

METALWORKING TEST

1. Lathe sizes are usually designated by the,? diameter and length of work which can be accommodated, A. horsepower of machine, B. the size of the tailstock, C. diameter and length of work which can be accommodated, D. size of the cutter bit.
2. The apron handwheel usually moves the carriage by means of,? rack and (pinion) gear, A. spur gears, B. bevel gears, C. rack and (pinion) gear, D. quick-change gearbox.
3. When thread cutting, be sure the feed-change lever is,? in neutral position, A. engaged, B. in neutral position, C. set for longitudinal feed, D. set for crossfeed.
4. Which of the following lathe items is not fastened to the carriage,? quick-change gearbox, A. saddle, B. apron, C. cross slide, D. quick change gearbox.
5. The three-jaw universal chuck can be used to hold,? hexagonal and round work, A. square work, B. octagonal and round work, C. octagonal work, D. hexagonal and round work.
6. A steadyrest is,? restricted to long work held in a chuck and between centers, A. clamped to the carriage, B. restricted to long work held in a chuck and between centers, C. aligned by the ways of the lathe, D. used to hold work that is too large or of such a shape that it cannot be held in a chuck
7. The chuck that is best suited for holding round, square, or irregular-shaped pieces is the,? four-jaw independent chuck, A. universal chuck, B. four-jaw independent chuck, C. magnetic chuck, D. collet chuck.
8. The cutting speed may be defined as,? the rate at which a point on the work circumference passes the cutting tool in 1 minute, A. the rate at which a point on the work radius passes the cutting tool in 1 minute, B. the spindle speed of the lathe, C. the rate at which a point on the work circumference passes the cutting tool in 1 minute, D. length of the lead.
9. Feed may be defined as the,? distance the cutting tool advances along the work for each revolution, A. distance the cutting tool advances along the work for each revolution, B. length of the cutting removed in 1 minute, C. distance the cutting tool travels in 1 minute, D. length of cutting removed in one revolution.
10. When removing a live center using a knockout bar, you should,? wrap a cloth around it and hold it by hand, A. let it fall onto a wooden tray, B. let it fall into the chip tray, C. hold it by using a pair of pliers, D. wrap a cloth around it and hold it by hand.
11. Which of the following is not one of the three preferred alignment methods for aligning a lathe center,? align centers by adjusting headstock, A. align centers by adjusting tailstock, B. align centers by adjusting headstock, C. align centers by trial-cut method, D. align centers by dial indicator and test bar.
12. Which of the following thread forms does not have a 60° angle,? American National Acme, A. American National, B. American National Acme, C. International Metric, D. Unified.

METALWORKING TEST

13. Which of the following statements is not considered good safety practice for an operator working on a milling machine,? Use a cloth to clean away the cuttings, A. Be sure that the cutter and arbor clear the work, B. Adjust the work only when the cutter is stopped, C. Use a cloth to clean away the cuttings, D. Never reach over a revolving cutter.
14. When removing a milling cutter, always,? handle it with a cloth, A. handle it with a cloth, B. place it on the machine table, C. place it on the floor, D. brush off the chips with your hands.
15. When the table is being aligned, the indicator should be mounted on the,? table, A. column, B. arbor, C. knee, D. table.
16. When a vise is being aligned, the indicator may be mounted on the,? arbor, A. table, B. face of the column, C. solid vise jaw or parallel in the vise, D. arbor.
17. Which of the following is not a manufactured abrasive,? emery, A. silicon carbide, B. aluminum oxide, C. emery, D. Boron carbide.
18. The most commonly used grinding wheels are made from,? aluminum oxide, A. aluminum oxide, B. diamond, C. silicon carbide, D. boron carbide.
19. Aluminum-oxide wheels are generally used for grinding,? steel and wrought iron, A. brass, B. lead, C. gold and precious metals, D. steel and wrought iron.
20. The most common surface grinder found in a machine shop has a,? horizontal spindle and reciprocating table, A. vertical spindle and reciprocating table, B. horizontal spindle and reciprocating table, C. vertical spindle and rotary table, D. horizontal spindle and rotary table.
21. The softest manufactured abrasive is,? aluminum oxide, A. silicon carbide, B. aluminum oxide, C. diamond, D. cubic boron nitride.
22. When taking a roughing cut on a surface grinder, (horizontal spindle, reciprocating table) the depth of cut should be,? .001 to .003, A. .200 to .250, B. .0005 to .0010, C. .001 to .003, D. .125 to .150.
23. Thin work is held for surface grinding on,? an adapter plate at approximately 15 to 30 degrees, A. a parallel, B. a chuck block, C. an adapter plate at approximately 15 to 30 degrees, D. hold down clamps
24. Reheating carbon steel to a desired temperature below its lower critical temperature and quenching in water or oil is known as,? Tempering, A. hardening, B. tempering, C. annealing, D. case hardening
25. Heating steel to just above the upper critical temperature and cooling it in still air is called,? normalizing, A. hardening, B. tempering, C. normalizing, D. spheroidizing.

