function of the head. Spindle is passed through the worm and worm wheel arrangement.

38. Rotation of spindle is done through _____ arrangement in universal dividing head..

- (A) worm (B) worm wheel
(C) both worm and worm wheel (D) none of the mentioned

Answer: - Option C

Explanation : Worm and worm wheel arrangement are used for the rotation of spindle but the rotation of spindle starts because of crank arrangement.

39. By linking the worm and worm gear driving mechanism of the attachment with the lead screw of the table, continuous _____ motion can be imparted to the work piece.

- (A) rotary (B) transverse
(C) reciprocating (D) none of the mentioned

Answer: - Option A

Explanation : As per working of universal dividing head, continuous rotary motion can be imparted to work piece for the purpose of helical milling.

Prepared By Ekta S Mehta	Verified By Ekta S Mehta Module Coordinator	Re-Verified By Mr. Kokare N.N Academic Coordinator	Approved By Mr. Khorane R.S HoD ME



Question Bank for Multiple Choice Questions

Program: Diploma in Mechanical engineering	Program Code:- ME
Scheme:-I	Semester:- 5
Course:- Advanced Manufacturing Processes	Course Code:- 22563

03 – Gear Manufacturing	Marks:-10
Content of Chapter:- <ul style="list-style-type: none">1.1 Gear Manufacturing methods- Function. Types of gears , Gear manufacturing methods.1.2 Gear hobbing - Working principal, advantages, limitations & applications .1.3 Gear shaping- Gear shaping by pinion cutter, gear shaping by rack cutter. Advantages , limitations & application of both the methods, Comparison of gear hobbing & gear shaping.1.4 Gear Finishing methods- Need of gear finishing, gear finishing methods. Gear finishing methods, Gear Shaving, Gear grinding, Gear finishing methods, Gear burnishing, lapping. Gear honning.	

1. Hobbing process is also used for which of the following application?

- (A) Punching (B) Metal bending
(C) Rust removal (D) Sprocket cutting

Answer: - Option D

Explanation : Hobbing is a machining process widely used for cutting gears, splines and sprockets. The tool used for cutting is called as a hob.

2. Hobbing is a special type of which of the following?

- (A) Casting (B) Grinding
(C) Drilling (D) Milling

Answer: - Option D

Explanation : Hobbing is a special type of milling in which teeth are cut by a series of cuts made by a tool known as a hob.

3. In the process of gear cutting by hobbing, the angle between the hob's spindle axis and the work piece's spindle axis is fixed..

- (A) True (B) False

Answer: - Option B

Explanation : The angle between the hob's spindle axis and the work piece's spindle axis varies depending upon the type of product being manufactured.

4. For spur gear manufacturing, angle between the hob's spindle axis and the work piece's spindle axis should be equal to _____

(A) (helix angle of the hob)/2

(B) $2 \times$ (helix angle of the hob)

(C) (helix angle of the hob)

(D) (helix angle of the hob)²

Answer: - Option C

Explanation : As hob has helical threads, it has to be oriented making some angle with the Work piece as per the requirement and then it is fed into the work piece. For spur gears, that angle should be equal to the helix angle of the hob.

5. For helical gears, the angle between hob's spindle axis and work piece's spindle axis must be _____ as the helix angle of the helical gear.

(A) increased by the same amount

(B) increased by the half amount

(C) decreased by the same amount

(D) decreased by the half amount

Answer: - Option A

Explanation : For manufacturing the helical gear, one has to consider helix angle of the gear. While hobbing the helical gear, angle between hob spindle axis and workpiece spindle axis should be increased by an angle equal to helix angle of the gear.

6. Hobbing machines are characterised by

(A) production rate

(B) largest module or PCD it can generate

(C) accuracy of the machine

(D) size of the machine

Answer: - Option B

Explanation : Hobbing machines are characterised by the largest module or pitch diameter it can generate as they can produce anything from tiny instrument gears to 10ft diameter marine gears.

7. The gear hob is a formed tooth milling cutter with helical teeth

(A) True

(B) False

Answer: - Option A

Explanation : The gear hob is a formed tooth milling cutter with helical teeth arranged like the thread on a screw. These teeth are fluted to produce required cutting edges.

8. As the number of threads on the hob increases, it's accuracy _____

(A) increases

(B) decreases

(C) remains same

(D) can't say

Answer: - Option B

Explanation : More number of threads means more difficulties to manufacture them. Therefore, accuracy varies inversely with a number of hob threads.

9. As the number of threads on the hob increases, production rate_____

- (A) increases (B) decreases
(C) remains same (D) can't say

Answer: - Option A

Explanation : Production rate increases with an increase in the number of threads on the hob as more number of threads means less machining time. Directly it cannot be said that production rate will increase by 25% per thread.

10. Ideally how many gear threads should be there or each hob thread?

- (A) 20 (B) 30
(C) 45 (D) 10 times the number of hob threads

Answer: - Option B

Explanation : For best results, there should be about 30 gear threads for each hob thread. Therefore four-thread hob should not be used to cut fewer than 120 gear teeth.

