14.406. The degradation of plastics is accelerated by
(*a*) high ambients
(*b*) dampness
(*c*) corrosive atmosphere
(*d*) ultravoilet radiation
(*e*) sun rays.

14.407. Which of the following metals can be easily drawn into wire
(*a*) tin (*b*) copper
(*c*) lead (*d*) zinc
(*e*) cast iron.

14.408. Following element is added to molten cast iron to obtain nodular cast iron
(*a*) Cr (*b*) Mn
(*c*) Cu (*d*) Mo
(*e*) Mg.

14.409. Silicon when added to copper increases its
(*a*) machinability
(*b*) brittleness
(*c*) electrical conductivity
(*d*) hardness and strength
(*e*) malleability.

14.410. Which of the following is an amorphous material
(*a*) mica (*b*) lead
(*c*) rubber (*d*) glass
(*e*) plastic.

14.411. Following etching solution is used for medium and high carbon steel, pearlitic steel, and cast iron
(*a*) nital - 2% HNO_3 in ethyl alcohol
(*b*) picral–5% picric acid and ethyl alcohol
(*c*) 1% hydrofluoric acid in water
(*d*) 50% NH_2 OH and 50% water
(*e*) none of the above.

15

Production Technology

15.1. Joggled welded joints are used
(*a*) where longitudinal shear is present
(*b*) where severe loading is encountered and the upper surface of both pieces must be in the same plane
(*c*) to join two pieces of metal in the same manner as rivet joint metals
(*d*) there is nothing called Joggled welded joint
(*e*) none of the above.

15.2. In arc welding, eyes need to be protected against
(*a*) intense glare (*b*) sparks
(*c*) infra-red rays (*d*) ultraviolet rays
(*e*) infra-red and ultraviolet rays.

15.3. In which type of welding a pool of molten metal is used
(*a*) electroslag (*b*) submerged arc
(*c*) MIG (*d*) TIG
(*e*) thermit welding.

15.4. Plain and butt welds may be used on materials upto approximately
(*a*) 25 mm thick (*b*) 40 mm thick
(*c*) 50 mm thick (*d*) 70 mm thick
(*e*) 90 mm thick.

15.5. The main criterion for selection of electrode diameter in arc welding is
(*a*) material to be welded
(*b*) type of welding process
(*c*) thickness of material
(*d*) voltage used (*e*) current used.

15.6. Which of the following is preferred for welding of non-ferrous metals by arc welding
(*a*) A.C. low frequency
(*b*) A.C. high frequency
(*c*) D.C.
(*d*) all of the above
(*e*) none of the above.

15.7. In arc welding, arc is created between the electrode and work by
(*a*) flow of current
(*b*) voltage
(*c*) material characteristics
(*d*) contact resistance
(*e*) electrical energy.

15.8. Open cricuit voltage for arc welding is of the order of
(*a*) 18–40 volts
(*b*) 40–95 volts
(*c*) 100–125 volts
(*d*) 130–170 volts
(*e*) 190–240 volts.

15.9. The material used for coating the electrode is called
(*a*) protective layer
(*b*) binder
(*c*) slag
(*d*) deoxidiser
(*e*) flux.

15.10. Plug weld joint is used
(*a*) where longitudinal shear is present
(*b*) where severe loading is encountered and the upper surfaces of both pieces must be in the same plane
(*c*) to join two pieces of metal in the same manner as rivet joint metals
(*d*) there is nothing like plug weld joint
(*e*) none of the above.

15.11. Which of the following welding process uses non-consumable electrode
(*a*) LASER welding
(*b*) MIG welding
(*c*) TIG welding
(*d*) ion beam welding
(*e*) plasma welding.

15.12. When welding is going on, arc voltage is of the order of
(*a*) 18–40 volts
(*b*) 40–95 volts
(*c*) 100–125 volts
(*d*) 130–170 volts
(*e*) 190–240 volts.

15.13. Following gases are used in tungsten inert gas welding
(*a*) hydrogen and oxygen
(*b*) CO_2 and H_2
(*c*) argon and neon
(*d*) helium and neon
(*e*) argon and helium.

15.14. T-joint weld is used
(*a*) where longitudinal shear is present
(*b*) where severe loading is encountered and the upper surface of both pieces must be in the same plane
(*c*) to join two pieces of metal in the same manner as rivet joint metals
(*d*) to join two pieces perpendicularly
(*e*) none of the above.

15.15. Pick up the incorrect statement about MIG welding
(*a*) no flux required
(*b*) high welding speed
(*c*) increased corrosion resistance
(*d*) even unclean surface can be welded to obtain sound welds
(*e*) even materials like aluminium and stainless steel can be welded.

15.16. Copper is
(*a*) easily spot welded
(*b*) very difficult to be spot welded
(*c*) as good for spot welding as any other material
(*d*) preferred to be welded by spot welding
(*e*) none of the above.

15.17. It is not possible to arc weld all types of metals with transformer set because it does not have provision for
(*a*) control of current
(*b*) control of voltage
(*c*) control of time duration
(*d*) change of polartiy
(*e*) all of the above.

15.18. Two sheets of same material but different thickness can be butt welded by
(*a*) adjustment of the current
(*b*) time duration of current
(*c*) pressure applied
(*d*) changing the size of one electrode
(*e*) all of the above.

15.19. Projection welding is
(*a*) multi-spot welding process
(*b*) continuous spot welding process
(*c*) used to form mesh
(*d*) used to make cantilevers
(*e*) none of the above.

15.20. Welding process in which two pieces to be jointed are overlapped and placed between two electrodes is known as
(*a*) percussion welding
(*b*) projection welding
(*c*) seam welding (*d*) spot welding
(*e*) butt welding.

15.21. Half corner weld is used
(*a*) where longitudinal shear is present
(*b*) where severe loading is encountered and the upper surfaces of both pieces must be in the same plane
(*c*) to join two pieces of metal in the same manner as rivet joint metals
(*d*) where efficiency of joint should be 50%
(*e*) none of the above.

15.22. In resistance welding, voltage used for heating is
(*a*) 1 V (*b*) 10 V
(*c*) 100 V (*d*) 500 V
(*e*) 1000 V.

15.23. Best reason to decide use of welding in preference to riveting for structural work on extension to a hospital could be
(*a*) it is cheaper
(*b*) it is convenient
(*c*) it produces rigid structure
(*d*) it is quieter
(*e*) it is more flexiable and requires less skilled persons.

15.24. In resistance welding, the pressure is released
(*a*) just at the time of passing the current
(*b*) after completion of current
(*c*) after the weld cools
(*d*) during heating period
(*e*) the pressure is never applied

15.25. Grey cast iron is best welded by
(*a*) TIG (*b*) arc
(*c*) MIG (*d*) submerged arc
(*e*) oxy-acetylene.

15.26. Seam welding is
(*a*) multi-spot welding process
(*b*) continuous spot welding process
(*c*) used to form mesh
(*d*) used for welding cylindrical objects
(*e*) none of the above.

15.27. Upto what thickness of plate, edge preparation for welding is not required
(*a*) 4 mm (*b*) 6 mm
(*c*) 8 mm (*d*) 10 mm
(*e*) 15 mm.

15.28. Preheating is essential in welding
(*a*) high speed steel
(*b*) stainless steel
(*c*) cast iron
(*d*) german silver
(*e*) aluminium.

15.29. Grey cast iron is usually welded by
(*a*) gas welding (*b*) resistance welding
(*c*) arc welding (*d*) TIG welding
(*e*) MIG welding.

15.30. For welding mild steel, the following arc welding is most suitable
(*a*) AC, straight polarity
(*b*) DC, straight polarity
(*c*) AC, reverse polarity
(*d*) DC, reverse polarity
(*e*) any of the above.

15.31. The brazing metals and alloys commonly used are
(*a*) copper (*b*) copper alloys
(*c*) silver alloys (*d*) aluminium alloys
(*e*) all of the above.

15.32. Forge welding is best suited for
(*a*) stainless steel (*b*) high carbon steel
(*c*) cast iron (*d*) wrought iron
(*e*) all of the above.

15.33. Two sheets of different materials but same thickness can be spot welded by
(*a*) adjusting the current
(*b*) adjusting the time duration of current
(*c*) adjusting the pressure applied
(*d*) changing the size of one electrode
(*e*) all of the above.

15.34. Laser welding finds widest application in
(*a*) heavy industry
(*b*) structural work
(*c*) process industry
(*d*) electronic industry
(*e*) all of the above.

15.35. Which of the following carbon steels is most weldable
(*a*) 0.15% carbon steel
(*b*) 0.30% carbon steel
(*c*) 0.50% carbon steel
(*d*) 0.75% carbon steel
(*e*) 1.00% carbon steel.

15.36. Pick up the incorrect statement about friction welding
(*a*) little preparation required for joints
(*b*) dissimilar metals can be welded
(*c*) it is best suited for welding of plastics
(*d*) any type of configuration can be welded
(*e*) welds can be produced very rapidly and of sound quality.

15.37. Unlike materials as well as materials of different thickness can be butt welded by
(*a*) control of pressure and current
(*b*) adjusting time duration of current
(*c*) adjusting initial gap
(*d*) all of the above
(*e*) none of the above.

15.38. Cross-wire welding is
(*a*) multi-spot welding process
(*b*) continuous spot welding process
(*c*) used to form mesh
(*d*) used where additional strength is desired
(*e*) none of the above.

15.39. In arc welding, temperature of the following order may be generated
(*a*) 1000°C (*b*) 1500°C
(*c*) 5500°C (*d*) 8000°C
(*e*) 10,000°C.

15.40. Long arc lengths in welding would require the voltages and currents respectively as follows

(a) high, high (b) low, low
(c) high, low (d) low, high
(e) any combination.

15.41. Fluxes are used in welding in order to protect the molten metal and the surfaces to be jointed from
(a) oxidation (b) carburising
(c) dirt
(d) distortion and warping
(e) unequal temperature distribution.

15.42. Metal deposited on to the workpiece from the electrode
(a) is forced across the arc
(b) falls because of gravity
(c) is attracted towards the workpiece due to the positive polarity of the workpiece
(d) is attracted towards the workpiece due to the negative polarity of the workpiece
(e) is attracted due to electromagnetic action.

15.43. In arc welding operations the current value is decided by
(a) thickness of plate
(b) length of welded portion
(c) voltage across the arc
(d) speed of travel
(e) size of the electrode.

15.44. The phenomeon of weld decay occurs in
(a) cast iron (b) brass
(c) bronze (d) stainless steel
(e) carbon steel.

15.45. Weaving in arc welding refers to
(a) side to side motion of electrode at right angles to the direction of the welding
(b) side to side motion of electrode along the direction of the welding
(c) spiral motion given to electrode
(d) a technique of striking the arc
(e) arc blow action due to electromagnetic forces.

15.46. Weld spalter is
(a) flux (b) electrode coating
(c) welding defect
(d) welding test
(e) welding technique.

15.47. Arc blow occurs in
(a) gas welding (b) gas cutting
(c) arc welding when straight polarity is used
(d) arc welding when reverse polarity is used
(e) welding stainless steel.

15.48. Low hydrogen electrodes are baked prior to use in order that
(a) proper strength in obtained
(b) welding is free from arc blow
(c) welding is free from moisture pick up
(d) current required is minimum
(e) electrode does not crumble during use.

15.49. Gray iron is usually welded by
(a) gas welding
(b) arc welding
(c) resistance welding
(d) TIG welding
(e) MIG welding.

15.50. Stud and projection welding belong to the following category of welding
(a) gas welding
(b) arc welding
(c) resistance welding
(d) pressure welding
(e) thermit welding.

15.51. In straight polarity welding
(a) electrode holder is connected to the negative and work to positive
(b) electrode holder is connected to the positive and work to negative
(c) work is positive and holder is earthed
(d) holder is positive and work is earthed
(e) work is negative and holder is earthed.

15.52. In arc welding process the intense heat is developed between the work and the electrode largely due to
(a) current (b) voltage
(c) electrical energy
(d) contact resistance
(e) time of current flow.

15.53. In thermit welding, the iron oxide and aluminium oxide are mixed in the proportion of
(a) 1 : 1 (b) 3 : 1
(c) 1 : 3
(d) mixture is of different oxides
(e) none of the above.

15.54. TIG welding is best suited for welding
(a) mild steel (b) stainless steel

(*c*) carbon steel (*d*) silver
(*e*) aluminium.

15.55. In the manual TIG welding, the angle of the electrode holder with the direction of welding is
(*a*) 30° (*b*) 45°
(*c*) 60° (*d*) 70°
(*e*) 90°.

15.56. Arc stability is better with
(*a*) AC welding
(*b*) DC welding
(*c*) both AC and DC welding
(*d*) specially designed wave forms
(*e*) rectified supply.

15.57. The following welding process uses consumable electrode
(*a*) TIG (*b*) MIG
(*c*) thermit (*d*) laser
(*e*) gas.

15.58. Electrode gets consumed in the following welding process
(*a*) gas (*b*) resistance
(*c*) thermit (*d*) arc
(*e*) TIG.

15.59. Two stainless steel foils of 0.1 mm thickness are to be joined. Which of the following processes would be best suited
(*a*) gas welding
(*b*) electroslag welding
(*c*) TIG welding
(*d*) MIG welding
(*e*) plasma arc welding.

15.60. Magnetic arc blow is
(*a*) a recent welding technique
(*b*) used to weld hard materials
(*c*) occurs when welding near equator
(*d*) of importance during striking of arc
(*e*) phenomenon of occurrence of splatter because of magnetic fields created in d.c. arc welding.

15.61. Arc length in arc welding should be equal to
(*a*) half the diameter of electrode rod
(*b*) rod diameter
(*c*) twice the rod diameter
(*d*) 2.5 times the rod diameter
(*e*) none of the above.

15.62. The amperage to be used in arc welding is dependent upon
(*a*) work thickness
(*b*) arc gap
(*c*) electrode rod thickness
(*d*) other considerations
(*e*) none of the above.

15.63. In coated electrode in arc welding
(*a*) both rod and coating melt simultaneously
(*b*) coating melts first and then rod melts
(*c*) which melts first depends on polarity used
(*d*) rod melts first and then coating melts
(*e*) there is no such criterion.

15.64. Two M.S. plates, 20 cm thick for boiler drum are to be butt welded. Which of the following processes would be best suited
(*a*) submerged arc welding
(*b*) plasma arc welding
(*c*) electric resistance welding
(*d*) TIG/MIG welding
(*e*) electroslag welding.

15.65. Pick up the incorrect statement

A.C. arc welding always employs coated electrodes, because it
(*a*) has high efficiency and low splatter
(*b*) uses less input current
(*c*) is safest for operator
(*d*) has low leakage loss
(*e*) protects the newly formed weld against atmosphere.

15.66. In reverse polarity welding
(*a*) electrode holder is connected to the negative and work to positive
(*b*) electrode holder is connected to the positive and work to negative
(*c*) work is positive and holder is earthed
(*d*) holder is positive and work is earthed
(*e*) work is negative and holder is earthed.

15.67. Pick up the incorrect statement

Coatings on electrodes are used to produce gas shields to protect the weld from atmosphere. The coating consists of
(*a*) flux and slagging materials like titanium oxide and calcium fluoride
(*b*) stabilisers to prevent splattering
(*c*) titanium oxide or potassium compounds to increase the melting rate, and ferro-manganese as a deoxidiser
(*d*) molasses as binder

(*e*) alloying constituent to improve strength of weld.

15.68. The temperature of the plasma torch is of the order of
(*a*) 1000°C (*b*) 5000°C
(*c*) 10,000°C (*d*) 33,000°C
(*e*) 75,000°C.

15.69. Following equipment is used for arc welding a material by carbon electrode
(*a*) a.c. welding set
(*b*) rectifier (*c*) motor generator
(*d*) d.c. welding set with straight polarity
(*e*) d.c. welding set with reverse polarity.

15.70. The strength of a properly welded joint as compared to base metal would be
(*a*) same (*b*) more
(*c*) less (*d*) unpredictable
(*e*) two can't be compared.

15.71. The advantages of electroslag welding are
(*a*) ability to weld metals of great thickness in a single pass without calling for joint preparation
(*b*) high welding speed
(*c*) little distortion and good stress distribution across the weld
(*d*) protection from contamination
(*e*) all of the above.

15.72. In arc welding, if arc is too short, it will result in
(*a*) formation of large globules in an irregular pattern because of wandering of arc, leading to poor fusion with base metal
(*b*) electrode sticking to the base metal and base metal not melting and bead resting on top of the work, leading to poor fusion and gas and slag holes
(*c*) arc extinction
(*d*) operator hazard
(*e*) no welding.

15.73. Too low welding current in arc welding would result in
(*a*) excessive piling up of weld metal, poor penetration, wasted electrodes
(*b*) excessive spatter, under cutting along edges, irregular deposits, wasted electrodes
(*c*) too small bead, weak weld and wasted electrodes
(*d*) excessive piling up of weld metal, overlapping without penetration of edges, wasted electrodes
(*e*) none of the above.

15.74. Of the following brazing joints, which is strongest
(*a*) butt (*b*) scarf (inclined)
(*c*) lap
(*d*) all are equally strong
(*e*) strength depends on other factors.

15.75. In braze welding, the filler metal is
(*a*) distributed by capillary attraction
(*b*) melted and deposited at the point where the weld is to be made
(*c*) both of the above
(*d*) not required (*e*) none of the above.

15.76. The melting point of the filler metal in brazing should be above
(*a*) 420°C (*b*) 600°C
(*c*) 800°C (*d*) 900°C
(*e*) 1000°C.

15.77. Too high welding current in arc welding would result in
(*a*) excessive piling up of weld metal, poor penetration, wasted electrodes
(*b*) excessive spatter, under cutting along edges, irregular deposits, wasted electrodes
(*c*) too small bead, weak weld and wasted electrodes
(*d*) excessive piling up of weld metal, overlapping without penetration of edges, wasted electrodes
(*e*) none of the above.

15.78. Arc length in arc welding should be nearly equal to
(*a*) diameter of electrode rod (d)
(*b*) $1.5d$ (*c*) $2d$
(*d*) $3d$ (*e*) $4d$.

15.79. In arc welding if arc is too long, it will result in
(*a*) formation of large globules in an irregular pattern because of wandering of arc, leading to poor fusion with base metal
(*b*) electrode sticking to the base metal and base metal not melting and bead resting on top of the work, leading to poor fusion and gas and slag holes

(*c*) arc extinction
(*d*) operator hazard
(*e*) no welding.

15.80. The carburising flame as compared to oxidising flame is
(*a*) more luminous
(*b*) less luminous
(*c*) equally luminous
(*d*) unpredictable
(*e*) none of the above.

15.81. The temperature of the inner luminous cone of neutral flame is the order of
(*a*) 1000°C (*b*) 2000°C
(*c*) 2500°C (*d*) 3500°C
(*e*) 5900°C.

15.82. The most commonly used flame in gas welding is
(*a*) neutral (*b*) oxidising
(*c*) carburising (*d*) all of the above
(*e*) none of the above.

15.83. The maximum flame temperature occurs at
(*a*) the tip of flame
(*b*) the inner cone
(*c*) next to the inner cone
(*d*) at the outer cone
(*e*) just inside the inner cone.

15.84. Submerged arc welding is
(*a*) a process which uses a mixture of iron oxide and granular aluminium
(*b*) accomplished by maintaining a hot molten metal pool between plates
(*c*) a process in which arc is maintained under a blanket of flux
(*d*) all of the above
(*e*) none of the above.

15.85. The vacuum of following order is maintained in the electron beam welding machine
(*a*) 1 torr (*b*) 10^{-2} torr
(*c*) 10^{-3} torr (*d*) 10^{-5} torr
(*e*) 10^{-8} torr.

15.86. Too fast welding speed in arc welding would result in
(*a*) excessive piling up of weld metal, poor penetration, wasted electrodes
(*b*) excessive spatter, under cutting along edges, irregular deposits, wasted electrodes
(*c*) too small bead, weak weld and wasted electrodes
(*d*) excessive piling up of weld metal, overlapping without penetration of edges, wasted electrodes
(*e*) none of the above.

15.87. The temperature produced in oxyhydrogen flame as compared to oxy-acetylene flame is
(*a*) same (*b*) more
(*c*) less (*d*) unpredictable
(*e*) none of the above.

15.88. The amount of current necessary in resistance welding is of the order of
(*a*) $1 - 2\ kVA/cm^2$
(*b*) $2.5 - 4.0\ kVA/cm^2$
(*c*) $4.5 - 6.2\ kVA/cm^2$
(*d*) $6.5 - 7.9\ kVA/cm^2$
(*e*) none of the above.

15.89. The quantum of heat generated in resistance welding depends upon
(*a*) welding current alone
(*b*) resistance of current conducting path alone
(*c*) time for current current flow alone
(*d*) area of welding electrode alone
(*e*) none of the above.

15.90. The electroslag welding is
(*a*) a process which uses a mixture of iron oxide and granular aluminium
(*b*) accomplished by maintaining a hot molten metal pool between plates
(*c*) a process in which arc is maintained under a blanket of flux
(*d*) there is nothing called electroslag
(*e*) none of the above.

15.91. In MIG welding, the metal is transferred in the form of
(*a*) a fine spray of metal
(*b*) molten drops (*c*) weld pool
(*d*) molecules
(*e*) very fine metal.

15.92. Too slow welding speed in arc welding would result in
(*a*) excessive piling up of weld metal, poor penetration, wasted electrodes
(*b*) excessive spatter, under cutting along edges, irregular deposits, wasted electrodes

(c) too small bead, weak weld and wasted electrodes
(d) excessive piling up of weld metal, overlapping without penetration of edges, wasted electrodes
(e) none of the above.

15.93. Carbon arc welding is
(a) a process which uses a mixture of iron oxide and granular aluminium
(b) accomplished by maintaining a hot molten metal pool between plates
(c) a process in which arc is maintained under a blanket of flux
(d) used to weld carbon rods
(e) none of the above.