METALWORKING TEST

26. High-speed steel toolbits can retain their cutting edge at red heat because of the addition of 18 percent,? tungsten, A. chromium, B. vanadium, C. manganese, D. tungsten.
27. The tensile strength of a metal is the,? maximum amount of pull a metal can stand before breaking, A. hardness, B. area of the cross section measured at a set number of pounds per square inch pressure, C. ability to flex and spring back, D. maximum amount of pull a metal can stand before breaking.
28. Two types of hardness testers used to measure hardness characteristics of steel are,? Rockwell and Brinell, A. tensile and destructive, B. hydraulic and pneumatic, C. soft and firm, D. Rockwell and Brinell.
29. Air quenching steels are often used on large workpieces because,? full hardness can be better achieved throughout the workpiece, A. it is more economical, B. air cools the material at a faster rate, C. full hardness can be better achieved through out the workpiece, D. large quenching tanks are not always available.
30. Which of the following is not an alloying element that can be added to steel,? brass, A. brass, B. chromium, C. cobalt, D. nickel.
31. An EDM removes the metal by means of,? an electrical discharge of short duration and high current density between the tool or wire and the workpiece, A. magnetic field, B. an electrical discharge of short duration and high current density between the tool or wire and the workpiece, C. conventional machining, D. laser machining.
32. Machining scrap loss is a common side effect of powder metallurgy processes in tool and die work,? False, A. True, B. False.
33. After compacting, the “green part” must be heated sufficiently to effect permanent cohesion of the metal particles into a solid. What is this operation called,? sintering, A. blending, B. sintering, C. impregnation, D. sizing and repressing.
34. When discussing CNC programming which statement best describes a program manuscript,? Form used by a programmer for listing detailed manual or computer part programming instructions, A. general term which refers to any storage media for binary data, B. portion of a computer exclusive of the input, output, peripherals and storage units, C. logic matrix that describes a logic function by listing all possible combinations, D. form used by a programmer for listing detailed manual or computer part programming instructions.
35. Which type of interpolation allows the cutting tool path to move in a path ranging from a small arc to a full 360 degree span,? circular, A. circular, B. programmed, C. lateral, D. linear
36. How is feed rate for axis travel generally expressed,? millimeters or inches per minute, A. centimeters or feet per minute, B. meters or yards per minute, C. millimeters or inches per minute, D. decimeters or inches per hour.

METALWORKING TEST

37. What kind of machine shop especially needs to keep a shop book,? one with many employees, A. one with many employees, B. a one person operation, C. any size shop, D. there is no need to keep this type of book in any shop.
38. What information is not commonly found on an operation instruction sheet,? distances programmed to reference point returns, A. cutting tool diameter, B. number of flutes, C. distances programmed to reference point returns, D. direction of spindle rotation.
39. What is a canned cycle,? preset series of operations which direct machine tool movement to complete an action, A. standardized routine which can be called up repeatedly, B. preset series of operations which direct machine tool movement to complete an action, C. group of commands, D. single command that calls a group of commands.
40. When CNC programming, preparatory functions are sometimes,? called “G” codes, A. used only in metric work, B. called “G” codes, C. used only in inches, D. called “M” codes.
41. What is the common name used to describe a sheet metal scratch awl,? scriber, A. punch, B. scriber, C. divider, D. trammel points.
42. Which type of tin snips can cut heavy metal with less effort,? aviation snips, A. aviation snips, B. bulldog snips, C. hawk billed snips, D. bench snips.
43. Which of the following is not a common shape of metal file,? octagon, A. flat, B. round, C. half round, D. octagon.
44. What metal bending operation can be performed on the pan brake that can't be performed on other metal benders,? reach in between the sides of a box or pan to bend the last side, A. thicker metal can be formed on this machine, B. holes can be punched with this brake, C. reach in between the sides of a box or pan to bend the last side, D. sharper radius bends can be performed on this machine.
45. What types of sheet metal projects would be made using a slip roll machine,? cylindrically shaped articles such as pipe, A. cylindrically shaped articles such as pipe, B. boxes, C. square metal duct work, D. wire edges on funnels.
46. Which piece of sheet metal would be thicker 10 gage, 12 gage, 16 gage or 28 gage,? 10 gage, A. 10 gage, B. 28 gage, C. 12 gage, D. 16 gage.
47. What is a full size sheet metal pattern that is used repeated called,? template or master pattern, A. template or master pattern, B. stretchout, C. pictorial drawing, D. sketch.
48. What function does a seam have in sheet metal work,? used to join edges of sheet metal, A. provides a smooth edge to keep from cutting yourself on the sheetmetal, B. reduces sizes down so that one piece can fit into another, C. used for decoration, D. used to join edges of sheet metal.