11. The gears are used to connect two parallel shafts except

- (A) Spur Gear (B) Helical gear (C) Double helical gears
(D) Bevel gears

Answer: - Option D

Explanation : NA

12 The gears used to connect non-parallel and non-intersecting shafts is

- (A) Straight bevel gears (B) Spiral bevel gears
(C) Spiral gears (D) Double helical gears

Answer: - Option C

Explanation : NA

13 To connect two intersecting shafts we use

- (A) Spur gear (B) Helical gear
(C) Worm and wheel (D) Bevel gears

14. The gear used to convert rotary motion into translating motion

- (A) Worm and wheel (B) Crown gear
(C) Rack and pinion (d) Spiral Bevel gear

Answer: - Option C

Explanation : NA

15. Which of the following type of gear has inclined teeth?

- (A) Spur gear
(C) Spiral gear
(B) Helical gear
(D) All of the above

Answer: - Option B

Explanation : NA

16 Gear shaping is related to.....

- (A) Template
(C) Hob
(E) All of the above
(B) Form tooth process
(D) Generating

Answer: - Option C

Explanation : NA

17 Which of the following methods produces gear by generating process.....

- (A) Hobbing
(C) Punching
(E) Broaching
(B) Casting
(D) Milling

Answer: - Option A

Explanation : NA

18 Which of the following is a gear finishing operation....

- (A) Milling
(C) Shaping
(E) None of the above
(B) Hobbing
(D) Shaping and brushing

Answer: - Option D

Explanation : NA

19 Climb Hobbing is done by feeding the hob from bottom of gear blank to top of gear blank.

- (A) True
(B) False

Answer: - Option A

Explanation : NA

20. Hobbing Techniques are used for

- (A) Spur Gear
(C) Worm & worm Gear
(B) Helical Gear
(D) All of the above

Answer: - Option D

Explanation : NA

21. Grinding wheel is specified as "A 46 K 5 B 17". Grain size of a wheel will be

- (A) Coarse (B) Medium
(C) Fine (D) Very Fine

Answer: - Option B

Explanation : '46' represents grain size, which is medium grain size. Second value in the specification represents grain size.

22. Grinding wheel is specified as "C 8 K 5 B 17". Grain size of a wheel will be

- (A) Coarse (B) Medium
(C) Fine (D) Very Fine

Answer: - Option A

Explanation : '8' represents grain size, which is coarse. Second value in the specification represents grain size.

23. Grinding wheel is specified as "A 600 K 5 B 17". Grain size of a wheel will be

- (A) Coarse (B) Medium
(C) Fine (D) Very Fine

Answer: - Option D

Explanation : '600' represents grain size, which comes under very fine grain size. Second value in the specification represents grain size.

24. Which of the following grinding wheel will have fine grain size?

- (A) A 46 K 5 B 17 (B) C 600 K 5 B 17
(C) C 8 K 5 B 17 (D) A 80 K 5 B 17

Answer: - Option D

Explanation : Second place of ISO designation of the grinding wheel represents grain size and "80" comes under fine rain size.

25. Which of the following grinding wheel will have fine grain size?

- (A) A 46 K 5 B 17 (B) C 600 K 5 B 17
(C) C 8 K 5 B 17 (D) A 80 K 5 B 17

Answer: - Option C

Explanation : Second place of ISO designation of the grinding wheel represents grain size and "600" comes under very fine rain size.

26. Removing dull grains in order to make grinding wheel sharp is known as

- (A) Loading
- (B) Glazing
- (C) Dressing
- (D) Trueing

Answer: - Option C

Explanation : Dressing is done to make grinding wheel shaft by removing dull grains at the top.

27. Which of the following is a surface finishing operation?

- (A) Drilling
- (B) Honing
- (C) Milling
- (D) Turning

Answer: - Option B

Explanation : Honing is a surface finishing operation used to give better surface finish and have very small material removal rate.

28. Which of the following is a surface finishing operation?

- (A) Drilling
- (B) Honing
- (C) Milling
- (D) Turning

Answer: - Option B

Explanation : Lapping is a surface finishing operation used to give better surface finish and have very small material removal rate.

29. Which of the following process has the lowest cutting speed?

- (A) Drilling
- (B) Honing
- (C) Milling
- (D) Turning

Answer: - Option B

Explanation : Honing is a surface finishing operation and hence it is generally performed at low speed.

30. Which of the following process has the lowest cutting speed?

- (A) Slotting (B) Lapping
(C) Milling (D) Reaming

Answer: - Option B

Explanation : Lapping is a surface finishing operation and hence it is generally performed at low speed.

31. Which of the following process have the lowest metal removal rate?

- (A) Drilling (B) Reaming
(C) Milling (D) Lapping

Answer: - Option B

Explanation : Lapping is a surface finishing operation and hence have low metal removal rate.

32. Which of the following process have the lowest metal removal rate?

- (A) Drilling (B) Reaming
(C) Milling (D) Honing

Answer: - Option D

Explanation : Honing is a surface finishing operation and hence have low metal removal rate.