15.94. In which welding process the parts are heated to welding temperature and then mechanical force is applied at the ends to unite the metals
(a) TIG (b) thermit
(c) atomic hydrogen
(d) plasma (e) forge.

15.95. Thermit welding is
(a) a process which uses a mixture of iron oxide and granular aluminium
(b) accomplished by maintaining a hot molten metal pool between plates
(c) a process in which arc is maintained under a blanket of flux
(d) in no welding process
(e) none of the above.

15.96. Iron oxide and aluminium are mixed in following proportion in thermit welding
(a) 1 : 1 (b) 1 : 3
(c) 3 : 1 (d) 1 : 2
(e) 2 : 1.

15.97. Arc welding uses following electric supply
(a) A.C. (b) D.C.
(c) both AC and DC
(d) spiral waveform
(e) none of the above.

15.98. It is required to permanently connect the end of a structural steel angle to a vertical plate. The following type would be preferable
(a) tack weld (b) fillet weld
(c) butt weld
(d) plug weld
(e) lap weld.

15.99. The welding of stainless is generally difficult because of the following reason
(a) rust formation takes place
(b) high melting temperature of stainless steel
(c) formation of oxide film
(d) formation of chromium carbide
(e) fear of cracking.

15.100. Filler material in welding should have
(a) same composition as the parent metal to be welded
(b) same melting temperature as the parent metal to be welded
(c) same composition and same melting temperature as the parent metal to be welded
(d) same composition as of electrode
(e) melting temperature much lower than the melting temperature of the parent metal.

15.101. Distortion in welding occurs due to
(a) use of excessive current
(b) improper clamping methods
(c) use of wrong electrodes
(d) oxidation of weld pool
(e) improper composition of parent material.

15.102. In inter gas arc welding following is used for welding magnesium
(a) non-combustible electrode in combination with helium and d.c. current
(b) combustible electrodes and argon in combination with a.c. current
(c) straight polarity d.c. current
(d) carbon dioxide, because of its excellent penetration and high speed
(e) none of the above.

15.103. Oxygen to acetylene ratio in case of neutral flame is
(a) 0.8 : 1.0 (b) 1 : 1
(c) 1.2 : 1 (d) 2 : 1
(e) none of the above.

15.104. In inert gas arc welding, following is used for welding aluminium
(a) non-combustible electrode in combination with helium and d.c. current
(b) combustible electrode and argon in combination with a.c. current
(c) straight polarity d.c. current

(*d*) carbon dioxide, because of its excellent penetration and high speed
(*e*) none of the above.

15.105. In metallic arc welding, the transfer of metal from the electrode is due to
(*a*) molecular attraction
(*b*) surface tension and attraction
(*c*) gravitational force
(*d*) ionisation of the space between the electrode and work piece
(*e*) (*a*) and (*b*) above.

15.106. In which of the following welding techniques, the weld pool is surrounded by an inert gas
(*a*) arc welding (*b*) carbon arc
(*c*) MIG (*d*) submerged arc
(*e*) electroslag welding.

15.107. The striking voltage as compared to voltage during welding in arc welding is
(*a*) same (*b*) more
(*c*) less (*e*) unpredictable
(*e*) none of the above.

15.108. In inert gas arc welding, following is used for welding carbon steel
(*a*) non-combustible electrode in combination with helium and d.c. current
(*b*) combustible electrodes and argon in combination with a.c. current
(*c*) straight polarity d.c. current
(*d*) carbon dioxide, because of its excellent penetration and high speed
(*e*) none of the above.

15.109. Filler metal is used in
(*a*) electric spot welding
(*b*) seam welding
(*c*) projection welding
(*d*) continuous welding
(*e*) none of the above.

15.110. The arc length in electric arc welding is the distance between the tip of the electrode and the
(*a*) work piece
(*b*) centre of crater
(*c*) bottom of crater
(*d*) workpiece top surface minus electrode diameter
(*e*) none of the above.

15.111. Thermit welding is a form of
(*a*) resistance welding
(*b*) gas welding (*c*) fusion welding
(*d*) forge welding (*e*) arc welding.

15.112. Which of the following metals can be suitably welded by TIG welding
(*a*) aluminium (*b*) stainless steel
(*c*) magnesium (*d*) pure titanium
(*e*) all of the above.

15.113. In MIG welding, helium or organ is used in order to
(*a*) provide cooling effect
(*b*) act as flux
(*c*) act as shielding medium
(*d*) facilitate welding process
(*e*) protect electrode.

15.114. Weld spatter refers to
(*a*) welding electrode
(*b*) flux
(*c*) filler material
(*d*) welding defect
(*e*) shield.

15.115. Flash butt welding belongs to the following category of welding
(*a*) gas welding
(*b*) arc welding with straight polarity
(*c*) arc welding with reverse polarity
(*d*) resistance welding
(*e*) thermit welding.

15.116. Seam welding is
(*a*) arc welding
(*b*) multi spot welding
(*c*) continuous spot welding
(*d*) used for forming sound bars
(*e*) gas welding.

15.117. In resistance welding the electrode material is made of
(*a*) carbon steel (*b*) stainless steel
(*c*) copper (*d*) high speed steel
(*e*) graphite.

15.118. If '*t*' is the thickness of sheet to be spot welded, then electrode tip diameter is equal to
(*a*) $\sqrt{t}$ (*b*) t
(*c*) $1.5\sqrt{t}$ (*d*) $2\sqrt{t}$
(*e*) $2.5\sqrt{t}$.

15.119. Submerged arc welding uses following type of electrode
(*a*) bare rods (*b*) coated electrodes
(*c*) core wires (*d*) copper electrodes
(*e*) stainless steel rods.

15.120. The flux in submerged arc welding is in the form of
(*a*) coating on the electrodes
(*b*) core wires (*c*) granules
(*d*) an inert gas (*e*) paste.

15.121. The arc in atomic hydrogen welding takes place between the
(*a*) parent metals
(*b*) consumable tungsten electrode and workpiece
(*c*) non-consumable tungsten electrode and workpiece
(*d*) consumable tungsten electrode and filler rod
(*e*) two tungsten electrodes.

15.122. The arc in argon arc welding takes place between the
(*a*) parent metals
(*b*) consumable tungsten electrode and workpiece
(*c*) non-consumable tungsten electrode and filler rod
(*d*) non-consumable tungsten electrode and workpiece
(*e*) consumable tungsten electrode and filler rod.

15.123. The following gas is used in tungsten-inert-gas welding process
(*a*) acetylene (*b*) oxygen
(*c*) hydrogen (*d*) argon
(*e*) helium.

15.124. The main advantage of MIG welding over TIG welding is that
(*a*) former can be used to weld hard to weld metal
(*b*) former permits use of large currents thereby allowing higher deposition
(*c*) welding rate is very fast
(*d*) welding is completely automatic
(*e*) all of the above.

15.125. Which of the following materials is best weldable with itself
(*a*) stainless steel (*b*) copper
(*c*) aluminium (*d*) mild steel
(*e*) cast iron.

15.126. Which of the following materials is best cut by oxy-cutting process
(*a*) brass (*b*) copper
(*c*) bronze (*d*) stainless steel
(*e*) mild steel.

15.127. Oxy-acetylene flame cuts metal by its
(*a*) evaporation (*b*) oxidation
(*c*) burning (*d*) rusting
(*e*) intensive oxidation.

15.128. In gas welding the combustion takes place by mixing oxygen with
(*a*) hydrogen (*b*) fuel gas
(*c*) CO (*d*) CO_2
(*e*) mixture of several gases.

15.129. In inert gas arc welding, following is used for welding stainless steel, copper or cast iron
(*a*) non-combustible electrode in combination with helium and d.c. current
(*b*) combustible electrode and argon in combination with a.c. current
(*c*) straight polarity d.c. current
(*d*) carbon dioxide, because of its excellent penetration and high speed
(*e*) none of the above.

15.130. Oxygen to acetylene ratio in case of carburising flame is
(*a*) 0.5 : 1 (*b*) 0.9 : 1
(*c*) 1 : 1 (*d*) 1 : 1.2
(*e*) 2 : 1.

15.131. Carburising flame is used to weld metals like
(*a*) steel
(*b*) copper and brass
(*c*) aluminium, stainless steel, zinc die castings, nickel, monel etc.
(*d*) carburised steel
(*e*) none of the above.

15.132. Neutral flame has
(*a*) 1 zone (*b*) 2 zones
(*c*) 3 zones (*d*) 4 zones
(*e*) no zone.

15.133. Carburising flame has
(*a*) 1 zone (*b*) 2 zones
(*c*) 3 zones (*d*) 4 zones
(*e*) no zone.

15.134. In forehand gas welding operation, the angle between the rod and work is kept around
(*a*) 30° (*b*) 45°
(*c*) 60° (*d*) 75°
(*e*) 90°.

15.135. For welding metals less than 5 mm thick, following method of gas welding would give best results
(*a*) forehand (*b*) backhand
(*c*) straight hand (*d*) inclined hand
(*e*) any one of the above.

15.136. In the following welding technique, the flame of the torch is directed against the completed weld
(*a*) overhead welding
(*b*) horizontal welding
(*c*) forehand welding
(*d*) backhand welding
(*e*) is never done.

15.137. The acetylene cylinder is filled with a material saturated with
(*a*) calcium carbide
(*b*) calcium oxide (*c*) black carbon
(*d*) acetone (*e*) acetylene.

15.138. Oxygen to acetylene ratio in case of oxidising flame is
(*a*) 1 : 1 (*b*) 1.2 : 1
(*c*) 1.5 : 1 (*d*) 2 : 1
(*e*) 3 : 1.

15.139. Neutral flame is used to weld metals like
(*a*) steel
(*b*) copper and brass
(*c*) aluminium, stainless steel, zinc die castings, nickel, monel etc.
(*d*) neutral materials
(*e*) none of the above.

15.140. Acetylene is stored in the gas cylinders
(*a*) in gaseous form
(*b*) in liquid form
(*c*) in solid form
(*d*) under high pressure
(*e*) under low pressure.

15.141. Cylinders in which oxygen gas is stored are
(*a*) fabricated by casting
(*b*) fabricated by welding
(*c*) fabricated by forging
(*d*) properly heat treated
(*e*) seamless steel cylinders.

15.142. Acetylene gas is generated from
(*a*) carbon (*b*) calcium
(*c*) calcium carbonate
(*d*) calcium chloride
(*e*) calcium carbide.

15.143. The following flux is used for brazing brass, copper, bronze, and low carbon-steels
(*a*) mixture of boric acid, borax and a wetting agent
(*b*) boric acid, borax or fluoride with a wetting agent
(*c*) chlorides and fluorides mixed with water
(*d*) all of the above
(*e*) none of the above.

15.144. Oxidising flame is used to weld metals like
(*a*) steel
(*b*) copper and brass
(*c*) aluminium, stainless steel, zinc die castings, nickel, monel etc.
(*d*) abrasives
(*e*) none of the above.

15.145. The gas torch is usually lighted by a friction lighter because
(*a*) it is easier to operate and maintain
(*b*) of low initial cost
(*c*) spark is created for very short duration
(*d*) of safety of operator
(*e*) of least running cost.

15.146. Metals like copper and brass can be welded by
(*a*) oxidising flame
(*b*) carburising flame
(*c*) neutral flame
(*d*) any of the above flames
(*e*) can't be welded by gas welding.

15.147. Positive pressure type torch works on
(*a*) equal pressure principle
(*b*) positive pressure principle
(*c*) differential pressure principle
(*d*) equal volume principle
(*e*) equal flow principle.

15.148. In forehand gas welding operation, the angle between the torch and work is kept around
(*a*) 30° (*b*) 45°
(*c*) 60° (*d*) 75°
(*e*) 90°.

15.149. For welding overhead joints in horizontal plane, following technique of gas welding is used

(*a*) forehand (*b*) back-hand
(*c*) straight hand (*d*) inclined hand
(*e*) any one of the above.

15.150. The surface cracks in the weldment of non-magnetic alloys can be inspected by
(*a*) X-ray test
(*b*) ultrasonic testing
(*c*) fluorescent test
(*d*) magnaflux method
(*e*) any one of the above.

15.151. The surface and sub-surface cracks in non-magnetic alloys can be inspected by
(*a*) X-ray testing
(*b*) ultrasonic testing
(*c*) magnetic particle inspection testing
(*d*) dye penetrant testing
(*e*) any one of the above.

15.152. Undercuts in weldments are caused due to
(*a*) low welding current
(*b*) excessive welding current
(*c*) wrong selection of welding rods
(*d*) wrong flux
(*e*) greasy and dirty surfaces.

15.153. For two metals to be brazed properly, *i.e.* for wetting action to take place, the distance between two surfaces should be
(*a*) less than 0.025 mm
(*b*) between 0.025 mm and 0.075 mm
(*c*) more than 0.1 mm
(*d*) about 0.5 mm
(*e*) none of the above.

15.154. The following flux is used for brazing cast iron
(*a*) mixture of boric acid, borax and wetting agent
(*b*) boric acid, borax or fluoride with a wetting agent
(*c*) chlorides and fluorides mixed with water
(*d*) all of the above
(*e*) none of the above.

15.155. Which is not correct statement about the function of flux in brazing
(*a*) to avoid thermal distortion and cracking
(*b*) to dissolve surface oxide coatings which have formed prior to brazing
(*c*) to prevent oxides from forming during the brazing operation on both the base metal and the brazing material
(*d*) to facilitate the wetting process by reducing the viscocity of the melt
(*e*) to give the filler-metal the fluidity to wet the joint surfaces completely.

15.156. Solder is essentially a
(*a*) tin-silver base
(*b*) tin lead base
(*c*) tin-bismuth base
(*d*) silver lead base
(*e*) bismuth lead base.

15.157. A soldering iron 'bit' is made of :
(*a*) brass (*b*) tin
(*c*) steel (*d*) copper
(*e*) iron.

15.158. Binding wire used to support the joints for soldering is made of
(*a*) aluminium (*b*) copper
(*c*) soft iron (*d*) mild steel
(*e*) tin.

15.159. The quality expected from flux used in silver soldering is that is should be able to
(*a*) dissolve oxides formed on the work
(*b*) fill up any gap in the joint
(*c*) vitrify after the solder has become molten
(*d*) form an oxide during the soldering operation
(*e*) cover up and protect oxides formed on the work.

15.160. Which of the following has the lowest melting point?
(*a*) brazing spelter
(*b*) copper (*c*) soft solder
(*d*) silver solder (*e*) aluminium.

15.161. The purpose of using flux in soldering is to
(*a*) increase fluidity of solder metal
(*b*) fill up gaps left in a bad joint
(*c*) prevent oxides forming
(*d*) lower the melting temperature of the solder
(*e*) wash away surplus solder.

15.162. The flux is brazing process is used in the form of
(*a*) powder (*b*) liquid
(*c*) paste (*d*) any of the above
(*e*) none of the above.

15.163. Soldering iron is made of wedge shape in order to

(*a*) apply high pressure at edge
(*b*) retain heat
(*c*) retain solder
(*d*) facilitate molecular attraction
(*e*) none of the above.

15.164. Brazing is the process of
(*a*) joining plastic sheets
(*b*) hard soldering using brass spelter
(*c*) casing in brass
(*d*) making steel look like brass
(*e*) joining protruded sections by melting.

15.165. Spelter is same as :
(*a*) tin (*b*) zinc
(*c*) lead (*d*) silver
(*e*) brass.

15.166. A brazed joint may be satisfactorily used on components made of
(*a*) tinplate (*b*) brass
(*c*) copper (*d*) aluminium
(*e*) all of the above.

15.167. When brazing is carried out
(*a*) a joint is made between two parts by molten spelter
(*b*) the edges of the joint melt and run together
(*c*) spelter forms an alloy with the flux
(*d*) flux prevents the work from melting
(*e*) flux acts as a cementing material.

15.168. Entrapped fluxes, during brazing result in
(*a*) presence of gas pockets
(*b*) corrosion
(*c*) cracking
(*d*) distortion of joints
(*e*) erosion.

15.169. Which is incorrect statement about corrosive flux in soldering process
(*a*) corrosive flux may be made by mixing three parts of zinc chloride and one part of sal ammoniac with water
(*b*) corrosive flux is rusted one and useless for soldering
(*c*) the term corrosive flux refers to the reaction which takes place after the soldering operation is consumated
(*d*) corrosive flux is used to solder non-ferrous materials like copper, brass, aluminium, or nickel
(*e*) corrosive flux is used to solder carbon-steel also.

15.170. Heat for soldering process is supplied by
(*a*) soldering iron
(*b*) induction furnace
(*c*) electric resistance method
(*d*) any one of these
(*e*) none of the above.

15.171. The temperature range for soldering process is
(*a*) 40°C to 100°C
(*b*) 180°C to 250°C
(*c*) 300°C to 500°C
(*d*) 600°C to 900°C
(*e*) around 1000°C.

15.172. Zinc chloride is used in the following process
(*a*) tempering (*b*) annealing
(*c*) brazing (*d*) hardening
(*e*) soft soldering.

15.173. An important precaution to produce a good soldered joint is that
(*a*) the soldering iron bit must first be made red hot
(*b*) the joint area must be clean and close-fitting
(*c*) aluminium wire must be placed along the joint
(*d*) a thin film of lubricating oil must be applied to the joint edges
(*e*) flux should be applied both before and after soldering.

15.174. The following flux is used for brazing aluminium and magnesium
(*a*) mixture of boric acid, borax and wetting agent
(*b*) boric acid, borax, or fluoride with a wetting agent
(*c*) chlorides and fluorides mixed with water
(*d*) any of the above
(*e*) none of the above.

15.175. Post cleaning is necessary at brazed joint in order to avoid
(*a*) scaling (*b*) slagging
(*c*) oxidation (*d*) corrosion
(*e*) weak joint.

15.176. The purpose of using borax in brazing is to

(a) replace flux
(b) dissolve oxides when heating the work
(c) accelerate the formation of oxides on the work
(d) prevent the spelter from melting too quickly
(e) increase fluidity of braze material.

15.177. The commonly used flux for brazing is
(a) resin (b) NH_4Cl
(c) borax (d) soft iron
(e) soft silver.

15.178. The brazing process is carried in the temperature range of
(a) 150°C to 250°C
(b) 250°C to 450°C
(c) 500°C to 700°C
(d) 700°C to 900°C
(e) at around 1000°C.

15.179. Which of the following is not a heat treatment process
(a) austempering (b) martempering
(c) parkerizing (d) cyaniding
(e) tempering.

15.180. S-curve is connected with
(a) combustion (b) cutting tools
(c) corrosion (d) heat treatment
(e) forging.

15.181. Sands are graded according to their
(a) source of origin
(b) strength
(c) permeability
(d) clay content and grain size
(e) moisture.

15.182. In sand moulding the bottom most part of the flask is called
(a) cope (b) cheek
(c) drag (d) flask bottom
(e) none of the above.

15.183. Cow dung is sometimes used in
(a) bench moulding
(b) dry sand moulding
(c) green sand moulding
(d) all of the above
(e) none of the above.

15.184. Moulding sands can contain following percentage of maximum quantity of moisture
(a) 2.5% (b) 5%
(c) 8% (d) 12%
(e) 20%.

15.185. Gas generated in mould made with synthetic sand as compared to silica sand is
(a) more (b) less
(c) same (d) unpredictable
(e) none of the above.

15.186. Riddle is
(a) a round sieve
(b) a long, flat metal plate fitted with an offset handle
(c) used to make or repair corners in a mould
(d) used to scoop sand deep in the mould
(e) none of the above.

15.187. In sand moulding, the middle part of flask is called
(a) cope
(b) cheek
(c) drag
(d) flask-middle
(e) none of the above.

15.188. Cope in foundry practice refers to
(a) bottom half of moulding box
(b) top half of moulding box
(c) middle portion of the moulding box
(d) coating on the mould face
(e) heavy weight kept on moulding box to overcome buoyant effect of molten metal.

15.189. In order to ram the sand softer on the pattern face and harder at the back of the mould, following type of moulding machine is used
(a) jolt (b) sand slinger
(c) squeezing (d) stripper plate
(e) diaphragm moulding.

15.190. Uniform sand hardness is obtained throughout the mould by following moulding machine
(a) jolt (b) sand slinger
(c) squeezing (d) stripper plate
(e) diaphragm moulding.

15.191. The purpose of chaplets is
(a) just like chills to ensure directional solidification
(b) to provide efficient venting
(c) to support the cores

(*d*) to join lower and upper parts of the moulding box
(*e*) compress moulding sand.

15.192. Which of the following is not a casting defect
(*a*) hot tear (*b*) blow hole
(*c*) scab (*d*) decarburisation
(*e*) shift.

15.193. Chills are metal inserts of steel that are placed at appropriate locations in the mould walls to
(*a*) decrease the freezing rate
(*b*) increase the freezing rate
(*c*) help directional solidification
(*d*) prevent directional solidification
(*e*) help progressive solidification.

15.194. Fluidity is greatly influenced by
(*a*) carbon content of molten metal
(*b*) melting temperature of molten metal
(*c*) inoculant addition
(*d*) pouring temperature of molten metal
(*e*) finish of the mould.

15.195. The chief advantage of die casting is
(*a*) possibility of incorporating thick sections in small castings
(*b*) casting of inserts is possible
(*c*) wide tolerances are possible
(*d*) high production rates are possible
(*e*) any material can be die cast easily.

15.196. The purpose of inoculation is
(*a*) to clean the casting
(*b*) to decrease the melting temperature of a cast metal
(*c*) to alter the chemical composition of a cast metal
(*d*) to modify the structure and properties of a cast metal
(*e*) to improve the finish of the castings.

15.197. The main advantage of shell moulding is that
(*a*) a metallic pattern is used
(*b*) the moulds are stronger
(*c*) thin sections can be easily obtained
(*d*) highly complex sections can be easily obtained
(*e*) high production rate is possible.