METALWORKING TEST

49. Which of the following is not a common sheet metal seam,? bar fold, A. lap seam, B. grooved seam, C. slip S hook and cross seam, D. bar fold.
50. What function does the squaring shears have in the sheet metal shop,? metal cut off, A. metal assembly, B. makes seams, C. metal cut off, D. soldering.
51. What is the purpose of a sheet metal hem,? they make a piece more attractive, more rigid, and safer because the sharp edge is turned over, A. they are used as a way of attaching two pieces of sheet metal together, B. they are used for strength, C. they have no purpose, D. they make a piece more attractive, more rigid, and safer because the sharp edge is turned over.
52. What can the sheet metal bending brake do that a bar folder cannot,? bend any width fold needed, A. bend thinner gage metal, B. bend any width fold needed, C. adjust for the radius of bend needed, D. bend the last side of a box or pan being formed.
53. What types of sheet metal project patterns would be drawn using triangulation,? projects whose sides slant at different angles, A. rectangular boxes, B. pipes and circular objects, C. spherical objects, D. projects whose sides slant at different angles.
54. Soldering is a commonly used type of sheet metal seaming practice,? True, A. True, B. False.
55. Which is not one the three major operations in forging,? heat treating, A. drawing, B. upsetting, C. bending, D. heat treating.
56. Which steel color when the metal is heated is the hottest,? orange, A. pale blue, B. orange, C. dark red, D. cherry red.
57. When tempering steels what color should you stop at if you are tempering a cold chisel,? brown, A. brown, B. purple, C. pale yellow, D straw.
58. Which is not a common oxy-acetylene flame style,? naturalizing, A. neutral, B. oxidizing, C. carburizing, D. naturalizing.
59. Which cutting torch tip would have the capability to cut a thicker piece of steel,? #6, A. #1, B. #3, C. #2, D. #6.
60. Which of the following fuels can not be used as a cutting gas when operating a cutting torch,? unleaded gasoline, A. acetylene, B. unleaded gasoline, C. propane, D. natural gas.
61. What is the liquid that is used in an acetylene cylinder,? acetone, A. paint thinner, B. acetone, C. lacquer thinner, D. gasoline.
62. Why are acetylene cylinders stored in an upright position,? to keep the acetone from flowing into the cylinder valve, A. to keep them from being turned over, B. they take up less room, C. to keep the acetone from flowing into the cylinder valve, D. they do not need to be stored in an

METALWORKING TEST

upright position.

63. Which is not one of the five basic weld joints,? end join, A. butt joint, B. end joint, C. lap joint, D. tee joint.

64. What are the two major categories of testing procedures used to test welds,? destructive and non destructive, A. destructive and non destructive, B. visual and by touch, C. sonic and non destructive, D. destructive and porosity.

65. Which of the following is not a form of non destructive weld testing,? break test, A. x-ray or gamma ray test, B. stethoscope or sound test, C. break test, D. magnetic test.

66. When brazing, it is not important to clean the metal before the welding process begins,? False, A. True, B. False.

67. When brazing, the base metal should not be melted,? True, A. True B. False.

68. When silver brazing, it is not necessary to use flux,? False, A. True, B. False.

69. Approximately what temperature is the arc when arc welding,? 6500 degrees Fahrenheit, A. 1500 degrees Fahrenheit, B. 6500 degrees Fahrenheit, C. 3000 degrees Fahrenheit, D. 120,000 degrees Fahrenheit.

70. The three main types of machines used in arc welding today are,? AC machine, DC machine, AC/DC machine, A. AC machine BC machine DC machine, B. AC machine DC machine AC/DC machine, C. DC machine AC/DC machine gas machine, D. spot machine Mig machine DC machine.

71. Polarity can be obtained only on a DC machine; it cannot be obtained on an AC machine,? True, A. True, B. False.

72. When discussing arc welding, the term slag is used to define what,? the coating which forms on top of an arc weld, A. short ends of used electrodes, B. ultra-violet and infa-red rays that can burn your eyes, C. spare metal used in the welding process, D. the coating which forms on top of an arc weld.

73. The first two digits in the American Welding Society electrode numbering system stand for,? tensile strength of rod, A. diameter of electrode, B. tensile strength of rod, C. welding position, D. type of current that can be used.

74. Generally speaking, the thicker the material being welded the larger diameter of welding rod,? True, A. True, B. False.

75. The three common types of fillet weld shapes are as follows,? ideal, buildup, and hollow, A. ideal, buildup and hollow, B. flat, straight and angular, C. downward, upward and horizontal, D. flat, round and square.