33. Which of the following is the correct grain size range of abrasive grains for honing stones?

- (A) 800 grit to 1000 grit (B) 5 grit to 10 grit
(C) 50 grit to 60 grit (D) 80 grit to 600 grit

Answer: - Option D

Explanation : 80 grit to 600 grit is the correct grain size range of abrasive grains for honing stones.

34. For practical honing conditions, cross hatch angle in degrees is generally taken in the range of

- (A) 20 to 40 (B) 40 to 50
(C) 50 to 60 (D) 10 to 15

Answer: - Option A

Explanation : Cross hatch angle is generally taken from 20 degrees to 40 degrees.

35. During a honing process, reciprocating speed of honing tool was 9m/min with a rotary speed of 25m/min. Cross hatch angle in degrees is equal to

- (A) 40 (B) 35
(C) 30 (D) 25

Answer: - Option A

Explanation : $\tan(X) = (\text{Reciprocating speed in m/min}) / (\text{Rotary speed in m/min})$. Cross hatch angle = $2 \times X$, where 'X' is the cross hatch angle.

36. The gears used for parallel shaft arrangement are

- (A) mitre gear (B) face gear
(C) spur gears on helical gears (D) none of the mentioned

Answer: - Option D

Explanation : Bevel gears are the gears used for intersecting shaft arrangement. The gears used for parallel shaft arrangement are spur gears on helical gears.

37. _____ are the gears used for intersecting shaft arrangement.

- (A) bevel gears (B) beveloid gears
(C) mitre gears (D) none of the mentioned

Answer: - Option A

Explanation : Bevel gears are the gears used for intersecting shaft arrangement. The gears used for parallel shaft arrangement are spur gears on helical gears.

38. _____ are gears used for skew arrangement.

- (A) spur gears on helical gears (B) helical, worm, or hypoid gears
(C) mitre gears (D) none of the mentioned

Answer: - Option D

Explanation : Helical, worm, or hypoid gears are gears used for skew arrangement. Bevel gears are the gears used for intersecting shaft arrangement.

39. Bevel gears used for connecting intersecting shafts at 90° and having speed ratio 1 : 1 is known as

- (A) bevel gears (B) beveloid gears

(C) mitre gears

(D) none of the mentioned

Answer: - Option C

Explanation : Bevel gears used for connecting intersecting shafts at 90° and having speed ratio 1:1 is known as mitre gears. Bevel gears with basic pressure angle of 20° with long and short addendums for ratios other than 1:1 to avoid undercut pinions and to increase strength are Gleason bevel gears.

40. Tapered involute gears which can couple intersecting shafts, skew shafts, and parallel shafts are known as

(A) bevel gears

(B) beveloid gears

(C) mitre gears

(D) none of the mentioned

Answer: - Option B

Explanation : Tapered involute gears which can couple intersecting shafts, skew shafts, and parallel shafts are known as beveloid gears. The gears used for parallel shaft arrangement are spur gears on helical gears.

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3. Which two disciplines are tied by a common database?

- (A) documentation and geometric modeling (B) CAD and CAM
(C) drafting and documentation (D) none of the mentioned

Answer: - Option B

Explanation : Because of their joint benefits, computer- aided design and computer-aided manufacturing are often combined into CAD/ CAM systems. This combination allows the transfer of information from the design stage to the stage of planning for manufacture, without the need to reenter the data on part geometry manually.

4. The system environment in a mainframe computer consists of

- (A) central processing (B) storage devices
(C) printers and plotters (D) both central processing and storage devices

Answer: - Option D

Explanation : None

5. The nerve center or brain of any computer system is known as

- (A) CPU (B) Storage device
(C) ALU (D) Monitor

Answer: - Option A

Explanation : None

6. Which of the following code will give point to point movement?

- (A) G00 (B) G01
(C) G56 (D) G94

Answer: - Option A

Explanation : G00 will give point to point movement.

7. Which of the following code will give linear interpolation movement?

- (A) G00 (B) G01
(C) G78 (D) G65

Answer: - Option B

Explanation : G01 will give linear interpolation movement.

8. Which of the following code will give circular interpolation in a clockwise direction?

- (A) G56 (B) G01
(C) G02 (D) G47

Answer: - Option C

Explanation : G02 will give circular interpolation in a clockwise direction.

9. Which of the following code will give circular interpolation in Counterclockwise direction?

- (A) G00 (B) G56
(C) G69 (D) G03

Answer: - Option D

Explanation : G03 will give circular interpolation in Counterclockwise direction.

10. Which the following code will produce dwell for a specified time?

- (A) G18 (B) G65
(C) G45 (D) G04

Answer: - Option D

Explanation : G04 will produce dwell for a specified time.