15.198. For mounting several patterns at a time, following type of pattern is used
(*a*) combined pattern
(*b*) loose, piece pattern
(*c*) sweep pattern
(*d*) match plate pattern
(*e*) metallic pattern.

15.199. Draft on pattern for casting is
(*a*) shrinkage allowance
(*b*) identification number marked on it
(*c*) taper to facilitate its removal from mould
(*d*) increase in size of cavity due to shaking of pattern
(*e*) for machining allowance.

15.200. Strength and permeability of served sand are related to
(*a*) grain size (*b*) clay-content
(*c*) hardness (*d*) moisture content
(*e*) type of sand.

15.201. Casting process is preferred for parts having
(*a*) a few details
(*b*) many details
(*c*) no details
(*d*) non-symmetrical shape
(*e*) none of the above.

15.202. In order to facilitate the withdrawal of pattern
(*a*) pattern is made smooth
(*b*) water is applied on pattern surface
(*c*) allowances are made on pattern
(*d*) draft is provided on pattern
(*e*) withdrawing facilities are provided.

15.203. Least shrinkage allowance is provided in the case of following
(*a*) brass (*b*) aluminium
(*c*) cast iron (*d*) steel
(*e*) white cast iron.

15.204. The draft allowance on the patterns is provided in order to
(*a*) provide good draft of air in the sand moulding
(*b*) provide for distortion that might take place
(*c*) remove the pattern easily from the moulding
(*d*) increase the strength of the mould walls
(*e*) push the pattern easily into the moulding.

15.205. The taper provided on pattern for its easy and clean withdrawal from the mould is called
(*a*) taper allowance
(*b*) draft allowance
(*c*) distortion allowance
(*d*) pattern allowance
(*e*) casting allowance.

15.206. The draft allowance on metallic pattern in comparison to wooden ones is
(*a*) same (*b*) more
(*c*) less
(*d*) more/less depending on size
(*e*) none of the above.

15.207. A big advantage of using synthetic sand in foundry shop is that
(*a*) it is less costly
(*b*) its properties can be controlled easily
(*c*) it possesses high moisture
(*d*) it possesses high % of clay
(*e*) it is highly refractory.

15.208. Which of the following materials has more shrinkage allowance
(*a*) cast iron (*b*) brass
(*c*) lead (*d*) aluminium alloy
(*e*) steel.

15.209. Which of the following provides an added projection on a pattern and forms a seat to support and locate the core in the mould
(*a*) mould print (*b*) core print
(*c*) drag (*d*) cope
(*e*) chaplet.

15.210. The mould is housed in a
(*a*) flask (*b*) cope
(*c*) drag (*d*) cheek
(*e*) moulding box.

15.211. Loose piece patterns are
(*a*) a sort of split patterns
(*b*) used when the pattern cannot be drawn from the mould
(*c*) similar to core prints
(*d*) never used in foundry work
(*e*) none of the above.

15.212. Cores are used to
(*a*) make desired recess in castings
(*b*) strengthen moulding sand
(*c*) support loose pieces
(*d*) remove pattern easily
(*e*) none of the above.

15.213. Trowel is
(*a*) a round sieve
(*b*) a long, flat metal plate fitted with an offset handle
(*c*) used to make or repair corners in a mould
(*d*) used to scoop sand deep in the mould
(*e*) none of the above.

15.214. Shrinkage allowance is made by
(*a*) adding to external and internal dimensions
(*b*) subtracting from external and internal dimensions
(*c*) subtracting from external dimensions and adding to internal dimensions
(*d*) adding to external dimensions and subtracting from internal dimensions
(*e*) none of the above.

15.215. Wood for pattern is considered dry when moisture content is
(*a*) zero per cent (*b*) 5%
(*c*) less than 15% (*d*) less than 25%
(*e*) none of the above.

15.216. Which of the following is not a casting process
(*a*) carthias process
(*b*) extrusion
(*c*) semi-centrifuge method
(*d*) slush process
(*e*) shell moulding.

15.217. The purpose of gate is to
(*a*) feed the casting at a rate consistent with the rate of solidification
(*b*) act as reservoir for molten metal
(*c*) help feed the casting until all solidification takes place
(*d*) feed molten metal from pouring basin to gate
(*e*) none of the above.

15.218. Pick up the correct statement
(*a*) Loose piece patterns are used when the pattern can be drawn from the mould
(*b*) Sweep patterns eliminate the need for three dimensional patterns
(*c*) Match plate patterns are made by fastening each half of a split pattern on the same side of one plate
(*d*) Cope and drag patterns are solid one piece patterns

(*e*) Disposable patterns are made of wood.

15.219. Lifter is
(*a*) a round sieve
(*b*) a long, flat metal plate fitted with an offset handle
(*c*) used to make or repair corners in a mould
(*d*) used to scoop sand deep in the mould
(*e*) none of the above.

15.220. The impurities in true centrifugal casting
(*a*) get collected at outer surface
(*b*) mix up thoroughly throughout
(*c*) get collected at the inner surface
(*d*) get collected in the middle portion in between inner and outer surface
(*e*) are thrown out.

15.221. Which of the following type of sand is used to keep the green sand from sticking to the pattern
(*a*) burnt sand (*b*) synthetic sand
(*c*) core sand (*d*) parting sand
(*e*) loam sand.

15.222. Facing sand used in foundry work comprises of
(*a*) alumina, silica and clay
(*b*) silica and clay
(*c*) clay and alumina
(*d*) silica and alumina
(*e*) clay and silica.

15.223. Loam sand comprises of
(*a*) 50% sand and 10% moisture
(*b*) 40% clay and 10% moisture
(*c*) 50% clay and 18% moisture
(*d*) 80% clay and 20% moisture
(*e*) none of the above.

15.224. Dilatometer is used to find out following property of moulding sand
(*a*) permeability (*b*) moisture content
(*c*) hot strength (*d*) compactness
(*e*) fineness.

15.225. The purpose of sprue is to
(*a*) feed the casting at a rate consistent with the rate of solidification
(*b*) act as a reservoir for molten metal
(*c*) help feed the casting until all solidification takes place
(*d*) feed molten metal from pouring basin to gate
(*e*) none of the above.

15.226. Accuracy of shell moulding is of the order of
(*a*) 0.001 mm/mm
(*b*) 0.003 to 0.005 mm/mm
(*c*) 0.01 mm/mm
(*d*) 0.1 mm
(*e*) none of the above.

15.227. The mould for casting ferrous materials in continuous casting process is made of
(*a*) low carbon steel
(*b*) medium carbon steel
(*c*) high carbon steel
(*d*) copper
(*e*) none of the above.

15.228. Sand slinger gives
(*a*) better packing of sand near pattern
(*b*) better packing of sand near the flask
(*c*) uniform sand density in the mould
(*d*) all of the above
(*e*) none of the above.

15.229. The trowel in a foundry shop is used to
(*a*) ram the moulding sand
(*b*) swab the edges and the mould cavity
(*c*) blow excess sand
(*d*) repair corners in a mould
(*e*) flatten and smoothen the sand during moulding operation.

15.230. When using disposable pattern, the metal should be poured
(*a*) very slowly
(*b*) rather rapidly
(*c*) at same rate as for other casting processes
(*d*) ay any rate
(*e*) none of the above.

15.231. If V is the volume of metal in a casting and A its surface area, then time of solidification will be proportional to
(*a*) $V, \frac{1}{A}$ (*b*) $V, \frac{1}{A^2}$
(*c*) $V^2, \frac{1}{A}$ (*d*) $V^2, \frac{1}{A^2}$
(*e*) $\frac{1}{V^2}, A^2$.

15.232. The purpose of pouring basin is to
(*a*) feed the casting at a rate consistent with the rate of solidification

(*b*) act as a reservoir for molten metal
(*c*) help feed the casting until all solidification takes place
(*d*) feed molten metal from pouring basin to gate
(*e*) none of the above.

15.233. Match plate pattern is used in
(*a*) green sand moulding
(*b*) bench moulding
(*c*) pit moulding
(*d*) machine moulding
(*e*) none of the above.

15.234. For steel castings, the following type of sand is better
(*a*) fine-grain
(*b*) coarser-grain
(*c*) medium grain
(*d*) all are equally good
(*e*) none of the above.

15.235. As the size of castings increases, it is often better to use increasingly
(*a*) fine grain
(*b*) medium grain
(*c*) coarse grain
(*d*) any one of the above
(*e*) none of the above.

15.236. The purpose of riser is to
(*a*) feed the casting at a rate consistent with the rate of solidification
(*b*) act as a reservoir for molten metal
(*c*) help feed the casting until all solidification takes place
(*d*) feed molten metal from pouring basin to gate
(*e*) none of the above.

15.237. Slick is
(*a*) a round sieve
(*b*) a long, flat metal plate fitted with an offset handle
(*c*) used to make or repair corners in a mould
(*d*) used to scoop sand deep in mould
(*e*) none of the above.

15.238. Freezing ratio or relative freezing time according to Caine's equation is

(*a*) $\dfrac{A_C/V_C}{A_R/V_R}$ (*b*) $\dfrac{A_R/V_R}{A_C/V_C}$

(*c*) $\dfrac{V_C/A_C}{V_R/A_R}$ (*d*) $\dfrac{V_R/A_R}{V_C/A_C}$

(*e*) $\dfrac{A_C A_R}{V_C V_R}$

(where A_C and A_R are areas of casting and rises and V_C and V_R are their volumes)

15.239. Hot tear refers to
(*a*) casting defect
(*b*) process of fabrication
(*c*) process of heat treatment
(*d*) weathering of non-ferrous materials
(*e*) strengthening of alloys.

15.240. Slick in a foundry shop is used to
(*a*) make and repair corners in a mould
(*b*) thoroughly mix up moulding sand
(*c*) make venting holes in the mould
(*d*) prepare gates
(*e*) swab the edges of the mould cavity.

15.241. True centrifugal casting
(*a*) is used to ensure purity and density at extremities of a casting
(*b*) is used to cast symmetrical objects
(*c*) is used to obtain high density and pure castings
(*d*) uses a heavy cast iron mould to act as chill
(*e*) none of the above.

15.242. In a permanent mould casting method
(*a*) molten metal is fed into the cavity in metallic mould by gravity
(*b*) metal is poured into die cavity, and after a predetermined time the mould is inverted to permit a part of metal still in molten state to flow out of cavity
(*c*) cavity is filled with a precalculated quantity of metal and a core or plunger is inserted to force the metal into cavity
(*d*) metal is forced into mould under high pressure
(*e*) none of the above.

15.243. Investment casting is used for
(*a*) shapes which are made by difficulty using complex patterns in sand casting
(*b*) mass production
(*c*) shapes which are very complex and intricate and can't be cast by any other method

(*d*) there is nothing like investment casting
(*e*) stainless steel parts.

15.244. The material of pattern in the case of investment casting is
(*a*) thermosetting resin
(*b*) special plastic
(*c*) synthetic sand
(*d*) wax (*e*) mercury.

15.245. Pipes subjected to very heavy pressures of the order of 100 kg/cm^2 are made by
(*a*) electric resistance welding process
(*b*) centrifugal casting
(*d*) die casting
(*d*) extrusion process, as seamless pipes
(*e*) gravity continuous casting.

15.246. Water pipes of large length and diameter are made by
(*a*) semi-centrifugal casting
(*b*) continuous casting
(*c*) sand casting
(*d*) electric resistance welding
(*e*) forging.

15.247. Which of the following processes would produce strongest components
(*a*) die casting (*b*) hot rolling
(*c*) extrusion (*d*) cold rolling
(*e*) forging.

15.248. The runners and ingates, respectively are located as follows in casting of ferrous metals
(*a*) in cope and in drag
(*b*) in drag and in cope
(*c*) both in cope
(*d*) both in drag
(*e*) in any of the above arrangements.

15.249. Which of the following processes refers to the preparation of objects from pressed powders
(*a*) electroforming
(*b*) shell moulding
(*c*) semi-centrifugal casting
(*d*) permanent mould casting
(*e*) none of the above.

15.250. The longitudinal joint of drums of 150 mm thick sheets are made by
(*a*) electric arc
(*b*) plasma arc welding
(*c*) electro slag welding
(*d*) resistance welding
(*e*) laser beams.

15.251. Antioch process is a
(*a*) continuous casting process
(*b*) welding process
(*c*) process of making porous moulds
(*d*) brazing process
(*e*) there is nothing like antioch process.

15.252. In centrifugal casting, cores are made of
(*a*) steel (*b*) cast iron
(*c*) hard sand (*d*) plastic
(*e*) none of the above.

15.253. Semi-centrifugal casting
(*a*) is used to ensure purity and density at extremities of a casting
(*b*) is used to cast symmetrical objects
(*c*) is used to obtain high density and pure castings
(*d*) uses heavy cast iron mould to act as chill
(*e*) is not used for any purpose.

15.254. For gray cast iron, the pattern shrinkage allowance is of the order of
(*a*) 2 to 5 mm/m (*b*) 5 to 7 mm/m
(*c*) 7 to 10.5 mm/m
(*d*) 10.5 to 13.5 mm/m
(*d*) 13.5 to 18 mm/m.

15.255. Surfaces to be machined are marked on the pattern by the following colour
(*a*) black (*b*) yellow
(*c*) red (*d*) blue
(*e*) green.

15.256. Colour scheme is employed on patterns in order to identify the
(*a*) pattern allowances
(*b*) cope and drag
(*c*) location of core print
(*d*) material of pattern
(*e*) none of the above.

15.257. Blue colour on the pattern is marked for
(*a*) machined surfaces
(*b*) unfinished surfaces
(*c*) loose piece pattern
(*d*) surfaces to be chilled
(*e*) never used in pattern making operation.

15.258. For gray cast iron, the volumetric shrinkage is of the order of

(*a*) 6%–5%
(*b*) 5–3.5%
(*c*) 3.5%–2.5%
(*d*) 2.5–1.9%
(*e*) 1.9% to negative value.

15.259. The pouring temperature for grey cast iron is
(*a*) 1000°C (*b*) 1250°C
(*c*) 1400°C (*d*) 1550°C
(*e*) 1650°C.

15.260. Chilled surfaces are marked on the pattern by
(*a*) oblique red strips
(*b*) yellow cross strips
(*c*) black cross strips on yellow
(*d*) oblique red strips on yellow
(*e*) none of the above.

15.261. Centrifugal method of casting is used to
(*a*) ensure purity and density at extremities of a casting
(*b*) cast symmetrical objects
(*c*) obtain high density and pure castings
(*d*) use heavy cast iron mould to act as chill
(*e*) none of the above.

15.262. A large intricate heavy casting weighing in tons is to be cast. The most appropriate moulding process would be
(*a*) machine moulding
(*b*) pit moulding
(*c*) cement moulding
(*d*) green sand moulding
(*e*) ceramic moulding.

15.263. The patterns in the case of machine moulding are mounted on
(*a*) match plates (*b*) moulding boards
(*c*) follow boards
(*d*) steel table
(*e*) plastic boards.

15.264. In die casting process
(*a*) molten metal is fed into the cavity in metallic mould by gravity
(*b*) metal is poured into die cavity, and after a predetermined time the mould is inverted to permit a part of metal still in molten state to flow out of cavity
(*c*) cavity is filled with a precalculated quantity of metal and a core or plunger is inserted to force the metal into cavity
(*d*) metal is forced into mould under high pressure
(*e*) none of the above.

15.265. The hot chamber die casting method is used to cast
(*a*) brass
(*b*) magnesium
(*c*) aluminium
(*d*) alloys of lead, tin and zinc
(*e*) all of the above.

15.266. In hot chamber method of die casting
(*a*) only low melting point metals can be cast
(*b*) high melting point metals can be cast
(*c*) die is kept hot by electrical heating
(*d*) die is kept cold by circulating water
(*e*) none of the above.

15.267. In general, the draft on castings is of the order of
(*a*) 1–5 mm/m
(*b*) 5–10 mm/m
(*c*) 10–15 mm/m
(*d*) 15–20 mm/m
(*e*) 20–30 mm/m.

15.268. Blind risers
(*a*) assist in feeding the metal into casting proper
(*b*) help to trap slag or other lighter particles
(*c*) supply the hottest metal when pouring is completed
(*d*) do not exist
(*e*) none of the above.

15.269. The allowances to be provided in disposable patterns are
(*a*) shrinkage and finish
(*b*) distortion (*c*) draft
(*d*) shake (*e*) (*a*) and (*b*) above.

15.270. Honey combing/sponginess refers to
(*a*) presence of impurities in molten metal
(*b*) molten metal at low temperature
(*c*) formation of a number of cavities in close proximity in casting
(*d*) defects due to poor heat treatment
(*e*) surface defects produced during hot working.

15.271. In carthias process
(*a*) molten metal is fed into the cavity in metallic mould by gravity
(*b*) metal is poured into die cavity, and after a predetermined time the mould is inverted to permit a part of metal still in molten state to flow out of cavity
(*c*) cavity is filled with a precalculated quantity of metal and a core or plunger is inserted to force the metal into cavity
(*d*) metal is forced into mould under high pressure
(*e*) none of the above.

15.272. The sand is packed on pit moulds with
(*a*) manually (*b*) squeezers
(*c*) jolt machines (*d*) sand slingers
(*e*) portable blowers.

15.273. Sprue in casting refers to
(*a*) gate (*b*) runner
(*c*) riser (*d*) horizontal passage
(*e*) vertical passage.

15.274. Pick up the incorrect statement about advantages of disposable patterns
(*a*) finish is uniform and reasonably smooth
(*b*) no complex wooden pattern with loose piece pattern is required
(*c*) no cores are required
(*d*) patterns can be handled easily and process is adaptable to mechanical moulding equipment
(*e*) no allowances and hence less metal is required.

15.275. In cold chamber method of die casting
(*a*) only low melting point metals can be cast
(*b*) high melting point metals can be cast
(*c*) die is kept hot by electrical heating
(*d*) die is kept cold by circulating water
(*e*) none of the above.

15.276. Which of the following casting methods utilises wax pattern
(*a*) shell moulding
(*b*) plaster moulding
(*c*) slush casting
(*d*) investment casting
(*e*) semi-centrifugal casting.

15.277. In slush casting process
(*a*) molten metal is fed into the cavity in metallic mould by gravity
(*b*) metal is poured into die cavity, and after a predetermined time the mould is inverted to permit a part of metal still in molten state to flow out of cavity
(*c*) cavity is filled with a precalculated quantity of metal and a core or plunger is inserted to force the metal into cavity
(*d*) metal is forced into mould under high pressure
(*e*) none of the above.

15.278. In slush casting
(*a*) consumable patterns are used
(*b*) plunger is used to force molten metal to fill up cavities
(*c*) vacuum is applied to facilitate complete filling of casting
(*d*) when a solid shell of sufficient thickness has formed, remaining liquid is poured out
(*e*) mercury is used for filling the master mould at normal temperature.

15.279. Pick up incorrect statement about advantages of vacuum die casting
(*a*) it produces good quality castings
(*b*) porosity is reduced
(*c*) surface finish is improved
(*d*) less metal is used
(*e*) injection pressure is reduced.

15.280. Ornaments are cast by
(*a*) die casting
(*b*) continuous casting
(*c*) pressed casting
(*d*) centrifugal casting
(*e*) gravity casting.

15.281. Ornamental objects, statues, toys etc. are cast by
(*a*) die casting
(*b*) pressed casting
(*c*) centrifugal casting
(*d*) slush casting
(*e*) none of the above.

15.282. Steel and cast iron pipes are cast by
(*a*) die casting
(*b*) continuous casting
(*c*) true centrifugal casting

(*d*) centrifuging
(*e*) investment casting.

15.283. In hot chamber method of die casting
(*a*) the melting pot is integral with die casting machine
(*b*) the melting pot is separate from die casting machine
(*c*) melting pot location has nothing to do with such a classification
(*d*) high temperature and low pressure alloys are used
(*e*) none of the above.

15.284. Scabs or buckles are the casting defects
(*a*) which occur due to some sand shearing from the cope
(*b*) which take the form of internal voids or surface depression due to excessive gaseous material not able to escape
(*c*) which occur due to discontinuity in metal casting resulting from hindered contraction
(*d*) caused by two streams of metals that are too cold to fuse property
(*e*) none of the above.

15.285. In centrifugal casting, the impurities are
(*a*) uniformly distributed
(*b*) collected in the centre of casting
(*c*) forced outside the surface
(*d*) present in the middle section of casting
(*e*) none of the above.

15.286. The core in the centrifugal casting is made of
(*a*) carbon steel
(*b*) properly treated sand
(*c*) plastic
(*d*) abrasive material
(*e*) no core is used.

15.287. Large and heavy castings are made by
(*a*) green sand moulding
(*b*) pit moulding
(*c*) dry sand moulding
(*d*) pressure moulding
(*e*) machine moulding.

15.288. Graphite moulds are used for continuous casting process in order to provide
(*a*) non-wetting agent
(*b*) self lubricating qualities
(*c*) chilling effect
(*d*) heat resisting medium
(*e*) quick solidification of metal.

15.289. Ferrous alloys are usually cast by
(*a*) hot chamber machine
(*b*) cold chamber machine
(*c*) die casting machine
(*d*) direct blow machine
(*e*) none of the above.

15.290. The tolerances produced by the investment casting process are of the order of
(*a*) a few microns
(*b*) $\pm$ 0.05 mm
(*c*) $\pm$ 1 mm
(*d*) $\pm$ 5 mm
(*e*) none of the above.

15.291. In cold chamber method of die casting
(*a*) the melting pot is integral with die casting machine
(*b*) the melting pot is separate from die casting machine
(*c*) melting pot location has nothing to do with such a classification
(*d*) low temperature and low pressure alloys are used
(*e*) none of the above.

15.292. Sweep pattern is used for moulding parts having
(*a*) rectangular shape
(*b*) elliptical shape
(*c*) uniform symmetrical shape
(*d*) complicated shape having intricate details
(*e*) none of the above.