METALWORKING TEST

76. Which of the following casting tools is used to break up the sand as it is sifted,? riddle, A. riddle, B. rammer, C. trowel, D. flask.
77. What are two types of molding sand,? synthetic and natural, A. light and dark, B. synthetic and natural, C. oil based and resin based, D. synthetic custom made.
78. Which of the following is not a metal casting method,? synthetic casting, A. die casting, B. investment casting, C. shell molding, D. synthetic casting.
79. What is the simplest type casting pattern called,? one piece, A. one piece, B. commercial, C. prefabricated, D. split pattern.
80. What is a riser pin used for in casting,? used to form an opening in the cope, A. used to ram the mold, B. used for blowing away loose sand, C. used to form an opening in the cope, D. used to form a hole in which the molten metal is poured.
81. What is a sprue pin used for in casting,? used to form a hole in which the molten metal is poured, A. used to ram the mold, B. used to form a hole in which the molten metal is poured, C. used to form an opening in the cope, D. used for blowing away loose sand.
82. What is the approximate melting temperature of aluminum used for casting,? 1200 degrees, A. 1200 degrees, B. 1800 degrees, C. 158 degrees, D. 2500 degrees.
83. Which of the following metals is not commonly used in industrial casting,? gar-alloy, A. gray iron, B. gar-alloy, C. magnesium, D. brass.
84. What is a crucible used for in metal casting,? holds metal that is being melted, A. used to pour molten metal into mold, B. used to strike off excess sand from top of drag, C. holds metal that is being melted, D. heats the metal to melting point.
85. Which type of casting method is used when a great number of castings are needed,? permanent mold casting, A. die casting, B. investment casting, C. shell molding, D. permanent mold casting.
86. Which is not an advantage of gas tungsten-arc welding,? easy to use outdoors, A. welding head is confined to a narrower area, B. easy to use outdoors, C. weld finishing is kept to a minimum, D. no need for flux thus no slag is formed.
87. Welds made with the gas tungsten-arc process are less ductile than those made with the shielded metal-arc process,? False, A. True, B. False.
88. One of the disadvantages of the plasma arc process is that it can be used only for welding,? False, A. True, B. False.
89. Which of the electrodes listed is not used in gas tungsten-arc welding,? low hydrogen, A. carbon, B. thoriated tungsten, C. low hydrogen, D. tungsten.

METALWORKING TEST

90. When welding aluminum with gas tungsten-arc what shielding gas should be used,? argon, A argon, B. helium, C. carbon dioxide, D. nitrogen.
91. When welding stainless steel using the gas tungsten-arc process the end of the tungsten should be sharpened to what shape,? to a point like a pencil, A. angled, B. round, C. flat, D. to a point like a pencil.
92. Aluminum is harder to weld than stainless because of the tendency for it to pre-heat ahead of the weld puddle,? True, A. True, B. False.
93. Which of the following is not a raw material use in the production of iron,? sand, A. iron ore, B. coke, C. sand, D. limestone.
94. The term non-ferrous metal refers to the absence of what material in the metal make-up,? iron, A. iron, B. copper, C. brass, D. nickel silver.
95. Which statement best describes an alloy,? an alloy is a combination of two or more metals, A. an alloy is a combination of two or more metals, B. an alloy is non magnetic, C. an alloy is always non-ferrous D. an alloy is always stronger than most other metals.
96. Why is it sometimes necessary to place false jaws over the steel jaws in the machinist's vise when holding a work piece,? to prevent marring the work piece, A. to prevent marring the work piece, B. to prevent marring of the vise jaws, C. to provide a tighter grip on the work piece, D. you don't need to use false jaws, there is no such thing.
97. What is another name for surface hardening,? case hardening, A. induction hardening, B. case hardening, C. flame hardening, D. quenching.
98. Which of the following is not a factor that effects the machinability of a piece of material,? size of machine, A. material characteristics of the work piece B. type of cutting tool used, C. power required to produce the cut, D. size of machine.
99. What is the dividing head used for on the milling machine,? allows the work piece to be rotated on its axis so that numerous operations requiring indexing can be performed quickly and accurately, A. permits a piece mounted on it to be revolved by hand or power through a circle, B. holds the mill cutter in place, C. allows the work piece to be rotated on its axis so that numerous operations requiring indexing can be performed quickly and accurately, D. used to sharpen mill cutters.
100. What is the difference between a hand reamer and a machine reamer,? the end of the shank of a hand reamer is machined square to accept a tap wrench; the machine reamer has a tapered shank with a tang or a straight shank, A. the end of the shank of a hand reamer is machined square to accept a tap wrench; the machine reamer has a tapered shank with a tang or a straight shank, B. the hand reamer is longer, C. the machine reamer is longer, D. there is no difference they are identical.

METALWORKING TEST

Test questions sources:

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