11. In machining of a workpiece, the material is removed by_____

- (A) drilling action (B) melting action
(C) shearing acting (D) using brittleness of the material

Answer: - Option C

Explanation : There are different machining processes, such as turning, milling, boring etc. In all these cases metal is removed by a shearing process, which occurs due to the relative motion between the workpiece and the tool. Generally, one of the two rotates at designated and generally high speed, causing the shearing of material (known as chips), from the workpiece. The other moves relatively slowly to effect removal of metal throughout the workpiece.

12. The depth that the tool is plunged into the surface is called as _____

- (A) feed (B) depth of cut
(C) depth of tool (D) working depth

Answer: - Option B

Explanation : The depth of cut, DOC is the depth that the tool is plunged into the surface. Feed defines the relative lateral movement between the cutting tool and the workpiece. Thus, together with the depth of cut, feed decides the cross section of the material removed for every rotation of the job or the tool.

13. Feed is measured in units of _____

- (A) length/revolution (B) degree/revolution
(C) length (D) velocity

Answer: - Option A

Explanation : Feed is the amount of material removed for each revolution or per pass of the tool over the workpiece and is measured in units of length/revolution, length/pass or other appropriate units for the particular process.

14. CNC machining centres do not include operations like _____

- (A) milling (B) boring
(C) welding (D) tapping

Answer: - Option D

Explanation : CNC machining centres are developed for machining prismatic components combining operations like milling, drilling, boring and tapping. Gradually machines for manufacturing cylindrical components, called turning centres are also developed.

15. In CNC systems multiple microprocessors and programmable logic controllers work _____

- (A) in parallel (B) in series
(C) one after the other (D) for 80% of the total machining time

Answer: - Option A

Explanation : In CNC systems multiple microprocessors and programmable logic controllers work in parallel for simultaneous servo position and velocity control of several axes of a machine for contour cutting as well as monitoring of the cutting process and the machine tool.

16. Which of the following is not the advantage of CNC machines?

- (A) Higher flexibility (B) Improved quality
(C) Reduced scrap rate (D) Improved strength of the components

Answer: - Option D

Explanation : None

17. In how many ways CNC machine tool systems can be classified?

- (A) 2 (B) 3

(C) 4

(D) 5

Answer: - Option B

Explanation : CNC machine tool systems can be classified in various ways such as:
• Point-to-point or contouring: depending on whether the machine cuts metal while the workpiece moves relative to the tool

• Incremental or absolute: depending on the type of coordinate system adopted to parameterise the motion commands

• Open-loop or closed-loop: depending on the control system adopted for axis motion control.

18. Point-to-point systems are used for _____

(A) reaming

(B) parting

(C) grooving

(D) facing

Answer: - Option A

Explanation : Such systems are used, typically, to perform hole operations such as drilling, boring, reaming, tapping and punching. In a PTP system, the path of the cutting tool and its feed rate while traveling from one point to the next are not significant, since, the tool is not cutting while there is motion.

19. For CNC machining skilled part programmers are needed.

(A) True

(B) False

Answer: - Option A

Explanation : None

20. An absolute NC system is one in which all position coordinates are referred to one fixed origin called the zero point.

(A) True

(B) False

Answer: - Option A

Explanation : An absolute NC system is one in which all position coordinates are referred to one fixed origin called the zero point. The zero point may be defined at any suitable point within the limits of the machine tool table and can be redefined from time to time.

21. What is the full form of CNC?

(A) Computer numerical control

(B) Computer number control

(C) Computer network control

(D) Computer numbers count

Answer: - Option A

(C) feedback system

(D) graphic user interface

Answer: - Option A

Explanation : Speed and position are controlled by using a sliding table and a spindle. X and Y directions are controlled by the machine table. The z-direction is controlled by spindle speed control. In the other options, The Machine control unit implements interpolation commands to generate axial motion commands. The feedback system is to record the data from the sensor and compare it with input data. To understand the position of the tool according to the input program, is the function of Graphic user interface.

27. In the block diagram of the CNC machine, data processing and control loop are a part of _____

(A) speed and position sensor

(B) feedback system

(C) machine control unit

(D) input device

Answer: - Option C

Explanation : In the block diagram of the CNC machine, data processing and control loop are a part of the Machine control unit. Machine control unit implements interpolation commands to generate axial motion commands. The feedback system is to record the data from the sensor and compare it with input data. Speed and position are controlled by using a sliding table and a spindle. The punch tape reader in a CNC machine is an input device. Magnetic tape, as well as computer keyboard, can be used in CNC as an input device.

28. Which of the following are the not characteristics of the closed loop systems?

(A) It does not compensate for disturbance

(B) It reduces the sensitivity of plant-parameter variations

(C) It does not involve output measurement

(D) It does not has the ability to control the system transient response

Answer: - Option D

Explanation : Feedback refers to the comparison of the final output to the desired output at respective input so as to get accurate and error free result and in the system improves the transient response of the system.