15.293. Centrifugal process is
(*a*) limited to symmetrical objects about horizontal axis
(*b*) limited to symmetrical objects about vertical axis
(*c*) used for producing castings of irregular shape
(*d*) used for producing one casting at a time
(*e*) none of the above.

15.294. Drossing in foundry practice refers to
(*a*) a method of cleaning the castings
(*b*) an inspection method for castings
(*c*) a method of deoxidation of molten metal

(*d*) the formation of oxides on the molten metal surface
(*e*) improving finish of castings.

15.295. During the freezing of a pure metal, the possible casting structure is
(*a*) columnar structure
(*b*) dendritic structure
(*c*) equi-axed grains structure
(*d*) partly columnar and partly equi-axed
(*e*) dendritic and columnar.

15.296. When an alloy solidifies over a short range of temperature, the resulting casting structure will be
(*a*) dendritic
(*b*) partially columnar and partially equi-axed
(*c*) wholly columnar
(*d*) wholly equi-axed
(*e*) dendritic and columnar.

15.297. When an alloy solidifies over a wide range of temperature, the resulting casting structure is
(*a*) wholly equi-axed
(*b*) wholly columnar
(*c*) partially columnar and partially equi-axed
(*d*) dendritic
(*e*) columnar.

15.298. Flogging in foundry practice refers to
(*a*) a type of moulding method
(*b*) removal of sprues and risers
(*c*) a non-destructive testing method
(*d*) removal of slag during pouring
(*e*) a casting defect.

15.299. The internal cracks in casting can be easily found out by the following method of testing
(*a*) magnetic particle inspection
(*b*) fluorescent penetrant
(*c*) ultrasonic
(*d*) dye-penetrant
(*e*) any one of the above.

15.300. The surface and sub-surface cracks in non-magnetic alloys can be easily located and detected by the following inspection method
(*a*) X-ray testing
(*b*) ultrasonic testing
(*c*) magnetic particle inspection testing
(*d*) dye-penetrant testing
(*e*) any one of the above.

15.301. The internal hot tear defects in castings can be inspected by the following method:
(*a*) radiography
(*b*) visual inspection
(*c*) damping test
(*d*) fluorescent penetrant test
(*e*) hardness test.

15.302. Hot tears are casting defects
(*a*) which occur due to some sand shearing from the cope surface
(*b*) which take the from of internal voids or surface depression due to excessive gaseous material not able to escape
(*c*) which occur due to discontinuity in metal casting resulting from hindered contraction
(*d*) caused by two streams of metals that are too cold to fuse properly
(*e*) none of the above.

15.303. Fetling is an operation performed
(*a*) before casting
(*b*) during casting
(*c*) after casting
(*d*) after heat treatment
(*e*) before heat treatment.

15.304. Vertical centrifugal castings as compared to horizontal centrifugal castings are spun at
(*a*) higher speed (*b*) slower speed
(*c*) same speed (*d*) unpredictable
(*e*) none of the above.

15.305. Shell moulding process requires
(*a*) wooden patterns
(*b*) sand patterns (*c*) plastic patterns
(*d*) metal patterns
(*e*) no patterns.

15.306. Cold shots are casing defects
(*a*) which occur due to some sand shearing from the cope surface
(*b*) which take the form of internal voids or surface depression due to excessive gaseous material not able to escape
(*c*) which occur due to discontinuity in metal casting resulting from hindered contraction

(*d*) caused by two streams of metals that are too cold to fuse properly
(*e*) none of the above.

15.307. Slag inclusion in casting is a
(*a*) surface defect (*b*) internal defect
(*c*) crack (*d*) notch
(*e*) no defect.

15.308. A sprue hole is
(*a*) a casting defect
(*b*) a hole made for riveting
(*c*) a blind hole in jigs
(*d*) an eccentric hole in dies for clamping
(*e*) an opening in mould for pouring molten metal.

15.309. Core prints are used to
(*a*) strengthen core
(*b*) form seat to support and hold the core in place
(*c*) fabricate core
(*d*) all of the above
(*e*) none of the above.

15.310. Jolt machines produce
(*a*) uniform ramming about the pattern
(*b*) uniform ramming about the flask
(*c*) uniform distribution throughout
(*d*) pack sand loosely all around
(*e*) none of the above.

15.311. Blow holes are casting defects
(*a*) which occur due to some sand shearing from the cope surface
(*b*) which take the from of internal voids or surface depression due to excessive gaseous material not able to escape
(*c*) which occur due to discontinuity in metal casting resulting from hindered contraction
(*d*) caused by two streams of metals that are too cold to fuse properly
(*e*) none of the above.

15.312. In salvage repair of castings, the most satisfactory and commonly used method of rectifying and repairing the defect
(*a*) brazing and soldering
(*b*) metal spraying
(*c*) painting
(*d*) galvanizing
(*e*) welding.

15.313. Cold ducts are
(*a*) forging defects due to insufficient filling
(*b*) pores in welds
(*c*) casting defects due to two streams not able to fuse due to being cool
(*d*) casting defects due to moisture
(*e*) machining defects.

15.314. Molten iron is desulphurized by adding following to the ladle
(*a*) carbon (*b*) ferromanganese
(*c*) ferro-silicon (*d*) soda ash
(*e*) graphite.

15.315. Which is incorrect statement about results of cold working
(*a*) it increases corrosion resistance
(*b*) it increases strength, elasticity and hardness with a corresponding decrease in ductility
(*c*) handling of parts is easier
(*d*) dimension tolerances and finish are high
(*e*) recrystalline temperature for steel is increased.

15.316. Coining is the operation of
(*a*) cold forging (*b*) hot forging
(*c*) cold extrusion (*d*) piercing
(*e*) reeling.

15.317. In the metal forming processes, the stresses encountered are
(*a*) less than the yield strength of the material
(*b*) less than the fracture strength of the material and greater than yield strength
(*c*) greater than the ultimate strength of the material
(*d*) less than the limit of proportionality
(*e*) less than the elastic limit.

15.318. Rotary swaging is used for
(*a*) manufacturing bolts and rivets
(*b*) manufacturing seamless tubes
(*c*) improving fatigue resistance
(*d*) reducing diameter of round bars and tubes by rotating die which open and close rapidly on the work
(*e*) providing desired contour to sheet metal.

15.319. The important property of a material in all metal forming processes is

(*a*) elasticity (*b*) plasticity
(*c*) ductility (*d*) brittleness
(*e*) toughness.

15.320. Hot press forging
(*a*) causes a steadily applied pressure instead of impact force
(*b*) is used to force the end of a heated bar into a desired shape
(*c*) is a forging operation in which two halves of a rotating die open and close rapidly while impacting the end of heated tube or shell
(*d*) is a forging method for reducing the diameter of a bar and in the process making it longer
(*e*) none of the above.

15.321. Swaging is an operation of
(*a*) hot rolling (*b*) forging
(*c*) extrusion (*d*) piercing
(*e*) drawing.

15.322. Plug rolling is used to
(*a*) produce collapsible tubes
(*b*) produce seamless tubes
(*c*) reduce diameter tubes
(*d*) increase wall thickness of tubes
(*e*) reduce wall thickness and increase diameter of tubes.

15.323. An important product manufactured by rolling is
(*a*) I-section (*b*) tubes
(*c*) metal rolls (*d*) rollers
(*e*) discs.

15.324. Which is incorrect statement about results of hot working
(*a*) annealing operation is not necessary
(*b*) power requirements are low
(*c*) surface finish is good
(*d*) grain refinement is possible
(*e*) porosity in the metal is largely eliminated.

15.325. Forging of plain carbon steel is carried out at
(*a*) 750°C (*b*) 900°C
(*c*) 1100°C (*d*) 1300°C
(*e*) 1450°C.

15.326. Which of the following materials can't be forged
(*a*) wrought iron (*b*) cast iron
(*c*) mild steel (*d*) high carbon steel
(*e*) H.S.S.

15.327. Swaging
(*a*) causes a steadily applied pressure instead of impact force
(*b*) is used to force the end of a heated bar into a desired shape
(*c*) is a forging operation in which two halves of a rotating die open and close rapidly while impacting the end of the heated tube or shell
(*d*) is a forging method for reducing the diameter of a bar and in the process making it longer
(*e*) none of the above.

15.328. Metals like lead and tin are hot worked at temperatures around
(*a*) 500–600°C (*b*) 200–300°C
(*c*) 100°C (*d*) room temperature
(*e*) – 100°C.

15.329. Mechanical properties of the metal improve in hot working due to
(*a*) recovery of grains
(*b*) recrystamisation
(*c*) grain growth
(*d*) refinement of grain size
(*e*) formation of columnar grains.

15.330. The following type of deformation of metals takes place in cold working and hot working
(*a*) elastic deformation
(*b*) plastic deformation
(*c*) viscous deformation
(*d*) isotropic deformation
(*e*) visco-elastic deformation.

15.331. Pick up wrong statement about results of hot working
(*a*) poor surface finish
(*b*) improvement in mechanical properties
(*c*) refinement of grain structure
(*d*) close tolerances obtained
(*e*) elimination of porosity.

15.332. The important mechanical property for a material to be successfully rolled or forged is
(*a*) brittleness (*b*) ductility
(*c*) elasticity (*d*) machinability
(*e*) malleability.

15.333. Pick up wrong statement about effect of cold working

(*a*) increase in strength and hardness
(*b*) improved surface finish
(*c*) close dimensional tolerances
(*d*) grain structure is unaffected
(*e*) increase in yield strength.

15.334. The important mechanical property of a material for extrusion purposes is
(*a*) continuity (*b*) ductility
(*c*) elasticity (*d*) plasticity
(*e*) brittleness.

15.335. The increase in hardness due to cold working is called
(*a*) cold hardening
(*b*) hot hardening
(*c*) work hardening
(*d*) age-hardening
(*e*) induction hardening.

15.336. In which type of extrusion process, the movement of the extruded product is in the direction opposite to that of the deforming force
(*a*) direct (*b*) forward
(*c*) backward (*d*) die extrusion
(*e*) wire drawing.

15.337. Hot working operation is carried at
(*a*) recrystallisation temperature
(*b*) near plastic stage temperature
(*c*) below recrystallisation temperature
(*d*) above recrystallisation temperature
(*e*) above room temperature.

15.338. Roll forging
(*a*) causes a steadily applied pressure instead of impact force
(*b*) is used to force the end of a heated bar into a desired shape
(*c*) is a forging operation in which two halves of a rotating die open and close rapidly while impacting the end of heated tube or shell
(*d*) is forging method for reducing the diameter of a bar and in the process making it longer
(*e*) none of the above.

15.339. A cylindrical section having no joints is known as
(*a*) seamless (*b*) ideal
(*c*) economical (*d*) perfect
(*e*) jointless.

15.340. Seamless tubes are made by
(*a*) piercing (*b*) extrusion
(*c*) cold rolling (*d*) plug rolling
(*e*) rolling mill.

15.341. The operation of removing the burr or flash from the forged parts in drop forging is known as
(*a*) lancing (*b*) trimming
(*c*) coining (*d*) shot peening
(*e*) burring.

15.342. Metallic cans are usually mass produced by the following process
(*a*) embossing (*b*) coining
(*c*) spinning (*c*) drawing
(*e*) extruding.

15.343. Spinning operation is carried out on
(*a*) hydraulic press
(*b*) mechanical press
(*c*) lathe
(*d*) milling machine
(*e*) drill press.

15.344. Production of contours in flat blanks is termed as
(*a*) blanking (*b*) piercing
(*c*) perforating (*d*) punching
(*e*) none of the above.

15.345. Thread rolling is somewhat like
(*a*) cold extrusion (*b*) cold machining
(*c*) cold rolling (*d*) cold forging
(*e*) plug rolling.

15.346. Upset forging
(*a*) causes a steadily applied pressure instead of impact force
(*b*) is used to force the end of a heated bar into a desired shape
(*c*) is a forging operation in which two halves of rotating die open and close rapidly while impacting the end of the heated tube or shell
(*d*) is a forging method for reducing the diameter of a bar and in the process making it longer
(*e*) none of the above.

15.347. Which of the following process is different from the rest of the processes
(*a*) shot peening
(*b*) cold extrusion
(*c*) sand blasting
(*d*) drop forging
(*e*) cold rolling.

15.348. It is required to reduce a slab directly to strip in one pase. Which of the following rolling mills can do this function ?
(*a*) two high mill
(*b*) three high mill
(*c*) four high mill
(*d*) planetary mill
(*e*) continuous rolling mill.

15.349. In four high rolling mill the bigger rollers are called
(*a*) guide rolls (*b*) back up rolls
(*c*) main rolls (*d*) support rolls
(*e*) none of the above.

15.350. A polished and etched surface of the cross-section of a hot worked product will be having
(*a*) fibre like structure
(*b*) mirror like surface
(*c*) grain field like structure
(*d*) carbon precipitated at boundaries
(*e*) carbon in the form of flakes.

15.351. The machinery/equipment used in the production of channels of I-section, rail sections, angles, etc is called
(*a*) continuous casting machine
(*b*) rolling mills
(*c*) forging plant
(*d*) hot spinning machines
(*e*) extrusion mills.

15.352. In a four high rolling mill, the diameter of backing up roll in comparison to diameter of working rolls is
(*a*) same (*b*) larger
(*c*) smaller
(*d*) smaller/larger depending upon the capacity
(*e*) no such correlation.

15.353. Large size bolt heads are made by
(*a*) swaging (*b*) roll forging
(*c*) tumbling (*d*) upset forging
(*e*) hammer forging.

15.354. Symmetrical hollow parts of circular cross-section are made by hot
(*a*) forging (*b*) extrusion
(*c*) piercing (*d*) drawing
(*e*) spinning.

15.355. The pilots in the punch holder assembly in pressworking operations are provided in order to
(*a*) ensure proper ejection of the blank
(*b*) ensure proper location of the blank
(*c*) reduce the punch load
(*d*) remove the burrs on the blank
(*e*) form a corresponding depression in the blank first.

15.356. Notching is the operation of
(*a*) removal of excess metal from the edge of a strip to make it suitable for drawing without wrinkling
(*b*) cutting of the excess metal at edge which was required for gripping purpose during press working operation
(*c*) cutting in a single line across a part of the metal strip to allow bending or forming in progressive die operation while the part remains attached to the strip
(*d*) punching in which punch is stopped as soon as the metal fracture is complete and metal is not removed but held in hole
(*e*) none of the above.

15.357. The collapsible tooth paste tubes are manufactured by
(*a*) direct extrusion
(*b*) piercing
(*c*) impact extrusion
(*d*) indirect extrusion
(*e*) ERW (electric resistance welding) process.

15.358. Tumbling is the process of
(*a*) improving fatigue limit
(*b*) imparting luster to surface
(*c*) cleaning the surface of small parts
(*d*) improving creep limit
(*e*) providing coating on metal surface.

15.359. Which of the following is the process for joining two metals
(*a*) sintering (*b*) tumbling
(*c*) notching (*d*) swaging
(*e*) coining.

15.360. The seamless tubes in mass production are manufactured by the following process
(*a*) rolling (*b*) spinning
(*c*) drawing (*d*) welding
(*e*) extrusion.

15.361. Stretch forming is a process of

(a) cold rolling (b) forging
(c) extrusion (d) cold drawing
(e) spinning.

15.362. Lancing is the operation of
(a) removal of excess metal from the edge of a strip to make it suitable for drawing without wrinkling
(b) cutting of the excess metal at edge which was required for gripping purpose during press working operation
(c) cutting in a single line across a part of the metal strip to allow bending or forming in progressive die operation while the part remains attached to the strip
(d) punching in which punch is stopped as soon as the metal fracture is complete and metal is not removed but held in hold
(e) none of the above.

15.363. Flange wrinkling is the defect found in
(a) blanking (b) spinning
(c) bending (d) cold rolling
(e) deep drawing.

15.364. Laser is produced by
(a) graphite (b) ruby
(c) diamond (d) emerald
(e) aluminium.

15.365. Injection moulding is the ideal method of processing
(a) plastics
(b) thermo-setting plastics
(c) thermoplastics
(d) non-ferrous materials
(e) none of the above.

15.366. Compression moulding is the ideal method of processing
(a) plastics
(b) thermosetting plastics
(c) thermoplastics
(d) non-ferrous materials
(e) cast iron.

15.367. Slugging is the operation of
(a) removal of excess metal from the edge of strip to make it suitable for drawing without wrinkling
(b) cutting of the excess metal at edge which was required for gripping purpose during press working operation
(c) cutting in a single line across a part of the metal strip to allow bending or forming in progressive die operation while the part remains attached to the strip
(d) punching in which punch is stopped as soon at the metal fracture is complete and metal is not removed but held in hole
(e) none of the above.

15.368. A 20 tonne press implies that the
(a) weight of press is 20 tonnes
(b) press can handle works weighing upto 20 tonnes
(c) it can exert pressure upto 20 tonnes
(d) its foundation should be designed for 20 tonnes
(e) its turnover in a day is 20 tonnes.

15.369. The fatigue strength of metal is improved by setting up compressive stresses in the surface by a process known as
(a) lancing (b) spinning
(c) hemming (d) shot-peening
(e) slugging.

15.370. In drawing operation the metal flows due to
(a) ductility (b) work hardening
(c) plasticity (d) shearing
(e) yielding.

15.371. Trimming it the operation of
(a) removal of excess metal from the edge of a strip to make it suitable for drawing without wrinkling
(b) cutting of the excess metal at edge which was required for gripping purpose during press working operation
(c) cutting in a single line across a part of the metal strip to allow bending or forming in progressive die operation while the part remains attached to the strip
(d) punching in which punch is stopped as soon as the metal fracture is completed and metal is not removed but held in hole
(e) none of the above.

15.372. Long wires are made by following process
(a) extrusion (b) rolling
(c) piercing (d) drawing

(*e*) non-conventional methods.

15.373. Hemming is the operation
(*a*) in which the edges of sheet are turned over to provide stiffness and a smooth edge
(*b*) of producing contours in sheet metal and of bending previously roll formed sections
(*c*) in which a series of impact blows are transferred on dies so that solid or tubular work changes in cross-section or geometric shape
(*d*) employed to expand a tubular or cylindrical part
(*e*) none of the above.

15.374. Which of the operation is different from the rest
(*a*) rivetting (*b*) embossing
(*c*) punching (*d*) coining
(*e*) flattening.

15.375. External screw threads can be produced fastest by
(*a*) milling (*b*) chasing
(*c*) casting (*d*) rolling
(*e*) automats.

15.376. In combination dies
(*a*) two or more cutting operations can be performed simultaneously
(*b*) cutting and formation operations are combined and carried out in single operation
(*c*) workpiece moves from one station to other with separate operation performed at each station
(*d*) all of the above
(*e*) none of the above.

15.377. The purpose of jigs and fixtures is to
(*a*) increase production rate
(*b*) increase machining accuracy
(*c*) facilitate interchangeable manufacture
(*d*) enable employ less skilled operators
(*e*) all of the above.

15.378. Bulging is the operation
(*a*) in which the edges of sheet are turned over to provide stiffness and a smooth edge
(*b*) of producing contours in sheet metal and of bending previously roll formed sections
(*c*) in which series of impact blows are transferred on dies so that solid or tubular work changes in cross-section or geometric shape
(*d*) employed to expand a tubular or cylindrical part
(*e*) none of the above.

15.379. Gear shaping is related to
(*a*) template (*b*) form tooth process
(*c*) hob (*d*) generating
(*e*) all of the above.

15.380. Which one of the following methods produces gear by generating process
(*a*) hobbing (*b*) casting
(*c*) punching (*d*) milling
(*e*) broaching.

15.381. Gears are best mass produced by
(*a*) milling (*b*) hobbing
(*c*) shaping (*d*) forming
(*e*) casting.

15.382. Which of the following is a gear finishing operation
(*a*) hobbing (*b*) shaping
(*c*) milling
(*d*) shaving or burnishing
(*e*) none of the above.

15.383. In press operation, the size of the pierced hole is dependent on the size of
(*a*) punch (*b*) die
(*c*) average of punch and die
(*d*) punch and clearance
(*e*) die and clearance.

15.384. Steel billets for extrusion are heated in the range of
(*a*) 750–1000°C (*b*) 1000–1100°C
(*c*) 1100–1200°C (*d*) 1200–1350°C
(*e*) 1350–1450°C.

15.385. For drawing operation, the best suited press is
(*a*) knuckle joint press
(*b*) crank shaft and connecting rod press
(*c*) toggle press
(*d*) rack and pinion press
(*e*) none of the above.

15.386. Swaging is the operation
(*a*) in which the edges of sheet are turned over to provide stiffness and a smooth edge

(*b*) of producing contours in sheet metal and of bending previously roll formed sections
(*c*) in which a series of impact blows are transferred on dies so that solid or tubular work changes in cross-section or geometric shape
(*d*) employed to expand a tubular or cylindrical part
(*e*) none of the above.

15.387. Trimming is the process associated with
(*a*) press work
(*b*) forging
(*c*) polishing of metals
(*d*) electroplating
(*e*) machining.

15.388. The ductility of a material with work hardening
(*a*) increases (*b*) decreases
(*c*) remains unaffected
(*d*) may increase/decrease depending on its tensile strength
(*e*) unpredictable.

15.389. Blanking and piercing operation can be performed simultaneously in
(*a*) simple die (*b*) progressive die
(*c*) compound die
(*d*) combination die
(*e*) none of the above.

15.390. In progressive dies
(*a*) two or more cutting operations can be performed simultaneously
(*b*) cutting and formation operations are combined and carried out in single operation
(*c*) workpiece moves from one station to other with separate operation performed at each station
(*d*) all of the above
(*e*) none of the above.

15.391. Cutting and forming operations can be done in a single operation on
(*a*) simple die (*b*) progressive die
(*c*) compound die (*d*) combination die
(*e*) none of the above.

15.392. Stretch forming is the operation
(*a*) in which the edges of sheet are turned over to provide stiffness and a smooth edge
(*b*) of producing contours in sheet metal and of bending previously roll formed sections
(*c*) in which a series of impact blows are transferred on dies so that solid or tubular work changes in cross-section or geometric shape
(*d*) employed to expand a tubular or cylindrical part
(*e*) none of the above.

15.393. Cold heading is the process of
(*a*) chipless machining
(*b*) high energy rate forming
(*c*) explosive forming
(*d*) magnetic pulse forming
(*e*) non conventional method of machining.

15.394. Steel balls are manufactured by
(*a*) casting (*b*) machining
(*c*) cold heading (*d*) sintering
(*e*) spinning.

15.395. After cold forming, steel balls are subjected to
(*a*) normalising (*b*) tempering
(*c*) electroplating (*d*) stress relieving
(*e*) artificial aging.

15.396. In press operation, the size of the blanked part is dependent on the size of
(*a*) punch (*b*) die
(*c*) average of punch and die
(*d*) die and clearance
(*e*) punch and clearance.

15.397. For operations like coining and embossing, the best suited press is
(*a*) knuckle joint press
(*b*) crank shaft and connecting rod press
(*c*) toggle press
(*d*) rack and pinion press
(*e*) none of the above.

15.398. In compound dies
(*a*) two or more cutting operations can be performed simultaneously
(*b*) cutting and formation operations are combined and carried out in single operation
(*c*) workpiece moves from one station to other with separate operation performed at each station
(*d*) all of the above

(*e*) none of the above.

15.399. The broaching operation in which the tool moves past the stationary work is known as
(*a*) push broaching
(*b*) pull broaching
(*c*) continuous broaching
(*d*) surface broaching
(*e*) straight broaching.

15.400. The workpiece motion and tool motion respectively in a horizontal boring machine are
(*a*) stationary and rotational
(*b*) rotational and translational
(*c*) translational and rotational
(*d*) stationary and rotational with translation
(*e*) rotational with translation and stationary.

15.401. In which of the following operation on lathe, the spindle speed will be minimum
(*a*) knurling (*b*) fine finishing
(*c*) taper turning (*d*) parting off
(*e*) thread cutting.

15.402. A side rake is seldom ground in
(*a*) broaching tool
(*b*) lathe tool
(*c*) shaper tool
(*d*) planer tool
(*e*) (*c*) and (*d*) above.

15.403. In most high speed milling cutters, positive radial rake angle is
(*a*) 2 – 6° (*b*) 7 – 10°
(*c*) 10 – 15° (*d*) 15 – 20°
(*e*) 20 – 25°.

15.404. In lathe, the carriage and tail stock are guided on
(*a*) same guideways
(*b*) different guideways
(*c*) any one of the above
(*d*) not guided on guideways
(*e*) none of the above.

15.405. The unit of a lathe which houses the lathe spindle and control levers for speed selection is called a
(*a*) head stock (*b*) tail stock
(*c*) feed box (*d*) carriage
(*e*) apron.

15.406. The back rake and side rake of round nose tool are
(*a*) + 5 to + 10° (*b*) – 5 to – 10°
(*c*) zero (*d*) + 10 to + 15°
(*e*) – 10 to – 15°.

15.407. The wear on the cross slide or compound rest can be taken up by tightening the adjustable
(*a*) jigs (*b*) plates
(*c*) gibs (*d*) pins
(*e*) screws.

15.408. The workpiece motion and tool motion respectively in vertical boring machine are
(*a*) stationary and rotational
(*b*) rotational and translational
(*c*) translational and rotational
(*d*) stationary and rotational with translation
(*e*) rotational with translation and stationary.

15.409. Tubular gears are the gears used in
(*a*) milling machine to change direction of rotation by 90°
(*b*) dividing head
(*c*) lathe for increasing/decreasing cutting speed
(*d*) lathe for cutting threads
(*e*) lathe for reversing direction of rotation.

15.410. In machine tools, chatter is due to
(*a*) free vibrations
(*b*) random vibrations
(*c*) forced vibrations
(*d*) self-excited vibrations
(*e*) cutting vibrations.

15.411. The usual ratio of forward and return stroke in shaper is
(*a*) 2 : 1 (*b*) 1 : 2
(*c*) 2 : 3 (*d*) 3 : 2
(*e*) 3 : 1.

15.412. If l be the length of job, d its diameter, f the feed, and n the spindle speed, then time for turning the job is equal to
(*a*) $\frac{l}{dn}$ (*b*) $\frac{1}{nf}$
(*c*) $\frac{d}{nf}$ (*d*) $\frac{nf}{l}$

(e) $\frac{nf}{d}$.

15.413. Half nut is connected with
(a) milling machine
(b) locking device
(c) jigs and fixtures
(d) thread cutting on lathe
(e) quick engaging and disengaging devices.

15.414. Lathe bed is usually made of
(a) structural steel
(b) stainless steel
(c) cast iron (d) mild steel
(e) non-ferrous materials.

15.415. Lathe spindle has got
(a) internal threads
(b) external threads
(c) taper threads
(d) no threads
(e) none of the above.

15.416. Which of the following lathe operations requires that the cutting edge of a tool bit be placed exactly on the work centre-line?
(a) boring (b) drilling
(c) facing (d) turning
(e) chamfering.

15.417. Lathe centres are provided with the following standard taper
(a) Morse (b) British
(c) metric (d) sharpe
(e) any taper.

15.418. Brown and sharp taper is generally used in
(a) lathes (b) milling machines
(c) shapers (d) drills
(e) broaching machines.

15.419. On screw machines having cross and vertical slides, cutting off operations are usually performed by the
(a) horizontal slide
(b) vertical slide
(c) cross-slide
(d) cross-drilling attachment
(e) special attachment.

15.420. In order to turn taper on length l with two end diameters d_1 and d_2 set over the tailstock stover required is
(a) $d_1 - d_2$ (b) $\frac{d_1 - d_2}{2}$
(c) $\frac{d_1 - d_2}{2l}$ (d) $\frac{d_1 - d_2}{l}$
(e) $\frac{2(d_1 - d_2)}{l}$.

15.421. Internal or external tapers on a turret lathe can be turned by
(a) face turning attachment
(b) taper turning attachment
(c) sliding attachment
(d) morse taper attachment
(e) offsetting tailstock.

15.422. Quick return mechanism is used in
(a) milling machine
(b) broaching machine
(c) grinding machine
(d) slotter
(e) welding machine.

15.423. Which of the following machines does not require quick return mechanism
(a) slotter (b) planer
(c) shaper (d) broaching
(e) none of the above.

15.424. The size of a power circular saw is indicated by the
(a) blade diameter
(b) motor horse power
(c) saw weight
(d) number of gullets
(e) maximum depth of cut.

15.425. Circular saw blades are specified by their diameter, number of teeth, and
(a) gauge (b) maximum rpm
(c) arbor-hole (d) number of gullets
(e) all of the above.

15.426. In blanking operation, the angle of shear is provided on
(a) die (b) punch
(c) both on punch and die
(d) not provided at all
(e) none of the above.

15.427. The shear angle in the piercing operation is provided on
(a) die (b) punch
(c) half on die and half on punch
(d) die or punch depending on material and thickness of sheet

(*e*) not provided at all.

15.428. The clearance in blanking operation is provided on
(*a*) die (*b*) punch
(*c*) half on die and half on punch
(*d*) die or punch depending on material and thickness of sheet
(*e*) not provided at all.

15.429. With increasing angle of shear, the force on punch
(*a*) increases linearly
(*b*) decreases linearly
(*c*) decreases as square of shear angle
(*d*) increases as square of angle of shear
(*e*) none of the above.

15.430. Size of the smallest hole that can be punched is given by
(*a*) $4t\frac{f_s}{f_c}$ (*b*) $2t\frac{f_s}{f_c}$
(*c*) $4t\frac{f_c}{f_s}$ (*d*) $2t\frac{f_c}{f_s}$
(*e*) none of the above.
where, t = sheet thickness
f_c = allowable compressive stress on punch
f_s = ultimate shear stress of sheet.

15.431. In piercing and punching operations, the angle of shear is provided on
(*a*) die (*b*) punch
(*c*) both on punch and die
(*d*) not provided at all
(*e*) none of the above.

15.432. In piercing operation, the clearance is provided on
(*a*) die (*b*) punch
(*c*) half of die and half on punch
(*d*) may be provided on any member
(*e*) none of the above.

15.433. In drawing operation, increase of punch radius
(*a*) has much influence on punch load and it decreases
(*b*) does not influence the punch load much
(*c*) punch load increases
(*d*) punch load depends on other factors
(*e*) none of the above.

15.434. Angular clearance provided on dies is of the order of
(*a*) 5 to 10° (*b*) 3 to 5°
(*c*) 1/2 to 1° (*d*) 0.1 to 0.5°
(*e*) none of the above.

15.435. The spring back in steel is of the order of
(*a*) 0 to 0.5° (*b*) 0.5 to 5°
(*c*) 5 to 10° (*d*) 10 to 13.5°
(*e*) 13.5 to 17.5°.

15.436. Centre of pressure for a piece to be blanked or pierced in power press lies at
(*a*) c.g. of area of piece
(*b*) c.g. of perimeter of piece
(*c*) centre of piece
(*d*) centre of percussion
(*e*) none of the above.

15.437. In drawing operation, increase of die radius
(*a*) has much influence on punch load and it decreases
(*b*) does not influence the punch load much
(*c*) punch load increases
(*d*) punch load depends on other considerations
(*e*) none of the above.

15.438. Bending operation should be performed
(*a*) parallel to the grain direction
(*b*) at 30° to the grain direction
(*c*) at right angle to the grain direction
(*d*) there is no such criterion
(*e*) none of the above.

15.439. In bending operation, the metal takes shape of
(*a*) die (*b*) punch
(*c*) average of two
(*d*) could take any shape
(*e*) none of the above.

15.440. In blanking operation, the clearance is provided on
(*a*) die
(*b*) punch
(*c*) half on die and half on punch
(*d*) may be provided on any member
(*e*) none of the above.

15.441. Most practical method of taking care of spring back during bending is to
(*a*) try a sample, make the necessary adjustments and try again

(*b*) punching the inside corner of bend
(*c*) use hollow concave punches
(*d*) undercutting the punch so that the material is free to over bend
(*e*) none of the above.

15.442. The velocity of operation in power drop hammer is of the order of
(*a*) 0.1 to 0.8 m/sec
(*b*) 0.8 to 1.5 m/sec
(*c*) 1.5 to 3.0 m/sec
(*d*) 3.0 to 9.0 m/sec
(*e*) 9.0 to 16.0 m/sec.

15.443. The choice of the right band saw blade for a particular job is determined by the
(*a*) blade set
(*b*) straddling speed
(*c*) type of material to be cut
(*d*) blade temper
(*e*) amount of material to be removed.

15.444. Under what conditions do band saws cut best ?
(*a*) high speed and light feed
(*b*) high speed and heavy feed
(*c*) slow speed and light feed
(*d*) slow speed and heavy feed
(*e*) none of the above.

15.445. Which of the following is/are affected by the number of teeth a saw blade has
(*a*) rate of feed
(*b*) coarseness of cut
(*c*) size of cut
(*d*) all of the above
(*e*) none of the above.

15.446. Sheradising is
(*a*) a zinc diffusion process
(*b*) an oxidising process used for aluminium and magnesium articles
(*c*) a process used for making thin phosphate coatings on steel to act as base or primer for enamels and paints
(*d*) the process of coating of zinc by hot dipping
(*e*) none of the above.

15.447. The purpose of chasing dial on lathes is to achieve
(*a*) taper turning
(*b*) cutting of tapered threads
(*c*) cutting of multiple threads
(*d*) plunge cut
(*e*) picking up the thread accurately at the beginning of each cut.

15.448. A good lubricant for thread-cutting operation is
(*a*) graphite
(*b*) white lead
(*c*) mineral lard oil
(*d*) water soluble oil
(*e*) emulsified oil.

15.449. The power is transmitted by lead screw to the carriage through
(*a*) gear box
(*b*) worm and gear
(*c*) rack and pinion
(*d*) half nut
(*e*) apron mechanism.

15.450. No lubricant is required when cutting threads in
(*a*) tungsten carbide
(*b*) mild steel
(*c*) titanium
(*d*) brass or cast iron
(*e*) high speed steel.

15.451. The following type of file is preferred for filing brass or bronze
(*a*) the smooth-cut file
(*b*) the second-cut file
(*c*) the coarse-cut or rough-cut file
(*d*) the double-cut file
(*e*) the single-cut file.

15.452. To clean a file, it is
(*a*) dipped in water
(*b*) dipped in dilute alcohol
(*c*) rubbed on stone
(*d*) rubbed on wood
(*e*) cleaned with a file card.

15.453. A power saw which employs a continuous looped blade driven by two wheels is known as
(*a*) a power hacksaw machine
(*b*) a circular saw machine
(*c*) a filing machine
(*d*) a band saw machine
(*e*) none of the above.

15.454. Average cutting speed in machining mild steel by single point tool of H.S.S. is
(*a*) 10 m/mt (*b*) 20 m/mt
(*c*) 30 m/mt (*d*) 40 m/mt
(*e*) 50 m/mt.

15.455. Tool life is said to be over if
(*a*) a poor surface finish is obtained
(*b*) sudden increase in power and cutting force with chattering take place
(*c*) overheating and fuming due to friction start
(*d*) all of the above
(*e*) it can no longer machine.

15.456. Tool life is most affected by machine
(*a*) cutting speed
(*b*) tool geometry
(*c*) feed and depth
(*d*) microstructure of material being cut
(*e*) not using coolant and lubricant.

15.457. The spindle speeds of machine tools are usually designed to follow
(*a*) arithmetical progression
(*b*) geometrical progression
(*c*) harmonical progression
(*d*) logarithmic progression
(*e*) random number theory.

15.458. The best machine for mass production of watch components machined from bar will be
(*a*) turret lathe (*b*) capstan lathe
(*c*) tool room lathe
(*d*) numerically controlled lathe
(*e*) multi spindle automatic lathe.

15.459. The common ratio ϕ for spindle speeds in geometrical progression is taken between
(*a*) 0.2 to 0.6 (*b*) 0.6 to 1.0
(*c*) 1.0 to 2.0 (*d*) 2.0 to 5.0
(*e*) 5.0 to 10.0.

15.460. The spindle speeds in a cutting tool are 160, 229, 328, 496...The next higher speed will be
(*a*) 642 (*b*) 660
(*c*) 671 (*d*) 695
(*e*) 709.

15.461. For machining a casting on a lathe, it should be held in
(*a*) collet chuck
(*b*) magnetic chuck
(*c*) three-jaw chuck
(*d*) four-jaw chuck
(*e*) face plate.

15.462. In automatic machine where large number of components are machined from a bar, it is held in
(*a*) collect chuck
(*b*) magnetic chuck
(*c*) three-jaw chuck
(*d*) four-jaw chuck
(*e*) face plate.

15.463. Turret lathes in which long turning cuts are made by moving the saddle along the bedways of the machine are called
(*a*) drum type turret lathes
(*b*) ram type turret lathes
(*c*) saddle type turret lathes
(*d*) automatic screw machines
(*e*) universal turret lathes.

15.464. The purpose of tumbler gears in lathe is to
(*a*) cut gears
(*b*) cut threads
(*c*) reduce spindle speed
(*d*) give desired direction of movement to the lathe carriage
(*e*) reverse spindle rotation.

15.465. Turret lathes equipped with spindles which can be fitted with a universal 2-jaw chuck are referred to as
(*a*) drum type machines
(*b*) saddle type machines
(*c*) chucking machines
(*d*) universal lathes
(*e*) swiss type lathes.

15.466. On bar-type turret lathes, work to be machined is gripped in
(*a*) three-jaw chucks
(*b*) four-jaw chucks
(*c*) pneumatic chucks
(*d*) collet
(*e*) magnetic chucks.

15.467. Flank wear occurs mainly on
(*a*) nose part, from relief face and side relief face
(*b*) nose part and top face
(*c*) cutting edges
(*d*) all of the above
(*e*) front force.

15.468. In a capstan lathe, the turret is mounted on
(*a*) a short slide of ram sliding on the saddle
(*b*) the saddle sliding on the bed
(*c*) compound rest

(*d*) back tool post
(*e*) head stock.

15.469. Which of the following properties are essential for a tool material used for high speed machining
(*a*) red hardness and impact resistance
(*b*) red hardness and wear resistance
(*c*) toughness and impact resistance
(*d*) impact resistance and wear resistance
(*e*) red hardness, wear resistance and toughness.

15.470. The characteristic that enables one material to cut another is its relative
(*a*) toughness (*b*) hardness
(*c*) resilience (*d*) ductility
(*e*) creep and fatigue properties.

15.471. Most machinable metal is one which
(*a*) produces discontinuous chips
(*b*) permits maximum metal removal per tool grind
(*c*) results in maximum length of shear plane
(*d*) results in minimum value of shear angle
(*e*) all of the above.

15.472. It is possible to correlate tool life with the following property of the metal
(*a*) grain size (*b*) toughness
(*c*) hardness
(*d*) microconstituent
(*e*) alloying elements.

15.473. Sanding is a process of removing metal surfaces or wood fibres by
(*a*) filing (*b*) sawing
(*c*) cutting (*d*) planing
(*e*) none of the above.

15.474. Sanding belts are made of cloth, coated with various grades of
(*a*) sand (*b*) gravel
(*c*) copper oxide
(*d*) aluminium oxide
(*e*) diamond.

15.475. The metal in machining operation is removed by
(*a*) tearing chips
(*b*) distortion of metal
(*c*) shearing the metal across a zone
(*d*) cutting the metal across a zone
(*e*) pushing the metal with tool.

15.476. Average cutting speed in machining cast iron by a single point cutting tool of H.S.S. is
(*a*) 6 m/mt (*b*) 11 m/mt
(*c*) 22 m/mt (*d*) 33 m/mt
(*e*) 44 m/mt.

15.477. Galvanising is
(*a*) a zinc diffusion process
(*b*) an oxidising process used for aluminium and magnesium articles
(*c*) a process used for making thin phosphate coatings on steel to act as a base or primer for enamels and paints
(*d*) is the process of coating of zinc by hot dipping
(*e*) none of the above.

15.478. The C.L.A. value is used for measurement of
(*a*) metal hardness
(*b*) surface roughness
(*c*) surface dimensions
(*d*) sharpness of tool edge
(*e*) machinability.

15.479. The front rake required to machine brass by H.S.S. tool is
(*a*) 15° (*b*) 10°
(*c*) 5° (*d*) 0°
(*e*) – 5°.

15.480. The best all-round coolant for carbide tools is
(*a*) soluble oil in plent
(*b*) kerosene (*c*) turpentine oil
(*d*) compressed air (*e*) soap water.

15.481. Work which cannot be chucked because of its shape can be mounted on the following device for facing operation
(*a*) collet (*b*) vise
(*c*) V-block (*d*) faceplate
(*e*) universal head.

15.482. A left hand tool on lathe cuts most efficiently when tool travels
(*a*) from left to right end of lathe bed
(*b*) from right to left end of lathe bed
(*c*) across bed
(*d*) at angular position
(*e*) for cutting threads.

15.483. A right hand tool on lathe cuts most efficiently when tool travels
(*a*) from left to right end of lathe bed

(*b*) from right to left end of lathe bed
(*c*) across bed
(*d*) at angular position
(*e*) for cutting threads.

15.484. Which one of the lathe parts mentioned below is not provided with a power feed?
(*a*) carriage (*b*) compound rest
(*c*) cross slide (*d*) feed screw
(*e*) lead screw.

15.485. Before hardened steel can cut, it must be
(*a*) annealed (*b*) heat treated
(*c*) forged (*d*) hardened
(*e*) shaped into a cutting edge.

15.486. Anodising is
(*a*) a zinc diffusion process
(*b*) an oxidising process used for aluminium and magnesium articles
(*c*) a process used for making thin phosphate coatings on steel to act as a base or primer for enamels and paints
(*d*) is the process of coating of zinc by hot dipping
(*e*) none of the above.

15.487. Undercutting is the operation of cutting
(*a*) below the specified size
(*b*) a deep groove
(*c*) a spiral
(*d*) a groove next to shoulder
(*e*) with high depth of cut.

15.488. Which of the following taper turning methods can be used only for turning external taper
(*a*) form fool (*b*) tailstock offset
(*c*) taper attachment
(*d*) compound rest
(*e*) all of the above.

15.489. The following gauge is used for checking of holes
(*a*) ring gauge (*b*) snap gauge
(*c*) plug gauge (*d*) dial gauge
(*e*) micrometer screw gauge.

15.490. If a 25° taper is to be cut with small diameter towards tail stock the setting of taper turning attachment would be
(*a*) + 25° (*b*) − 25°
(*c*) − 12.5° (*d*) + 12.5°
(*e*) + 50°.

15.491. Chisels for metal cutting are hardened
(*a*) at tip (*b*) all over
(*c*) at the cutting edge
(*d*) rarely (*e*) at the top.

15.492. The cutting angle of chisel for cutting mild steel is
(*a*) 30° (*b*) 50°
(*c*) 70° (*d*) 90°
(*e*) 110°

15.493. If the diameter of a job being machined on lathe is doubled and speed is halved, the cutting time will be
(*a*) same (*b*) half
(*c*) double (*d*) four time
(*e*) eight times.

15.494. Short or sharp angle tapers are machined using
(*a*) a taper attachment
(*b*) the compound rest
(*c*) the tailstock set over method
(*d*) a form tool ground to the taper angle
(*e*) morse taper attachment.

15.495. The taper on lathe spindle is
(*a*) 1 : 10 (*b*) 1 : 12
(*c*) 1 : 15 (*d*) 1 : 20
(*e*) 1 : 24.

15.496. The angle between the lathe centres is
(*a*) 15° (*b*) 30°
(*c*) 45° (*d*) 60°
(*e*) 90°

15.497. The movement of the various slides as well as the feeding of the stock is entirely automatic on screw machines and is obtained by the action of
(*a*) gear (*b*) collet
(*c*) roller (*d*) spring
(*e*) cam.