29. Automatic Pallet Changer(APC)

(A) Automatic Pallet Changer(APC)

(B) Automatic Pallet Changer(APC)

(C) Automatic Pallet Changer(APC)

(D) Automatic Pallet Changer(APC)

Answer: - Option A

Explanation : None

30. CNC turning centres

- (A) 0.02 (B) 0.04
(C) 0.05 (D) 0.07

Answer: - Option A

Explanation : None

31. Which of the following code is used to give input of cutter offset data?

- (A) G30 (B) G20
(C) G10 (D) G04

Answer: - Option C

Explanation : G10 is used to give input of cutter offset data.

32. G & M codes for turning & milling

- (A) G32 (B) G89
(C) G20 (D) G74

Answer: - Option A

Explanation : G32 is used in thread cutting in turning.

33. Which of the following code is used to return to a reference point?

- (A) G23 (B) G28
(C) G14 (D) G19

Answer: - Option B

Explanation : G28 is used to return to a reference point.

34. **The use of computers to control the operation of production process is known as**

- (A) CAD (B) CAE
(C) CAM (D) CAQ

Answer: - Option B

Explanation :

35. **for holding hollow work part _____ is required**

- (A) internal gripper (B) external gripper
(C) magnetic gripper is required (D) notch gripper is required

Answer: - Option A

Explanation : None

36. **Several machine tools can be controlled by a central computer in**

(B) can be used again and again

(C) can be used again but it has to be modified every time
(D) cannot say

Answer: - Option B

Explanation : NA

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(A) G32

(B) G00

(C) G02

(D) G19

Answer: - Option D

Explanation :

4. Which of the following code will change specified input values in millimeters?

(A) G01

(B) G00

(C) G20

(D) G21

Answer: - Option C

Explanation : G20 will change specified input values in millimeters.

5. Machine zero position means

(A) Home position

(B) Floating zero point

(C) Work piece zero

(D) Program zero point

Answer: - Option A

Explanation : None

6. To indicate the position of the workpiece by & easily machine zero point should be displaced to another point on the workpiece called...

(A) Workpiece zero Point

(B) machine Zero Point

(C) Start Point

(D) Program Zero point

Answer: - Option A

Explanation : None

7. Which of the following code is used to cancel offset compensation for cutter radius?

(A) G40

(B) G02

(C) G42

(D) G00

Answer: - Option A

Explanation : G40 is used to cancel offset compensation for cutter radius.

8. G40 is used to cancel offset compensation for cutter radius.

(A) G40

(B) G41

(C) G42

(D) G50

Answer: - Option B

Explanation : G41 is used to give cutter offset compensation, left of part surface.

9. Which of the following code is used to give cutter offset compensation, right of a part surface?

(A) G00

(B) G41

(C) G42

(D) G91

Answer: - Option C

Explanation : G42 is used to give cutter offset compensation, right of part surface.

10. Which of the following code is used to specify the location of co-ordinate Axes system origin relative to starting location of cutting tool?

(A) G01

(B) G41

(C) G00

(D) G50

Answer: - Option D

Explanation : G50 is used to specify the location of co-ordinate Axes system origin relative to starting location of cutting tool.

11. Which of the following code is used in programming in absolute coordinates?

(A) G90

(B) G32

(C) G92

(D) G01

Answer: - Option A

Explanation : G90 is used in programming in absolute coordinates.

12. Which of the following code is used in programming in incremental coordinates?

(A) G90

(B) G32

(C) G92

(D) G01

Answer: - Option D

Explanation :

13. Which of the following code is used to specify location of co-ordinate Axis System origin relative to starting location of cutting tool?

(A) G17

(B) G91

(C) G92

(D) G00

Answer: - Option C

Explanation : G92 is used to specify location of co-ordinate Axis System origin relative to starting location of cutting tool.

14. In CNC programming is commonly used canned cycle for Stock removal cycle

(A) G71

(B) G72

(C) G73

(D) G74

Answer: - Option D

Explanation : None

15. Typical canned drilling cycle is specified by

(A) G74

(B) G78

(C) G81

(D) G85

Answer: - Option C

Explanation : None

16. Canned Cycles in CNC are repeated

(A) turning process

(B) boring process

(C) inclined turning process

(D) knurling process

Answer: - Option B

Explanation : None

17. The depth of cut is the _____ distance measured from the machined surface to the surface of the work piece, which is uncut.

(A) parallel

(B) perpendicular

(C) at 45 degree

(D) none of the mentioned

Answer: - Option D

Explanation : It is the perpendicular distance measured from the machined surface to the surface of the work piece, which is uncut. Other factors remaining constant, the depth of cut varies inversely as the cutting speed.

18. Which of the following represents the formula for the depth of cut? d_1 =diameter of work surface before machining and d_2 =diameter of the machined surface

(A) d_1+d_2

(B) d_1-d_2

(C) $(d_1+d_2)/2$

(D) $(d_1-d_2)/2$

Answer: - Option D

Explanation : (D_1-d_2) – this is the formula for depth of cut. Here both d_1 and d_2 are diameters and expressed in mm.