15.498. The slowest speed in lathe is adopted for following operation
(*a*) normal turning
(*b*) thread cutting
(*c*) turning big diameter
(*d*) taper turning
(*e*) knurling.

15.499. Square or irregular shaped workpiece for turning is usually mounted in
(*a*) three jaw chuck
(*b*) independent chuck
(*c*) collet chuck (*d*) bar chuck
(*e*) mandrel.

15.500. The lathe spindle at the nose end has
(*a*) internal threads
(*b*) external threads
(*c*) taper threads (*d*) no threads
(*e*) snap threads.

15.501. A device which is fastened to the headstock end of the work to be turned between centres is called a
(*a*) face plate (*b*) lathe dog
(*c*) vise (*d*) work steady
(*e*) independent chuck.

15.502. The included angle of lathe centre is
(*a*) 30° (*b*) 45°
(*c*) 60° (*d*) 90°
(*e*) 120°

15.503. The taper in lathe spindle is
(*a*) 1 : 10 (*b*) 1 : 12
(*c*) 1 : 15 (*d*) 1 : 20
(*e*) 1 : 30.

15.504. Tail stock centres which do not revolve with the workpiece are known as
(*a*) non-revolving centres
(*b*) dead centres
(*c*) live centre
(*d*) independent centres
(*e*) magnetic centres.

15.505. Parkerizing process is
(*a*) a zinc diffusion process
(*b*) an oxidising process used for aluminium and magnesium articles
(*c*) a process used for making thin phosphate coatings on steel to act as a base or primer for enamels and paints
(*d*) the process of coating of zinc by hot dipping
(*e*) none of the above.

15.506. In electro-discharge maching, the tool is made of
(*a*) tungsten carbide
(*b*) properly heat treated alloy steel
(*c*) diamond
(*d*) brass or copper
(*e*) stainless steel.

15.507. Which is false statement about electro-discharge machining
(*a*) it can machine very hard materials
(*b*) very good surface finish is obtained
(*c*) section to be machined should be thick
(*d*) metal removal rate is very slow
(*e*) even heat treated metals can be machined.

15.508. In electro-chemical milling operation, the gap between tool and work is kept of the order of
(*a*) no gap, two are in contact with each other
(*b*) 0.25 mm (*c*) 0.75 mm
(*d*) 1.25 mm (*e*) 5 mm.

15.509. In spark erosion machining process, the gap between tool and workpiece is filled with
(*a*) a photo etchant
(*b*) brine solution
(*c*) acid solution
(*d*) a liquid dielectric
(*e*) an electrolytic sloution.

15.510. In the electro-discharge machining process, the workpiece and the electrode are submerged in
(*a*) a dielectric fluid
(*b*) an abrasive slurry
(*c*) an electrolytic solution
(*d*) vacuum
(*e*) chemical reagents.

15.511. The cutting tool used in the spark erosion machining process is called
(*a*) arc (*b*) capacitor
(*c*) electrode (*d*) dielectric
(*e*) servo.

15.512. The machining process in which the metal of a workpiece is dissolved into an electrolyte solution is called
(*a*) electro-discharge machining
(*b*) ultrasonic machining
(*c*) electro-chemical machining
(*d*) chemical machining
(*e*) laser machining.

15.513. The machining method which uses abrasive slurry is known as
(*a*) electro-discharge machining
(*b*) laser machining
(*c*) plasma arc machining
(*d*) ultrasonic machining
(*e*) chemical machining.

15.514. A big advantage of electro-chemical machining over electro-discharge machining is that

(*a*) it can cut harder materials
(*b*) it is more accurate and precise
(*c*) it consumes less power
(*d*) its cost is low
(*e*) tool wear is negligible.

15.515. The size of abrasive grains in abrasive jet machining varies between
(*a*) 1 to 10 microns
(*b*) 10 to 50 microns
(*c*) 50 to 100 microns
(*d*) 100 to 500 microns
(*e*) 500 to 1000 microns.

15.516. Which is correct statement about electro-chemical grinding operation
(*a*) grinding pressure is high
(*b*) very hard materials can be ground precisely
(*c*) defects like grinding cracks, tempering of work take place
(*d*) dimensional control is little problem
(*e*) none of the above.

15.517. Machining centre is a
(*a*) numerical controlled (NC) machine tool
(*b*) transfer machine tool
(*c*) group of automatic machine tools
(*d*) automatic tool changing unit
(*e*) next logical step beyond NC machine.

15.518. Chemical milling operation is performed
(*a*) on plain milling machine
(*b*) on universal milling machine
(*c*) in a tank having agitator facility
(*d*) on any one of above machines
(*e*) none of the above.

15.519. In the electrolytic grinding process, following type of grinding wheel is generally used
(*a*) aluminium oxide
(*b*) silicon carbide
(*c*) tungsten carbide
(*d*) diamond
(*e*) buffing wheel.

15.520. Chemical reagents and etchants are used in the following machining method
(*a*) electrochemical
(*b*) plasma arc
(*c*) ultrasonic
(*d*) chemical machining
(*e*) laser.

15.521. In spark erosion machining process which is used for diesinking, the usual tool material is
(*a*) high speed steel
(*b*) brass (*c*) tungsten carbide
(*d*) diamond
(*e*) stellite.

15.522. Laser stands for
(*a*) light amplification by stimulated emission of radiation
(*b*) light amplification by strong emission of radiation
(*c*) light amplification by stimulated energy of radiation
(*d*) light amplification by stimulated energy of radiation
(*e*) none of the above.

15.523. Laser beam machining process is used for machining
(*a*) very thick materials
(*b*) thin materials
(*c*) heavy sections
(*d*) is not used for machining
(*e*) there is no such limitation.

15.524. In abrasive jet machining process, the abrasive particles should be
(*a*) perfectly round
(*b*) made of diamond powder
(*c*) around 1 mm in size
(*d*) of irregular shape
(*e*) none of the above.

15.525. Sintered and tungsten carbides can be machined by
(*a*) brazing (*b*) grinding
(*c*) diamond tools (*d*) hot machining
(*e*) electro-machining process.

15.526. The machining rate in ultrasonic machining is high in case of following material
(*a*) hard (*b*) brittle
(*c*) ductile (*d*) malleable
(*e*) elastic.

15.527. Spark erosion machining method can be used for the machining of
(*a*) conducting materials only
(*b*) non-conducting materials only
(*c*) semi-conductors only
(*d*) both conducting and non-conducting materials
(*e*) any metal.

15.528. For machining to take place by spark erosion
(*a*) the tool must be immersed in the dielectric fluid
(*b*) the work must be immersed in the dielectric fluid
(*c*) both tool and work must be immersed in the dielectric fluid
(*d*) no dielectric fluid is to be used
(*e*) none of the above is true.

15.529. In spark erosion machining process, removal of metal takes place during
(*a*) charging of the capacitor
(*b*) discharging of the capacitor
(*c*) all times
(*d*) alternate cycles only
(*e*) none of the above.

15.530. In spark machining, erosion takes place
(*a*) on the job (*b*) on the tool
(*c*) on both job and tool
(*d*) on the dielectric itself
(*e*) neither on tool nor on the job.

15.531. Ultrasonic machining removes material by
(*a*) direct vibration of tool with workpiece
(*b*) using abrasive slurry between tool and work
(*c*) vibrating air in vicinity of tool and workpiece and making no contact
(*d*) all of the above
(*e*) none of the above.

15.532. Electron beam machining process is suitable for the following type of material
(*a*) low melting point and high thermal conductivity
(*b*) low melting point and low thermal conductivity
(*c*) high melting point and high thermal conductivity
(*d*) high melting point and high thermal conductivity
(*e*) all of the above.

15.533. Very hard, fragile and heat sensitive materials can be machined by
(*a*) hot machining
(*b*) explosive forming
(*c*) electrical discharge machining
(*d*) high velocity forming
(*e*) magnetic pulse methods.

15.534. Ultrasonic machining finds application for
(*a*) production of tapped holes and threads in brittle materials
(*b*) die casting
(*c*) machining sintered carbides, diamonds etc.
(*d*) all of the above
(*e*) none of the above.

15.535. Tool in the case of ultrasonic machining is made of
(*a*) HSS (*b*) diamond
(*c*) plain carbon (*d*) stainless steel
(*e*) brass or copper.

15.536. In ultrasonic drilling process, the tool is usually given
(*a*) the rotary motion
(*b*) the reciprocating motion
(*c*) the linear motion
(*d*) both the rotary motion and the reciprocating motion
(*e*) no motion.

15.537. The electrodes used in the electro-chemical machining process must be made of
(*a*) semi-conductor
(*b*) an anodic material
(*c*) a dielectric
(*d*) an insulating material
(*e*) an electrically conducting material.

15.538. Ultrasonic machining method is bed suited for
(*a*) brittle materials
(*b*) stainless steel (*c*) plastics
(*d*) lead (*e*) non-ferrous alloys.

15.539. The following non-conventional method of machining essentially requires electrolyte
(*a*) EDM (*b*) ECM
(*c*) LBM (*d*) UTM
(*e*) IBM.

15.540. A hole of 1 mm is to be drilled in glass. It could best be done by
(*a*) laser drilling
(*b*) plasma arc drilling
(*c*) ultrasonic method
(*d*) electro-chemical discharge method
(*e*) electron beam drilling.

15.541. The machining action in ultrasonic machining method is achieved by

(*a*) impact of tool on workpiece
(*b*) impact of tool on abrasive particles
(*c*) impact of tool on coolant
(*d*) abrasive
(*e*) all of the above.

15.542. For mild steel work-piece and carbide tool, maximum material is removed at temperature of
(*a*) room temperature
(*b*) 100°C (*c*) 280°C
(*d*) 400°C (*e*) 500°C.

15.543. Which is false statement about plasma arc machining
(*a*) it is almost equally effective on any metal irrespective of hardness
(*b*) simple work supports required
(*c*) metal removal rate can be increased by increasing the gas flow rate
(*d*) metal properties remain even without shielding
(*e*) can machine even refractory materials.

15.544. In electro-chemical machining, best surface finish is obtained
(*a*) with low current density
(*b*) with high current density
(*c*) with slow rate of metal removal
(*d*) with high rate of metal removal
(*e*) at all metal removal rates.

15.545. Chemical milling operation is carried out on
(*a*) grinder
(*b*) milling machine
(*c*) tank containing etching solution
(*d*) surface table
(*e*) special machine.

15.546. Following electrolyte is used in electro-chemical machining process
(*a*) brine solution
(*b*) kerosene (*c*) transformer oil
(*d*) water (*e*) air.

15.547. For the machining of tungsten carbide by ultrasonic machining which abrasive is used for maximum machining rate?
(*a*) silicon carbide
(*b*) boron carbide
(*c*) aluminium oxide
(*d*) glass
(*e*) carbon particles.

15.548. Electro-discharge machining uses the following dielectric fluid
(*a*) water
(*b*) acqueous salt solution
(*c*) sodium hydroxide
(*d*) kerosene
(*e*) lard oil.

15.549. Best coolant and lubricant for brass, copper, bronze and monel metal is
(*a*) water, soluble oils or sulphur-based mineral oils
(*b*) mineral and fatty oils
(*c*) soluble oil
(*d*) dry
(*e*) none of the above.

15.550. In ion beam machining process, the metal is removed by
(*a*) sputtering process
(*b*) pulsed magnetic field
(*c*) thermoelectric process
(*d*) all of the above
(*e*) none of the above.

15.551. The type of the chip produced when cutting cast iron is
(*a*) continuous
(*b*) discontinuous
(*c*) with built up edge
(*d*) any one of above depending on other factors
(*e*) none of the above.

15.552. Best coolant and lubricant for steel and wrought iron is
(*a*) water soluble oils or sulphur-based and mineral oils
(*b*) mineral an fatty oils
(*c*) soluble oils
(*d*) dry
(*e*) none of the above.

15.553. Crater wear occurs mainly due to following phenomena
(*a*) abrasion (*b*) diffusion
(*c*) oxidation (*d*) adhesion
(*e*) all of the above.

15.554. Chips with built up edge can be expected when machining
(*a*) hard material (*b*) brittle material
(*c*) tough material
(*d*) ductile material
(*e*) none of the above.

15.555. With H.S.S. tools, highest cutting speed is used while machining
(*a*) cast iron (*b*) mild steel
(*b*) brass (*d*) bronze
(*e*) aluminium.

15.556. In machining, chips break due to
(*a*) plasticity (*b*) ductility
(*c*) toughness (*d*) work hardening
(*e*) tearing of the work material.

15.557. When machining a hard and brittle metal like cast iron, the type of chips produced is
(*a*) continuous chip
(*b*) discontinuous chip
(*c*) continuous chip with built-up edge
(*d*) no chips are produced
(*e*) fine chips.

15.558. The following type of chip is produced when machining ductile materials
(*a*) continuous chip
(*b*) discontinuous chip
(*c*) continuous chip with built-up-edge
(*d*) no chips are produced
(*e*) fine chips.

15.559. The advantage of positive rake angles on cutters is that these
(*a*) use less power
(*b*) have less cutting pressures
(*c*) generate less heat
(*d*) work well on soft and ductile materials
(*e*) all of the above.

15.560. The following cutting fluid is used with carbide tools
(*a*) kerosene oil (*b*) lard oil
(*c*) water (*d*) water with oil
(*e*) no cutting fluid.

15.561. The sector arm in indexing head is so adjusted that the number of holes between the beveled edges is equal to
(*a*) no. of holes to be indexed
(*b*) no. of holes to be indexed + 1
(*c*) no. of holes to be indexed –1
(*d*) no. of holes to be indexed + 2
(*e*) no. of holes to be indexed –2.

15.562. How many degrees of the movement is produced by one complete turn of the index crank
(*a*) 360° (*b*) 90°
(*c*) 45° (*d*) 9°
(*e*) 1°.

15.563. Crater wear takes place in a single point cutting tool at
(*a*) flank (*b*) side rake
(*c*) face (*d*) tip
(*e*) none of the above.

15.564. Best coolant and lubricant for cast iron is
(*a*) water soluble oils or sulphur based and mineral oils
(*b*) mineral and fatty oils
(*c*) soluble oils
(*d*) dry
(*e*) none of the above.

15.565. Which of the following tool materials has highest cutting speed
(*a*) carbon steel (*b*) tool steel
(*c*) HSS (*d*) cast alloy
(*e*) carbide.

15.566. 18-4-1 high speed steel contains following elements in the ratio of 18-4-1
(*a*) tungsten (W), chromium (Cr) and vanadium (V)
(*b*) Cr, V, W (*c*) W, Mn, Cr
(*d*) W, V, Cr (*e*) W, Cr, Mn.

15.567. Approximate content of Vanadium in H.S.S. cutting tool material is
(*a*) 16% (*b*) 4%
(*c*) 0.1% (*d*) 1%
(*e*) 8%.

15.568. Tungsten content in the High Speed Steel cutting tool material is
(*a*) 18% (*b*) 4%
(*c*) 1% (*d*) 0.6%
(*e*) 16%.

15.569. Chromium is H.S.S. cutting tool material is
(*a*) 1% (*b*) 4%
(*c*) 18% (*d*) 0.6%
(*e*) 16%.

15.570. The main function of the cutting fluid is
(*a*) provide lubrication
(*b*) cool the tool and workpiece
(*c*) wash away the chips
(*d*) improve surface finish
(*e*) all of the above.

15.571. Friction between chip and tool can be reduced by

(*a*) increasing rake angle
(*b*) increasing shear angle
(*c*) increasing depth of cut
(*d*) increasing sliding velocity
(*e*) using coolant.

15.572. For the same amount of metal removal, the shear stress induced in orthogonal cutting as compared to oblique cutting is
(*a*) more (*b*) less
(*c*) equal
(*d*) may be more or less depending on speed and cutting conditions
(*e*) there is no such correlation.

15.573. The increase in back rake angle would affect the surface finish as follows
(*a*) improve (*b*) deteriorate
(*c*) unchanged
(*d*) improve/deteriorate depending on material
(*e*) there is no such correlation.

15.574. Which of the following is used as cutting fluid for the turning and milling operation on alloy steels
(*a*) CO_2
(*b*) kerosene
(*c*) soluble oil
(*d*) heavy water
(*e*) sulphurised mineral oil.

15.575. Continuous chips will be formed when machining speed is
(*a*) high (*b*) low
(*c*) medium
(*d*) irrespective of cutting speed
(*e*) away from the design value.

15.576. Which of the following is the chip removal process
(*a*) rolling (*b*) extruding
(*c*) die casting (*d*) broaching
(*e*) forging.

15.577. Ceramic tools are made from
(*a*) tungsten oxide
(*b*) silicon carbide
(*c*) cobalt (*d*) aluminium oxide
(*e*) diamond sand.

15.578. Discontinuous chips will be formed when machining speed is
(*a*) high (*b*) low
(*c*) medium
(*d*) irrespective of cutting speed
(*e*) away from the design value.

15.579. The heat generated in metal cutting can be conveniently determined by
(*a*) installing thermocouple on tool
(*b*) installing thermocouple on job
(*c*) using radiation pyrometer
(*d*) calorimetric set up
(*e*) infra-red techniques.

15.580. Poor surface finish results due to
(*a*) heavy depth of cut
(*b*) low cutting speed
(*c*) high cutting speed
(*d*) coarse feed
(*e*) low side rake angle.

15.581. Large jobs on shaper are held with the help of
(*a*) vise
(*b*) clamps and T-bolts
(*c*) magnetic vise
(*d*) clamps, bolts and squares
(*e*) on floor directly.

15.582. For proper seating of the work in a shaper vise for machining, the work should be supported on :
(*a*) jaws (*b*) clamps
(*c*) shims (*d*) parallels
(*e*) flats.

15.583. Flat thin work is held on planer by
(*a*) C-clamp and angle plate
(*b*) toe dogs and stops
(*c*) clamping stops
(*d*) poppets and toe dogs
(*e*) magnetic vise.

15.584. Cylindrical parts are held on planer by
(*a*) V-blocks and arrestors
(*b*) angle plates
(*c*) V-block, T-bolts and clamps
(*d*) T-bolt and clamps
(*e*) magnetic vise.

15.585. The feeding of the job in a shaper is done by
(*a*) movements of the clapper box
(*b*) table movement
(*c*) V-block
(*d*) ram movement
(*e*) tool movement.

15.586. In the case of a shaping machine, feeding of the job is done

(*a*) at the beginning of the cutting stroke
(*b*) at the middle of the cutting stroke
(*c*) at the end of the cutting stroke
(*d*) at the end of the return stroke
(*e*) any where.

15.587. In the case of a shaper equipped with Whitworth mechanism
(*a*) the cutting stroke is faster than the return stroke
(*b*) the return stroke is faster than the cutting stroke
(*c*) both the cutting stroke and the return stroke take the same time
(*d*) the return stroke is slower than the cutting stroke
(*e*) none of the above.

15.588. The cutting speed of the tool in a mechanical shaper is
(*a*) maximum at the beginning of the cutting stroke
(*b*) maximum at the end of the cutting stroke
(*c*) maximum at the middle of the cutting stroke
(*d*) minimum at the middle of the cutting stroke
(*e*) uniform throughout the cutting stroke.

15.589. Size of shaper is specified by
(*a*) length of stroke
(*b*) size of table
(*c*) maximum size of tool
(*d*) ratio of forward to return stroke
(*e*) h.p. of motor.

15.590. A shaper employs following for quick return motion
(*a*) whitworth mechanism
(*b*) crack and slotted link mechanism
(*c*) hydraulic mechanism
(*d*) any one of the above
(*e*) Leonard mechanism.

15.591. To prolong the life of shaper tools after they are ground, they should be
(*a*) lapped (*b*) sanded
(*c*) stoned (*d*) hardened
(*e*) heat treated.

15.592. Which of the following work holding device is preferred for shaping a key-way in a cylindrical shaft
(*a*) a V-block
(*b*) an angle plate
(*c*) a dividing head
(*d*) a shaper vise
(*e*) any one of the above.

15.593. Which of the following is not the part of a shaper
(*a*) lapper box (*b*) ram
(*c*) table (*d*) tool head
(*e*) cross slide.

15.594. To shape splines in a shaft which must be accurately spaced, the work is mounted in
(*a*) a shaper vise
(*b*) between indexing centres
(*c*) V-blocks
(*d*) a special fixture
(*e*) an independent chuck.

15.595. Which of the following is non-chip removal process
(*a*) spinning on lathe
(*b*) milling
(*c*) thread cutting
(*d*) gear hobbing
(*e*) grinding.

15.596. Size of planer is specified by
(*a*) size of table
(*b*) stroke length
(*c*) size of table and height of cross rail
(*d*) no. of tools which operate at a time
(*e*) h.p. of motor.

15.597. Pick up the incorrect statement about plano-miller
(*a*) feed is given by moving the table
(*b*) in comparison to planning machine the table movement is slower
(*c*) used for production of large surface
(*d*) cutting can be done on three sides of the work at the same time
(*e*) cutting can be done on one side only at a time.

15.598. Too low a feed rate in a milling operation would
(*a*) consume less power
(*b*) improve surface finish
(*c*) cause the cutter to rub and scrap the surface of the work instead of cutting and dull the tool quickly
(*d*) be best suited while milling harder materials

(*e*) be best suited while milling softer materials.

15.599. Feed rate in milling operation is equal to
(*a*) RPM
(*b*) RPM × No. of teeth
(*c*) RPM × Feed per tooth × No. of teeth
(*d*) $\frac{\text{RPM} \times \text{Feed per tooth} \times \text{No. of teeth}}{2}$
(*e*) none of the above.

15.600. Depth of finishing cut on milling machine is of the order of
(*a*) 0.01 to 0.1 mm
(*b*) 0.01 to 0.3 mm
(*c*) 0.4 to 0.8 mm
(*d*) 0.8 to 1.2 mm
(*e*) 1.2 to 2 mm.

15.601. Light duty face mills are used in finishing operations, and compared to heavy duty face mills, these have
(*a*) more no. of teeth
(*b*) less no. of teeth
(*c*) same no. of teeth
(*d*) there is no such criterion
(*e*) none of the above.

15.602. Addition of lead, sulphur and phosphorous to low carbon steels helps in achieving
(*a*) better surface quality
(*b*) reduction of built up edge
(*c*) breaking up of chips
(*d*) all of the above
(*e*) none of the above.

15.603. The difference between planer and shaper is that in former case
(*a*) tool moves over stationary work
(*b*) tool moves over reciprocating work
(*c*) tool can machine internal as well as external details
(*d*) both tool and job reciprocate
(*e*) tool is stationary and job reciprocates.

15.604. The cut per tooth while broaching steel in a key way broach is of the order of
(*a*) 0.01 to 0.05 mm
(*b*) 0.05 to 0.20 mm
(*c*) 0.001 to 0.01 mm
(*d*) 0.02 to 0.08 mm
(*e*) 0.1 to 0.3 mm.

15.605. Internal and external threads can be produced on tapered surfaces conveniently by
(*a*) universal milling machine
(*b*) plano miller
(*c*) planetary milling machine
(*d*) rotary table milling machine
(*e*) lathe.

15.606. Best coolant and lubricant for aluminium is
(*a*) water soluble oils or sulphur based and mineral oils
(*b*) mineral and fatty oils or soluble oils
(*c*) soluble oils
(*d*) dry
(*e*) none of the above.

15.607. Non-ferrous cast tool steel operates best at
(*a*) cold temperatures
(*b*) high temperatures of 500°C
(*c*) temperature has no effect
(*d*) elevated temperatures of 825°C and lose efficiency if operated at cold temperature
(*e*) none of the above.

15.608. Carbide tool bits are ground by following type of grinding wheel
(*a*) aluminium oxide
(*b*) silicon carbide
(*c*) diamond
(*d*) cobalt
(*e*) high speed steel.

15.609. Powder metallurgy techniques are used in the production of
(*a*) high carbon tool steels
(*b*) HSS tools
(*c*) tungsten carbide tools
(*d*) twist drills
(*e*) ceramics.

15.610. Which of the following abrasives is the hardest
(*a*) Al_2O_3 (Aluminium Oxide)
(*b*) Si C (Silicon Carbide)
(*b*) B_4C (Boron Carbide)
(*d*) CBN (Cubic Boron Nitride)
(*e*) diamond.

15.611. The hardness of carbon tool steels is increased when alloyed with
(*a*) tungsten

(*b*) chromium and vanadium
(*c*) silicon (*d*) manganese
(*e*) sulphur.

15.612. High speed steel tool material contains carbon
(*a*) 0.6–1.0% (*b*) 2–4%
(*c*) 4–6% (*d*) 6–10%
(*e*) 10–12%.

15.613. The binding material used in cemented carbide tools is
(*a*) graphite (*b*) lead
(*c*) cobalt (*d*) carbon
(*e*) nickel.

15.614. The cutting speed will be minimum while machining the following material with H.S.S. tool
(*a*) aluminium (*b*) brass
(*c*) copper (*d*) white metal
(*e*) cast iron.

15.615. When the point of a twist drill is sharpened, the lips must be ground so that they have
(*a*) equal dead centre
(*b*) deep flutes
(*c*) wide web
(*d*) proper point
(*e*) equal length and angle.

15.616. The hardest manufactured cutting tool material is
(*a*) diamond (*b*) high speed steel
(*c*) ceramic (*d*) carbon steel
(*e*) cemented carbide.

15.617. The type of chip produced when cutting ductile material is
(*a*) continuous
(*b*) discontinuous
(*c*) with built up edge
(*d*) any one of the above depending on other factors
(*e*) none of the above.

15.618. Depth of cut of finish grinding of steel in surface grinder is of the order of
(*a*) 0.001 to 0.005 mm
(*b*) 0.005 to 0.01 mm
(*c*) 0.01 to 0.5 mm
(*d*) 0.05 to 0.1 mm
(*e*) 0.1 to 0.5 mm.

15.619. The point of a twist drill is thinned in order to
(*a*) decrease the rake angle
(*b*) increase the rake angle
(*c*) reduce the hole diameter
(*d*) reduce the axial feed pressure
(*e*) locate in the centre punch mark.

15.620. For drilling operation, the cylindrical job should always be clamped on a
(*a*) collet (*b*) socket
(*c*) jaw (*d*) vise
(*e*) V-block.

15.621. Drilling is an example of
(*a*) simple cutting
(*b*) uniform cutting
(*c*) orthogonal cutting
(*d*) oblique cutting
(*e*) intermittent cutting.

15.622. The cutting edges of a standard twist drill are called
(*a*) flutes (*b*) lips
(*c*) wedges (*d*) flanks
(*e*) conical points.

15.623. Trepanning is an operation of
(*a*) cutting internal threads
(*b*) producing a hole by removing metal along the circumference of a hollow cutting tool
(*c*) making a cone-shaped enlargement of the end of a hole
(*d*) super finishing
(*e*) coating metal for wear resistance.

15.624. The helical grooves which extend to the full length of the drill body are called
(*a*) lips (*b*) cutting edges
(*c*) margins (*d*) flutes
(*e*) shanks.

15.625. The angle formed by the leading edge of the land with a plane having the axis of the drill is known as
(*a*) helix angle or rake angle
(*b*) point angle (*c*) lip clearance angle
(*d*) chisel edge angle
(*e*) primary angle.

15.626. The number of helical groves which are present in a standard twist drill is usually
(*a*) one (*b*) two
(*c*) three (*d*) four
(*e*) five.

15.627. A standard ground drill has a point angle of

(*a*) 90° (*b*) 100°
(*c*) 118° (*d*) 120°
(*e*) 130°.

15.628. Goose neck tools are preferred on planers and slotters because
(*a*) digging in and scoring of the work is minimum
(*b*) large clearance angles are possible
(*c*) friction between flank and machined surface is less
(*d*) tool is very rigid
(*e*) back rake is appropriate.

15.629. For harder materials, the point angle of drill is
(*a*) increased
(*b*) decreased
(*c*) kept at 118°
(*d*) point angle has nothing to do with type of material
(*e*) none of the above.

15.630. For ferrous materials, the helix angle of drill is taken as
(*a*) 30° (*b*) 45°
(*c*) 60° (*d*) 90°
(*e*) none of the above.

15.631. The commonly used value of feed while machining mild steel on shaper with HSS tool is of the order of
(*a*) 0.1 mm (*b*) 0.5 mm
(*c*) 1.0 mm (*d*) 1.5 mm
(*e*) 3.0 mm.

15.632. The cutting speed of high speed steel twist drill to machine grey cast iron is
(*a*) 10–20 m/mt (*b*) 25–40 m/mt
(*c*) 50–80 m/mt (*d*) 100–160 m/mt
(*e*) 180–240 m/mt.

15.633. Optimum rake angle of a tool is a function of
(*a*) cutting speed
(*b*) cutting tool material
(*c*) properties of work material
(*d*) cutting conditions, *i.e.* dry or lubricant
(*e*) feed and depth of cut.

15.634. The back rake angle of HSS single point cutting tool for machining brass is
(*a*) 10° (*b*) – 5°
(*c*) 0° (*d*) 5°
(*e*) 7°.

15.635. The recommended value of rake angle for machining aluminium with diamond tool is
(*a*) 0° (*b*) 5°
(*c*) 15° (*d*) 25°
(*e*) 35°.

15.636. The angle between the face of tool, and the line tangent to the machined surface at the cutting point is known as
(*a*) rake angle
(*b*) lip angle
(*c*) clearance angle
(*d*) cutting angle
(*e*) nose angle.

15.637. The angle between the tool face and the ground end surface of flank is known a
(*a*) lip angle
(*b*) rake angle
(*c*) clearance angle
(*d*) cutting angle
(*e*) nose angle.

15.638. The recommended value of rake angle for machining aluminium with high speed steel tool is
(*a*) 0° (*b*) 5°
(*c*) 15° (*d*) 25°
(*e*) 35°.

15.639. The angle between the face of the tool and the plane parallel to the base of the cutting tool is called
(*a*) rake angle
(*b*) cutting angle
(*c*) clearance angle
(*d*) lip angle
(*e*) nose angle.

15.640. The recommended value of rake angle for machining aluminium with cemented carbide tool is
(*a*) 0° (*b*) 5°
(*c*) 15° (*d*) 25°
(*e*) 35°.

15.641. The normal back rake angle of carbide single point cutting tool for machining aluminium is of the order of
(*a*) – 5° to 0° (*b*) 0 to 5°
(*c*) 0 to 10° (*d*) 10 to 15°
(*e*) 10 to 20°.

15.642. For softer material, the point angle of drill is

(*a*) increased (*b*) decreased
(*c*) kept at 118°
(*d*) point angle has nothing to do with type of material
(*e*) none of the above.

15.643. The metal cutting wedge is fundamental to the geometry of
(*a*) hand tools
(*b*) power driven tools
(*c*) lathe tools
(*d*) sheet metal cutting tools
(*e*) all of the above.

15.644. The tool life of a single point cutting tool with increase in back rake angle, with other parameters constant, will
(*a*) increase slightly
(*b*) decrease slightly
(*c*) remain unchanged
(*d*) increase tremendously
(*e*) decrease tremendously.

15.645. Tool signature is
(*a*) there is nothing like tool signature
(*b*) a numerical method of identification of tool
(*c*) the plan of tool
(*d*) the complete specification of tool
(*e*) none of the above.

15.646. Tool signatures comprise
(*a*) 4 elements (*b*) 5 elements
(*c*) 6 elements (*d*) 7 elements
(*e*) 8 elements.

15.647. In metal cutting at speed above 20 mpm, maximum heat is carried by
(*a*) work (*b*) tool
(*c*) chip
(*d*) equally by all of the above
(*e*) none of the above.

15.648. The cutting force with increase in nose radius of a single point cutting tool will
(*a*) increase slightly
(*b*) decrease slightly
(*c*) remain unchanged
(*d*) increase considerably
(*e*) decrease considerably.

15.649. The rake angle of a cutting tool
(*a*) determines the profile of tool
(*b*) prevents rubbing
(*c*) decides the type of cutting action
(*d*) controls the chip formation
(*e*) weakens the tool.

15.650. Which of the following is the example of oblique cutting
(*a*) slotting (*b*) broaching
(*c*) knife turning (*d*) all of the above
(*e*) none of the above.

15.651. Side rake angle of a single point tool is the angle
(*a*) by which the face of the tool is inclined sideways
(*b*) by which the face of the tool is inclined towards back
(*c*) between the surface of the flank immediately below the point and a line drawn from the point perpendicular to the base
(*d*) between the surface of the flank immediately below the point and a plane at right angles to the centre line of the point of the tool
(*e*) none of the above.

15.652. The recommended value of rake angle for machining brittle materials like brass is
(*a*) − 15° (*b*) − 5°
(*c*) 0° (*d*) + 10°
(*e*) + 20°.

15.653. In orthogonal cutting system, the cutting edge is
(*a*) in line with direction of tool travel
(*b*) perpendicular to direction of tool travel
(*c*) perpendicular to shear plane
(*d*) perpendicular to direction of depth of cut
(*e*) none of the above.

15.654. Stellite is the trade name for
(*a*) ceramics
(*b*) ferrous cast alloys
(*c*) cemented carbide
(*d*) products manufactured by powder metallurgy techniques
(*e*) non-ferrous cast alloy.

15.655. No cutting fluid is normally used while machining
(*a*) mild steel (*b*) carbon steel
(*c*) stainless steel (*d*) aluminium
(*e*) cast iron.

15.656. Pick up the incorrect statement about ceramic cutting tools

(*a*) it is available in the form of tips
(*b*) it is made by cold pressing techniques
(*c*) it consists of silicon
(*d*) it consists of Al_2O_3
(*e*) it cannot be reground.

15.657. Throw away tips are used because
(*a*) initial cost is low
(*b*) tool changing is easier
(*c*) regrinding is not required
(*d*) all of the above
(*e*) none of the above.

15.658. Back rake angle for HSS single point cutting tool to machine free cutting brass is
(*a*) 0° (*b*) 5°
(*c*) 10° (*d*) 15°
(*e*) – 15°.

15.659. The portion of the tool on which cutting edge is formed is called
(*a*) flank (*b*) side
(*c*) face (*d*) nose
(*e*) shank.

15.660. The angle between the side cutting edge and the end cutting edge is known as
(*a*) nose angle
(*b*) clearance angle
(*c*) side relief angle
(*d*) end cutting edge angle
(*e*) end relief angle.

15.661. Lip angle of a single point tool is of the order of
(*a*) 10–20° (*b*) 30–45°
(*c*) 50–60° (*d*) 60°–80°
(*e*) 80°–100°.

15.662. A reamer is used to correct the
(*a*) size and position of drilled hole
(*b*) size and roundness of hole
(*c*) finish and position of drilled hole
(*d*) finish and size of a drilled hole
(*e*) finish and depth of a drilled hole.

15.663. If 't' is the thickness of underformed chip in mm, "ϕ" is the side cutting edge angle of the single point tool and 's' the feed in mm/rev, then
(*a*) $t = s \sin \phi$ (*b*) $s = t \sin \phi$
(*c*) $s = t \cos \phi$ (*d*) $t = s \tan \phi$
(*e*) $t = s \cos \phi$.

15.664. The binding material used in cemented carbide tools is
(*a*) nickel (*b*) cobalt
(*c*) aluminium (*d*) chromium
(*e*) iron.

15.665. Cemented carbide tools are poor in
(*a*) compression
(*b*) tension
(*c*) shear
(*d*) compression and tension
(*e*) tension and shear.

15.666. Cutting speed in machining with H.S.S. tool will be maximum when machining
(*a*) cast iron (*b*) mild steel
(*c*) aluminium (*d*) wrought iron
(*e*) tough steel.

15.667. Back rake angle of a single point tool is the angle
(*a*) by which the face of the tool is inclined sideways
(*b*) by which the face of the tool is inclined towards back
(*c*) between the surface of the flank immediately below the point and a line drawn from the point perpendicular to the base
(*d*) between the surface of the flank immediately below the point and a plane at right angles to the centre line of the point of the tool
(*e*) none of the above.

15.668. The cutting speed for machining cast iron with a HSS tool is of the order of
(*a*) 30–50 m/mt
(*b*) 60–90 m/mt
(*c*) 100–150 m/mt
(*d*) 160–250 m/mt
(*e*) 250–400 m/mt.

15.669. Which is correct order for machinability of metals
(*a*) magnesium alloys, grey C.I., low carbon steel, monel metal
(*b*) grey cast iron, low carbon steel, magnesium alloys, monel metal
(*c*) magnesium alloys, low carbon steel, grey C.I., monel metal
(*d*) magnesium alloys, grey C.I., monel metal, low carbon steel
(*e*) magnesium alloys, low carbon steel, monel metal, grey C.I.

15.670. The angle measured in the diametral plane between the face of the tooth and a radial

line passing through the tooth cutting edge of a milling cutter is known as
(*a*) rake angle
(*b*) primary clearance angle
(*c*) relief angle
(*d*) lip angle
(*e*) axial rake.

15.671. For particular cutting speed, the tool materials in order of tool life are
(*a*) H.S.S., cemented carbides, ceramics and oxides
(*b*) ceramics and oxides, cemented carbides, H.S.S.
(*c*) H.S.S., ceramics and oxides, cemented carbides
(*d*) cemented carbides, ceramics and oxides, H.S.S.
(*e*) ceramics and oxides H.S.S., cemented carbides.

15.672. Tool cutting forces, with increase in cutting speed
(*a*) more or less remain constant
(*b*) increase linearly
(*c*) decrease linearly
(*d*) unpredictable
(*e*) none of the above.

15.673. The cutting speed for milling cast iron with HSS milling cutter is of the order of
(*a*) 5–10 m/mt
(*b*) 10–16 m/mt
(*b*) 20–30 m/mt
(*d*) 50–100 m/mt
(*e*) 100–250 m/mt.

15.674. End relief angle of a single point tool is the angle
(*a*) by which the face of the tool is inclined sideways
(*b*) by which the face of the face is inclined towards back
(*c*) between the surface of the flank immediately below the point and a line drawn from the point perpendicular to the base
(*d*) between the surface of the flank immediately below the point and a plane at right angles to the centre line of the point of the tool
(*e*) none of the above.

15.675. The strength of a cutting tool depends on following angle
(*a*) lip angle
(*b*) clearance angle
(*c*) rake angle
(*d*) cutting angle
(*e*) all of the above.

15.676. Chips are broken effectively due to following property
(*a*) stress
(*b*) elasticity
(*c*) toughness
(*d*) work hardening of work material
(*e*) ductility.

15.677. A burr is
(*a*) short piece of hardened chip
(*b*) burnt sand
(*c*) rough surface on welded joint adhering to casting
(*d*) sharp edge remaining on metal after cutting, stamping or machining
(*e*) built up edge on a cutting tool.

15.678. Cutting force and power involved in a machine tool can be measured by using
(*a*) pyrometer (*b*) comparator
(*c*) transducer (*d*) dynamometer
(*e*) gyroscope.

15.679. An important parameter of specification of milling machine is
(*a*) size of table (*b*) spindle size
(*c*) arbor size (*d*) horse power
(*e*) table movements.

15.680. A milling machine in which the table can be swivelled and set at any angle to the column face is called a
(*a*) plain knee-and-column type milling machine
(*b*) universal knee-and-column type milling machine
(*c*) bed-type milling machine
(*d*) drum-type milling machine
(*e*) planer-type milling machine.

15.681. The cutting tool in a milling machine is mounted on
(*a*) tool holder (*b*) arbor
(*c*) spindle (*d*) column
(*e*) table.

15.682. The chip space between the back of one tooth and the face of the next tooth in a milling cutter is called
(*a*) fillet (*b*) land

(*c*) radiused edge (*d*) gash
(*e*) tooth space.

15.683. The operation of milling two sides of a workpiece simultaneously is called
(*a*) gang milling (*b*) climb milling
(*c*) square milling (*d*) straddle milling
(*e*) end milling.

15.684. In order to avoid dulling of cutter, climb milling operation should never be used when milling parts made of
(*a*) magnesium (*b*) cast iron
(*c*) mild steels
(*d*) non-ferrous materials
(*e*) stainless steel.

15.685. Standard milling arbor size is
(*a*) 25.4 mm (*b*) 27 mm
(*c*) 32 mm (*d*) 31.75 mm
(*e*) all of above.

15.686. Milling machine is classified as horizontal or vertical type, depending on the position of
(*a*) spindle (*b*) workpiece
(*c*) milling cutter (*d*) work table or bed
(*e*) knee.

15.687. Burnishing is an operation of
(*a*) heat treatment (*b*) deep boring
(*c*) gear finishing (*d*) surface treatment
(*e*) producing gears.

15.688. To obtain fine finish cuts in milling
(*a*) the cutting speed should be decreased and the feed increased
(*b*) the cutting speed should be increased and the feed decreased
(*c*) both the cutting speed and feed should be decreased
(*d*) both the cutting speed and feed should be increased
(*e*) there is no such criterion.

15.689. The arbor of the milling machine is used to hold
(*a*) cutting tool (*b*) spindle
(*c*) over arm (*d*) mandrel
(*e*) workpiece.

15.690. Very thin chips with end mills
(*a*) dull the cutting edge quickly
(*b*) improve tool life
(*c*) sharpen the cutting edge
(*d*) cause chipping of the cutting edge
(*e*) cause tool breakage.

15.691. Plain milling cutters should be
(*a*) smaller than the width of the flat surface to be machined
(*b*) wider than the flat surface to be machined
(*c*) equal to width of flat surface to be machined
(*d*) there is no such criterion
(*e*) none of the above.

15.692. Plain milling cutters, if used to mill steps or grooves, would cause
(*a*) very good surface finish
(*b*) extreme rubbing
(*c*) dulling of the surface
(*d*) excessive power consumption
(*e*) correcting of centring.

15.693. Stagger tooth milling cutters in comparison to straight tooth side mills
(*a*) permit smoother cutting action
(*b*) have alternate helical teeth
(*c*) have more chip clearance
(*d*) permit deeper cuts
(*e*) all of the above.

15.694. A universal dividing head is used to perform a milling operation by
(*a*) plain indexing
(*b*) direct indexing
(*c*) differential indexing
(*d*) compound indexing
(*e*) complex indexing.

15.695. Standard taper generally used on milling machine spindles is
(*a*) Morse (*b*) Brown and Sharpe
(*c*) Chapman (*d*) Seller's
(*e*) Metric.

15.696. For sharpening milling cutters, the width of the land can be reduced by grinding
(*a*) primary clearance angle
(*b*) secondary clearance angle
(*c*) rake angle
(*d*) suitable nose radius
(*e*) back face.

15.697. Dovetail milling cutter falls under the category of
(*a*) a plain milling cutter
(*b*) a side milling cutter
(*c*) an end milling cutter
(*d*) a shaping tool

(*e*) fly cutter.

15.698. A perfect square on the end of a round shaft can be milled by mounting it on
(*a*) a differential (*b*) a compound rest
(*c*) an index plate (*d*) a dividing head
(*e*) universal table.

15.699. In helical milling, the ratio of the circumference of the gear blank to the lead of the helix gives the
(*a*) angle setting of the machine table
(*b*) proper speed to use
(*c*) proper feed and depth of cut required
(*d*) no. of teeth to be cut
(*e*) gear ratio for table screw and dividing head.

15.700. The accurate spacing of teeth in a gear blank requires the use of
(*a*) a dividing head
(*b*) an index plate
(*c*) a gear tooth vernier
(*d*) a differential mechanism
(*e*) universal table.