19. Which of the following represents the formula for metal removal rate?, b =depth of cut, c =feed, d =revolution

a =cutting speed, b =depth of cut, c =feed, d =revolution

(A) $(a*b*d)/c$

(B) $(a*b)/(c*d)$

(C) $(a*b*c)/d$

(D) C

Answer: - Option C

Explanation : $(a*b*c)/d$ – This is the right formula for metal removal rate. Here a is expressed in mm/minute, b is expressed in mm, c is expressed in mm/revolution and d is simply revolution.

20 **6 axis milling machine is capable of**

(A) moving and rotating about each primary axis simultaneously

(B) moving only about each primary axis simultaneously

(C) rotating only about each primary axis simultaneously

(D) moving and rotating about each primary axis only at a time

Answer: - Option A

Explanation : NA

21. **When the series of motion of the tool is repeated number of times which of the following command is used**

(A) Subroutines

(B) Canned cycle

(C) Macros

(D) Tool length and diameter compensation

Answer: - Option B

Explanation : NA

22. **In CNC programming, cutter radius compensation to left and right are specified by**

(A) G41 and G42 respectively

(B) G42 and G41 respectively

(C) G40 and G41 respectively

(D) G40 and G42 respectively

Answer: - Option A

Explanation : NA

23. During the execution of a CNC part program block NO20 GO2 X45.0 Y25.0 R5.0 the type of tool motion will be

(A) circular Interpolation – clockwise (B) circular Interpolation – counterclockwise

(C) linear Interpolation (D) rapid feed

Answer: - Option A

Explanation : NA

24. Tooling of Robot is also called as_____

(A) Manipulator

(B) Gripper

(C) Wrist

(D) End Effector

Answer: - Option D

Explanation : NA

25. Cutter radius compensation- Left is applicable for

(A) inside path only

(B) outside path only

(C) both path simultaneously

(D) for both outside and inside path

Answer: - Option A

Explanation :NA

26. Which of the following options is correct for the control unit and panel of NC (Numerical Control) and CNC (Computer Numerical Control) machine tools?

(A) The control unit of NC machine tool works in ON-line mode and the control unit of CNC machine tool works in batch processing mode.

(B) The control unit of NC machine tool works in batch processing mode and the control unit of CNC machine tool works in ON-line mode

(C) The control units of both NC and CNC machines work in ON-line mode

(D) The control units of both NC and CNC machines work in batch processing mode

Answer: - Option B

Explanation : None

27. **Part-programming mistakes can be avoided in**

- (A) NC (Numerical Control) machine tool
- (B) CNC (Computer Numerical Control) machine tool
- (C) Both a. and b.
- (D) None of the above

Answer: - Option B

Explanation :

28. **The machine tool, in which calculation and setting of the operating conditions like depth of cut, feed, speed are done during the machining by the control system itself, is called**

- (A) Computer Numerical Control System
- (B) Direct Numerical Control System
- (C) Machining Centre System
- (D) Adaptive Control System

Answer: - Option D

Explanation :NA

29. **Which machine tool reduces the number of set-ups in machining operation, time spent in setting machine tools and transportation between sections of machines?**

- (A) Computer Numerical Control machine tool
- (B) Direct Numerical Control machine tool
- (C) Adaptive Control Systems
- (D) Machining centre

Answer: - Option D

Explanation : NA

30. **In CNC machining tool radius compensation turning the left mode ON programming contour done by**

- (A) G40
- (B) G41
- (C) G42
- (D) 43

Answer: - Option B

Explanation : NA

31. **CNC machining centres do not include operations like _____**

- (A) milling
- (B) boring
- (C) welding
- (D) tapping

Answer: - Option C

Explanation : NA

32. Which type of feed is needed in turning operation?

(A) longitudinal

(B) cross

(C) both cross and longitudinal

(D) none of the mentioned

Answer: - Option A

Explanation : NA

33. NC contouring is an example of

(A) continuous path positioning

(B) point-to-point positioning

(C) absolute positioning

(D) incremental positioning

Answer: - Option A

Explanation : NA

34. Part-programming mistakes can be avoided in

(A) NC

(B) CNC

(C) both (A & B)

(D) None of the above

Answer: - Option B

Explanation : NA

35. The most preferred transmission system in CNC machining center is

(A) Timing belt and pulle

(B) V-belt

(C) Recirculating ball screw

(D) Rack and pinion

Answer: - Option C

Explanation : NA

36. The setting of tools to a specific length is called

(A) Tool on setting

(B) Specific setting

(C) Presetting

(D) Post setting

Answer: - Option C

Explanation : NA

37. Spindle speed for machining centers is always specified in

- (A) Inches per revolution
- (B) RPM
- (C) Surface feet or meter per minute
- (D) Inches per minute

Answer: - Option B

Explanation : NA

38. What is the purpose of using recirculating ball screw nut mechanism in CNC machine?

- (A) To reduce the setup time
- (B) For higher surface finish
- (C) For carrying out up milling
- (D) To remove backlash

Answer: - Option B

Explanation : NA

39. The full form of APT is

- (A) Advance programming tools
- (B) Automatic positioning tools
- (C) Advance programming techniques
- (D) Automatically programmed tools

Answer: - Option D

Explanation : NA

40. CNC machine coordinate system is described based on

- (A) Polar coordinate system
- (B) Cartesian coordinate system
- (C) Both a and b
- (D) None of the above

Answer: - Option B

Explanation : NA

Prepared By Ekta S Mehta	Verified By Ekta S Mehta Module Coordinator	Re-Verified By Mr. Kokare N.N Academic Coordinator	Approved By Mr. Khorane R.S HoD ME



Program: Diploma in Mechanical engineering	Program Code:- ME
Scheme:-I	Semester:- 5
Course:- Advanced Manufacturing Processes	Course Code:- 22563

06 – Automation and Robotics	Marks:-8
Content of Chapter:- 6.1 Automation - Define, need of automation , high & low cost automation , examples of automations . 6.2 Types of Automation - Fixed (Hard) automation , Programmable automations & Flexible automations (Soft). Comparison of types of automations. 6.3 Group technology -concept, basis for developing part families. Classification & Coding with example Concept of cellular Manufacturing. Advantages & Disadvantages . 6.4 Flexible Machining System-Introduction, concept, definitions & need , sub systems of FMS. .Comparing with other manufacturing approaches.. 6.5 Introduction to Robotics - Definition of robot & robotics advantages & disadvantages & applications. 6.6 Components of Robotics manipulator Sensors, micro controller processor & software.	

1. Which of the following drive system is not used in Robotics

- (A) Hydraulic (B) Manual
(C) Pneumatic (D) Electric motor

Answer: - Option B

Explanation : None

2. Which one of following is not part of FMS –

- (A) AS/RS (B) AGV's
(C) Lathe (D) CNC Machines

Answer: - Option C

Explanation : None

3. What are types of Automation (a) Hard Automation, (b) Soft Automation

- (A) Only (a) (B) Only (b)
(C) Both (a) and (b) (D) None of the above

Answer: - Option C

Explanation : None

4. _____ is most versatile automation

- (A) Hard
- (B) Soft
- (C) Programmable
- (D) Open

Answer: - Option B

Explanation : NA

5. FMS stands for

- (A) Fixed Manufacturing Systems
- (B) Flexible Manufacturing System
- (C) Fused Manufacturing System
- (D) Follower Manufacturing System

Answer: - Option B

Explanation :NA

6. The number of moveable joints in the base, the arm, and the end effectors of the robot determines

- (A) degrees of freedom
- (B) payload capacity
- (C) operational limits
- (D) flexibility

Answer: - Option A

Explanation : NA

7. Hard automation is used when jobs are in

- (A) low quantity
- (B) medium quantity
- (C) batch quantity
- (D) huge quantity

Answer: - Option D

Explanation :NA

8. If a Robot can alter its own trajectory in response to external conditions, it is considered

- (A) Intelligent
- (B) Mobile
- (C) Non servo
- (D) Open loop

Answer: - Option A

Explanation : NA

9. Which of the following person used the name robotics first time in print?

- (A) Josef capek (B) Karel capek
(C) Isaac asimov (D) Newton

Answer: - Option C

Explanation : NA

10. The region throughout which a robot arm can accomplish tasks is called its:

- (A) Coordinate geometry. (B) Reference axis.
(C) Reference frame. (D) Work envelope.

Answer: - Option D

Explanation :

11. The _____ of a robot is the smallest increment of movement into which the robot can divide its work volume

- (A) control resolution (B) spatial resolution
(C) accuracy (D) precision

Answer: - Option B

Explanation : NA

12. _____ is helpful in prevention of shutdown

- (A) CAPP (B) CIM
(C) FMS (D) Group Technology

Answer: - Option C

Explanation : NA

13. According to _____ movements and arrangement of links different configurations are possible

- (A) arm (B) joint
(C) grippers (D) end effector

Answer: - Option B

Explanation : NA

14. The movement of arm along its axis is called the _____

(A) vertical traverse

(B) Radial Traverse

(C) Rotational Traverse

(D) wrist Yaw

Answer: - Option B

Explanation : NA

15. _____ Automation has highest production rate

(A) Flexible

(B) Programmable

(C) Fixed

(D) Extended

Answer: - Option C

Explanation : NA

16. Wrist motion of y involves

(A) right to left rotation of the object

(B) up and down rotation of the object

(C) twisting of the object about the arm axis

(D) none of the mentioned

Answer: - Option A

Explanation : Wrist motion always follows right hand rule.

17. Robots are specified by

(A) pay load

(B) dimension of work envelope

(C) degree of freedom

(D) all of the mentioned

Answer: - Option D

Explanation : None

18. Hydraulic drives are used for a robot when

(A) high torque is required

(B) high power is required

(C) rapid motion of robot arm

(D) all of the mentioned

Answer: - Option D

Explanation : NA

19. The following type of robot is most suitable for pick and place operations

(A) rectangular

(B) cylindrical

(C) spherical

(D) jointed arm type

Answer: - Option A

Explanation : The fixed-sequence robot, also called a pick-and-place robot, is programmed for a specific sequence of operations. Its movements are from point to point, and the cycle is repeated continuously.

20. A robot's arm is also known as its

- (A) actuator
- (B) end effector
- (C) manipulator
- (D) servomechanism

Answer: - Option C

Explanation : The manipulator is a mechanical unit that provides motions (trajectories) similar to those of a human arm and hand.

21. Programming a robot by physically moving it through the trajectory you want it to follow is called

- (A) contact sensing control
- (B) continuous path control
- (C) pick and place control
- (D) robot vision control

Answer: - Option NA

Explanation :

22. Which device is mostly associated with automation?

- (A) flexible manufacturing
- (B) robots
- (C) computer graphics workstation
- (D) NC machine

Answer: - Option B

Explanation : Only robots are associated with automation.

23. Choose the basic element for an automated machine tool

- (A) Logic
- (B) NC tape programming
- (C) software
- (D) workstation

Answer: - Option A

Explanation : NA

24. Choose the robot component from the following

- (A) micro computer
- (B) coaxial cable
- (C) arm
- (D) software

Answer: - Option C

Explanation : Arm is the major component of a robot.

25. Wrist motion of y involves

- (A) right to left rotation of the object (B) up and down rotation of the object
(C) twisting of the object about the arm axis (D) none of the mentioned

Answer: - Option A

Explanation : Wrist motion always follows right hand rule.

26. Hydraulic drives are used for a robot when

- (A) high torque is required (B) high power is required
(C) rapid motion of robot arm (D) all of the mentioned

Answer: - Option D

Explanation : None

27. Group technology brings together and organizes:

- (A) automation and tool production (B) parts and simulation analysis
(C) documentation and analysis (D) common parts, problems, and tasks

Answer: - Option D

Explanation :None:

28. Cellular manufacturing is not a application of thought of group technology.

- (A) True (B) False

Answer: - Option A

Explanation : None

29. Form which of the following is the objective of cellular manufacturing.

- (A) Reduced manufacturing lead time (B) Increased in quality
(C) Reduced setup time (D) All of the above

Answer: - Option D

Explanation : None

30. Cellular manufacturing is also known as

- (A) Manufacturing Technology (B) Production Technology
(C) Group Technology (D) None of the above

Answer: - Option C

Explanation : NA

31. Cellular manufacturing is an approach whereby production can be done in

- (A) Small batches (B) Medium batches
(C) Large batches (D) Any of the above

Answer: - Option A

Explanation : NA

32. The following is (are) the advantage(s) of Cellular manufacturing.

- (A) Very little in-process inventory (B) More job satisfaction
(C) Reduced flow times (D) All of the above

Answer: - Option D

Explanation : NA

33. In a simple and visual method of Cell design, the priorities in classifying may be in the order

- (A) Rotational or non-rotational – Material – Size – Shape
(B) Material – Rotational or non-rotational – Size – Shape
(C) Size – Rotational or non-rotational – Material – Shape
(D) Shape – Rotational or non-rotational – Material – Size

Answer: - Option A

Explanation : NA

34. In cell formation using production flow analysis, following process will be left out of analysis

- (A) Grinding (B) Milling
(C) Drilling (D) Gear cutting

Answer: - Option D

Explanation : NA

35. Which of the following technique of grouping does not consider the design and shape aspect?

- (A) A simple and visual method of cell design (B) Family formation by classification and codification
(C) Cell formation using Production Flow Analysis (D) All of the above

Answer: - Option C

Explanation : NA

36. The following is basically a material flow simplification technique.

- (A) A simple and visual method of cell design (B) Family formation by classification and codification
(C) Cell formation using Production Flow Analysis (D) All of the above

Answer: - Option C

Explanation : NA

37. In Cell, manufacturing, the cell size (people) should be

- (A) 6 to 12 (B) 10 to 20
(C) 15 to 25 (D) 20 to 30

Answer: - Option A

Explanation : NA

38.. The following cell formation technique is based on Component shape and design?

- (A) Production flow analysis (B) Component flow analysis
(C) Composite component (D) Simulation

Answer: - Option C

Explanation : NA

39. The following is (are) the benefit(s) of Cellular Manufacturing.

- (A) Job satisfaction (B) Job enlargement
(C) Both (A) and (B) (D) Job enrichment

Answer: - Option C

Explanation : NA

40. Which is the first robot to get citizenship in any country?

(A) Eskimo

(B) Ansino

(C) Asimo

(D) Sophia

Answer: - Option D

Explanation : Sophia is the first robot to get citizenship in Saudi Arabia. The humanoid robot “Sophia” has been developed by “Hanson Robotics” at Hong Kong. Sophia is social humanoid robot that can mimic more than 60 human expressions.

Prepared By Ekta S Mehta	Verified By Ekta S Mehta Module Coordinator	Re-Verified By Mr. Kokare N.N Academic Coordinator	Approved By Mr. Khorane R.S HoD ME