15.701. Helical gears can be cut on following type of milling machine
(*a*) vertical (*b*) horizontal
(*c*) universal (*d*) drum-type
(*e*) multi spindle.

15.702. Feed rate in milling operation is expressed as
(*a*) mm/tooth
(*b*) mm/r.p.m. of the milling cutter
(*c*) metres/minute
(*d*) revolution per minute
(*e*) mm.

15.703. Milling cutters are mounted on a part called the
(*a*) bracket or brace
(*b*) arbor (*c*) shaft
(*d*) dividing head (*e*) tang.

15.704. The angle between the face of the blade and a line passing through the nose parallel to the milling cutter axis is called
(*a*) axial rake (*b*) radial rake
(*c*) relief angle (*d*) clearance angle
(*e*) lip angle.

15.705. Negative rake is usually provided on
(*a*) H.S.S. tools
(*b*) high carbon steel tools
(*c*) cemented carbide tools
(*d*) all of the above
(*e*) none of the above.

15.706. Side relief angle of a single point tool is the angle
(*a*) by which the face of the tool is inclined sideways
(*b*) by which the face of the tool is inclined towards back
(*c*) between the surface of the flank immediately below the point and a line drawn from the point perpendicular to the base
(*d*) between the surface of the flank immediately below the point and a plane at right angles to the centre line of the point of the tool
(*e*) none of the above.

15.707. A left hand tool on lathe is used for turning in the direction
(*a*) from right to left
(*b*) from left to right
(*c*) across the bed
(*d*) in angular position on compound slide
(*e*) any direction.

15.708. Counterboring is the operation of
(*a*) enlarging the end of a hole cylindrically
(*b*) cone-shaped enlargement of the end of a hole
(*c*) smoothing and squaring the surface around a hole
(*d*) sizing and finishing a hole
(*e*) none of the above.

15.709. Power requirement, with increase in cutting speed
(*a*) more or less remains constant
(*b*) increases linearly
(*c*) decreases linearly
(*d*) unpredictable
(*e*) none of the above.

15.710. It is required to divide a surface into six equal parts using. Brown and Sharpe dividing head. Index handle should be rotated by
(*a*) 6 turns (*b*) $6\frac{2}{3}$ turns
(*c*) 1/6 turns (*d*) $6\frac{1}{3}$ turns

(*e*) none of the above.

15.711. Heavy speed shafts to be turned by carbide tools on centre lathe must be supported in
(*a*) 3-jaw chuck (*b*) 4-jaw chuck
(*c*) live centre (*d*) steady rest
(*e*) collet.

15.712. It is required to index 119 divisions. It can be done by
(*a*) simple indexing
(*b*) direct indexing
(*c*) compound indexing
(*d*) differential indexing
(*e*) any one of the above.

15.713. One of the important parameters of lathe specification is
(*a*) swing over tool bed
(*b*) swing over tool post
(*c*) distance between centres
(*d*) horse power
(*e*) bed length.

15.714. A quill is a
(*a*) tool holding device
(*b*) work clamping device
(*c*) tool used for milling operation
(*d*) device used in heat treatment operation
(*e*) steel tube in the head of some machine tools that enclose the bearings of rotating spindles on which are mounted the cutting tools.

15.715. The different speeds on a lathe are provided in
(*a*) arithmetical progression
(*b*) harmonical progression
(*c*) geometrical progression
(*d*) any one of the above
(*e*) none of the above.

15.716. Centring can be done most accurately on
(*a*) four jaw chuck
(*b*) three jaw chuck
(*c*) collet chuck
(*d*) magnetic chuck
(*e*) all of the above.

15.717. Small sized cylindrical jobs on engine lathe are held in
(*a*) three jaw chuck
(*b*) four jaw chuck
(*c*) lathe dog
(*d*) mandrel
(*e*) collet.

15.718. In gang milling
(*a*) several jobs can be performed in one set up
(*b*) one job is completed on several milling machines located together
(*c*) two or more cutters are mounted on the arbor and all of them remove the metal simultaneously
(*d*) all of the above
(*e*) none of the above.

15.719. Spot facing is the operation of
(*a*) enlarging the end of a hole cylindrically
(*b*) cone-shaped enlargement of the end of a hole
(*c*) smoothing and squaring the surface around a hole
(*d*) sizing and finishing a hole
(*e*) none of the above.

15.720. Trepanning operation is performed for
(*a*) finishing a drilled hole
(*b*) truing a hole for alignment
(*c*) producing large hole
(*d*) sizing a small hole
(*e*) none of the above.

15.721. A T-slot is milled in a
(*a*) single operation
(*b*) two operations
(*c*) three operations
(*d*) four operations
(*e*) none of the above.

15.722. End mills designed for cutting aluminium have
(*a*) fast helix angle
(*b*) highly polished flutes
(*c*) highly polished cutting edges
(*d*) all of the above
(*e*) none of the above.

15.723. The part of the back of tooth adjacent to the cutting edge which is relieved to avoid interference between the surface being machined and the cutter is called
(*a*) land (*b*) fillet
(*c*) face (*d*) cutting edge
(*e*) relief angle.

15.724. The centre of an existing hole is located
(*a*) by hit and trial

(*b*) by calipers
(*c*) using dividing head
(*d*) with a dial indicator mounted in the machine spindle
(*e*) not possible.

15.725. When locating a number of positions on a workpiece, the backlash in the machine screws can be eliminated by
(*a*) backlash device
(*b*) using new screw
(*c*) positioning the workpiece always from the same direction
(*d*) first taking it forward and then backward
(*e*) not possible.

15.726. Drill press size is determined by
(*a*) the largest drill that will fit the machine
(*b*) the largest piece of work that will fit on the drill table
(*c*) the largest diameter work that can be drilled on centre
(*d*) size of table
(*e*) none of the above.

15.727. When a workpiece requires several operations such as drilling, counter-boring, reaming etc., the following machine should be used
(*a*) radial drilling machine
(*b*) multispindle drilling machine
(*c*) hand drilling machine
(*d*) gang-drilling machine
(*e*) none of the above.

15.728. Counter-sinking is the operation of
(*a*) enlarging the end of a hole cylindrically
(*b*) cone-shaped enlargement of the end of a hole
(*c*) smoothing and squaring the surface around a hole
(*d*) sizing and finishing a hole
(*e*) none of the above.

15.729. For fast metal removal rate on lathe, it is recommended to
(*a*) increase speed
(*b*) use hot machining
(*c*) use carbide tool
(*d*) use abundant supply of coolant
(*e*) use roughing cut.

15.730. Segmented chips are formed when machining
(*a*) ductile metal
(*b*) brittle material
(*c*) heat treated material
(*d*) with lot of pressure and heat against the tool
(*e*) none of the above.

15.731. Machinability
(*a*) tends to increase with increase in hardness
(*b*) tends to decrease with increase in hardness
(*c*) remains unaffected with hardness
(*d*) (*b*) is correct in general, but it can be drastically influenced by strain hardening and microstructure
(*e*) none of the above.

15.732. Machinability depends on
(*a*) microstructure, physical and mechanical properties and composition of workpiece material
(*b*) cutting forces
(*c*) type of chip
(*d*) tool life
(*e*) profile of workpiece.

15.733. Machinability tends to decrease with
(*a*) increase in hardness and increase in tensile strength
(*b*) increase in strain hardening tendencies
(*c*) increase in carbon content, hard oxide and carbide
(*d*) decrease in grain-size
(*e*) all of the above.

15.734. Machinability can be calculated and predicted by following factor
(*a*) tensile strength
(*b*) brinell hardness
(*c*) shear angle
(*d*) all of the above
(*e*) none of the above.

15.735. Ideal chip is
(*a*) heavy continuous chip
(*b*) lighter continuous chip
(*c*) tightly curled continuous chip
(*d*) short, broken one in the shape of 'figure 9' chip
(*e*) none of the above.

15.736. Shear angle varies with
(*a*) different materials and with tool geometry
(*b*) cutting speed
(*c*) feed
(*d*) machine used
(*e*) none of the above.

15.737. Continuous chips are formed when machining
(*a*) ductile metal
(*b*) brittle material
(*c*) heat treated material
(*d*) with lot of pressure and heat against the tool
(*e*) none of the above.

15.738. A 5° taper over 5 mm length is to be made on a 100 mm diameter job. Which method should be used ?
(*a*) taper turning attachment
(*b*) tailstock offset method
(*c*) compound rest method
(*d*) form tool method
(*e*) any one of the above.

15.739. Chip breakers are provided on cutting tools
(*a*) for safety of operator
(*b*) to minimise heat generation
(*c*) to permit easy access of coolant at tool point
(*d*) to permit short segmented chips
(*e*) to increase tool life.

15.740. Tool life is said to be over when
(*a*) finish of work becomes too rough
(*b*) chips become blue
(*c*) chattering starts
(*d*) cutter looks dull
(*e*) a certain amount of wear or cratering occurs on the flank.

15.741. In the Taylor equation $VT^n = C$, value of index n is closely related to
(*a*) workpiece material
(*b*) cutting tool material
(*c*) working conditions
(*d*) temperature at chip tool interface
(*e*) none of the above.

15.742. The relationship between the shear angle ϕ, friction angle β and cutting rake angle α, and the machining constant C for the work material is
(*a*) $2\phi + \beta - \alpha = C$
(*b*) $2\alpha + \beta - \phi = C$
(*c*) $2\beta + \alpha - \phi = C$
(*d*) $2\phi + \alpha - \beta = C$
(*e*) $2\phi + \alpha + \beta = C$.

15.743. Wear limit on cutting tool is of the order of
(*a*) 0.2 mm (*b*) 0.8 mm
(*c*) 1.6 mm (*d*) 2.5 mm
(*e*) none of the above.

15.744. With high speed steel tools, the maximum safe operating temperature is of the order of
(*a*) 200°C (*b*) 540°C
(*c*) 760°C (*d*) 870°C
(*e*) 1100°C.

15.745. To remove maximum material per minute with the same tool life
(*a*) increase depth of cut
(*b*) increase feed rate
(*c*) decrease cutting speed
(*d*) increase cutting speed
(*e*) all of the above.

15.746. The included angle between the land and the face of the tooth is called
(*a*) rake angle
(*b*) lip angle
(*c*) relief angle
(*d*) primary clearance angle
(*e*) axial rake.

15.747. A cutting tool having tool signature as 10, 10, 6, 6, 8, 8, 2 will have back angle as
(*a*) 10° (*b*) 6°
(*c*) 8° (*d*) 2°
(*e*) none of the above.

15.748. The last element in the tool signature is
(*a*) back rake angle
(*b*) side rake angle
(*c*) nose radius
(*d*) end cutting edge angle
(*e*) side-relief angle.

15.749. As cutting speed increases, the built up edge
(*a*) becomes smaller and finally does not form at all
(*b*) becomes bigger
(*c*) has nothing to do with speed
(*d*) may or may not form depending on other conditions.

(*e*) none of the above.

15.750. Carbide tools wear out faster at
(*a*) slow speeds
(*b*) medium speeds
(*c*) fast speeds
(*d*) very fast speeds
(*e*) speed is no criterion for wear.

15.751. Which of the following tools are harder and more wear resistant than tungsten carbide but are weaker in tension
(*a*) low carbon steel tools
(*b*) high carbon steel tools
(*c*) H.S.S. tools
(*d*) ceramic tools
(*e*) none of the above.

15.752. Ceramic tips are prepared from
(*a*) tungsten powder
(*b*) carbon powder
(*c*) aluminium oxide powder
(*d*) silicon carbide powder
(*e*) H.S.S. powder.

15.753. Which of the following are cast alloys containing tungsten and chromium carbides in a matrix of cobalt and chromium
(*a*) mechanites (*b*) tungsten carbides
(*c*) bakelites (*d*) stellites
(*e*) ceramics.

15.754. Carbide tips are fixed to the shanks of cutting tools by
(*a*) forging (*b*) sintering
(*c*) welding (*d*) soldering
(*e*) brazing.

15.755. The most wear-resistant grade of carbide used for cutting tools is the straight
(*a*) iron carbide
(*b*) calcium carbide
(*c*) tungsten carbide
(*d*) nickel carbide
(*e*) aluminium carbide.

15.756. With increase in cutting speed, the finish
(*a*) improves considerably
(*b*) improves slightly
(*c*) remains same
(*d*) gets poor
(*e*) gets poor or improves depending on work material.

15.757. When turning a long shaft on a lathe, its bending can be prevented by
(*a*) running the shaft at low speed
(*b*) using low feed
(*c*) using low depth of cut
(*d*) using sturdy machine
(*e*) using steady rest.

15.758. In oblique cutting system, the chip thickness is
(*a*) maximum at middle
(*b*) maximum at sides
(*c*) minimum at middle
(*d*) uniform throughout
(*e*) none of the above.

15.759. Finish is more affected by
(*a*) cutting speed
(*b*) depth of cut
(*c*) feed-rate
(*d*) lubricant
(*e*) none of the above.

15.760. Best method of increasing the rate of removing metal is
(*a*) increase speed
(*b*) increase feed-rate
(*c*) increase depth of cut
(*d*) increase nose radius
(*e*) supply more quantity of lubricant.

15.761. The width of tape by which numerical control machines are controlled is
(*a*) 10 mm (*b*) 20 mm
(*c*) 25 mm (*d*) 50 mm
(*e*) 100 mm.

15.762. Number of tracks on tape as per EIA standard are
(*a*) 4 (*b*) 6
(*c*) 8 (*d*) 10
(*e*) 12.

15.763. Photo-electric tape readers are capable of reading upto
(*a*) 10 rows/sec on tape
(*b*) 100 rows/sec on tape
(*c*) 300 rows/sec on tape
(*d*) 3000 rows/sec on tape
(*e*) none of the above.

15.764. A 'block' of information means
(*a*) one row on tape
(*b*) a word, comprising several rows on tape
(*c*) initial portion of tape
(*d*) complete instruction
(*e*) complete programming for a job.

15.765. Cemented carbide tools wear faster at
(*a*) high speed
(*b*) very high speed
(*c*) medium speed
(*d*) very low speed
(*e*) none of the above.

15.766. The machining operation of cutting a key-way inside a drilled hole is known as
(*a*) reaming (*b*) broaching
(*c*) boring (*d*) tapping
(*e*) counter sinking.

15.767. The process of trimming is associated with
(*a*) forging (*b*) electroplating
(*c*) machining (*d*) polishing
(*e*) press work.

15.768. The numerical control system which is applicable to a milling machine is called the
(*a*) point-to-point system
(*b*) continuous path system
(*c*) zig-zag machining system
(*d*) straight cut-system
(*e*) contouring system.

15.769. The broaching operation in which the work moves past the stationary tool is called
(*a*) pull broaching
(*b*) push broaching
(*c*) surface broaching
(*d*) continuous broaching
(*e*) full broaching.

15.770. The point-to-point system of numerical control can be applied only to the conventional
(*a*) drilling machine or jig boring operations
(*b*) milling operations
(*c*) shaper operations
(*d*) lathes
(*e*) grinder.

15.771. The following machine should be specified when complex parts in short run quantities with variation have to be produced
(*a*) copying
(*b*) NC machine
(*c*) transfer machine
(*d*) electro-chemical milling machine
(*e*) non-conventional machines.

15.772. TAB code is used
(*a*) to leave space between words
(*b*) at the end of a block
(*c*) to align the information properly on the type written copy
(*d*) for staring fresh instruction
(*e*) any one of the above.

15.773. Relief or clearance angles on H.S.S. tools usually vary from
(*a*) 0 to 30° (*b*) 3 to 10°
(*c*) 10 to 15° (*d*) 15 to 20°
(*e*) 20 to 30°.

15.774. The purpose of providing relief or clearance angles on tools is to
(*a*) permit chip formation
(*b*) facilitate easy flow of chips
(*c*) strain harden the material
(*d*) strengthen the tool
(*e*) prevent tool from rubbing on the work.

15.775. High speed steel tools compared to carbon steel tools operate at
(*a*) same speed
(*b*) 2-3 times higher speed
(*c*) 2-3 times lower speed
(*d*) 3-5 times higher speed
(*e*) 5-8 times higher speed.

15.776. The cutting speed of H.S.S. milling cutter to machine aluminium is
(*a*) 25–40 m/mt
(*b*) 50–80 m/mt
(*c*) 100–160 m/mt
(*d*) 180–240 m/mt
(*e*) 240–400 m/mt.

15.777. In starddle milling, following number of side milling cutters are mounted on the arbor
(*a*) 1 (*b*) 2
(c) 3 (*d*) 4
(*e*) none of the above.

15.778. The following cutting fluid is used when milling with carbide tipped milling cutter
(*a*) kerosene (*b*) lard oil
(*c*) water (*d*) CO_2
(*e*) dry.

15.779. Which of the following is not a multi-point cutting tool
(*a*) drill (*b*) reamer
(*c*) milling cutter (*d*) parting tool

(e) grinding wheel.

15.780. The included angle of taper in collet is usually
(a) 1–2° (b) 5–10°
(c) 30° (d) 45°
(e) 60°.

15.781. Which of the following machines utilise fly cutter ?
(a) lathe (b) planer
(c) shaper (d) broaching
(e) milling machine.

15.782. The positive radial rake angle in most of the high speed milling cutters is
(a) – 5 to 0° (b) 0 – 5°
(c) 5 – 10° (d) 10 – 15°
(e) 15 – to 25°.

15.783. Pick up the correct statement for milling
(a) cutter is rotated in the opposite direction of travel of job
(b) thickness of chip is maximum at the beginning of cut
(c) cutting force is directed downwards
(d) coolant can be easily poured on the cutting edge
(e) all of the above.

15.784. A right hand tool is one which is used to
(a) start a cut from tailstock and cut toward the headstock
(b) start a cut from head stock and cut toward the tailstock
(c) start facing at the centre and cut outward
(d) (a) and (c) above
(e) (b) and (c) above.

15.785. For turning mild steel, tvpe of tool used is
(a) left hand type
(b) right hand type
(c) any one of the two
(d) depends on cutting angles and tool material
(e) none of the above.

15.786. Negative rakes are used for
(a) heavy loads (b) harder materials
(c) carbide tools (d) all of the above
(e) none of the above.

15.787. The helix angle of the teeth of a heavy duty plain milling cutter is of the order of
(a) – 15° to 0° (b) 0° to 5°
(c) 10° to 20° (d) 25° to 45°
(e) 45° to 60°

15.788. Purpose of side rake is to
(a) avoid work from rubbing against tool
(b) control chip flow
(c) strengthen tool edge
(d) break chips
(e) shear off the metal.

15.789. Relief angles on carbide tips are usually provided between
(a) 3 – 5° (b) 5 – 8°
(c) 3 – 12° (d) 12 – 15°
(e) 15 – 20°.

15.790. A grinding wheel gets glazed (shining cutting edges) due to
(a) wear of abrasive grains
(b) breaking up of abrasive grains
(c) wear of bond
(d) cracks of grinding wheel
(e) embedding of fine chips and metal powder on wheel.

15.791. In grinding operation, for grinding softer materials
(a) coarser grain size is used
(b) fine grain size is used
(c) medium grain size is used
(d) any grain size may be used
(e) none of the above.

15.792. Maximum cutting angles are used for machining
(a) mild steel
(b) cast iron
(c) free machining steels
(d) nickel alloy
(e) aluminium alloys.

15.793. A work on the milling machine can be indexed by
(a) universal milling attachment
(b) chasing dial
(c) dividing head attachment
(d) manipulating vertical and horizontal movements
(e) rotary tables.

15.794. In tool signature, nose radius is indicated
(a) in the beginning
(b) at the end
(c) in the middle
(d) not indicated
(e) none of the above.

15.795. Reaming is the operation of
(*a*) enlarging the end of a hole cylindrically
(*b*) cone shaped enlargement of the end of a hole
(*c*) smoothing and squaring the surface around a hole
(*d*) sizing and finishing a hole
(*e*) none of the above.

15.796. Which of the following is fastest method of cutting gears
(*a*) milling (*b*) gear shaping
(*c*) gear hobbing (*d*) gear burnishing
(*e*) all of the above.

15.797. Hard ferrous metals like steel and cast iron are cut with following medium size grit cut off wheels
(*a*) Al_2O_3 (*b*) SiC
(*c*) diamond grit (*d*) garnet
(*e*) boron carbide.

15.798. In grinding operation, for grinding harder material
(*a*) coarser grain size is used
(*b*) fine grain size is used
(*c*) medium grain size is used
(*d*) any grain size may be used
(*e*) none of the above.

15.799. Which of the following abrasives will be selected for grinding tool steel and high speed steel
(*a*) diamond (*b*) Al_2O_3
(*c*) SiC (*d*) boron carbide
(*e*) none of the above.

15.800. Which abrasive particle would you choose for grinding bronze valve bodies
(*a*) silicon carbide
(*b*) aluminium oxide
(*c*) diamond (*d*) cubic boron nitride
(*e*) none of the above.

15.801. Which abrasive particle would you choose for grinding high speed steel tools
(*a*) silicon carbide
(*b*) aluminium oxide
(*c*) diamond
(*d*) cubic boron nitride
(*e*) none of the above.

15.802. For grinding operation in which heat generation must be kept minimum, the following bond of wheel must be used
(*a*) resinoid rubber
(*b*) silicate
(*c*) vitrified
(*d*) shellac
(*e*) any one of the above.

15.803. Holes in parts which have been hardened by heat treatment can be finished to accurate size only by
(*a*) drilling
(*b*) boring
(*c*) internal grinding
(*d*) reaming
(*e*) any one of the above.

15.804. Which of the following is an example of snag grinding
(*a*) removing excess metal on weld
(*b*) grinding a parting line left on casting
(*c*) trimming the surface left by sprues and risers
(*d*) removing flash from forgings
(*e*) all of the above.

15.805. The grit size of the abrasives used in the grinding wheel is usually specified by the
(*a*) hardness number
(*b*) size of the wheel
(*c*) softness or hardness of the abrasive
(*d*) mesh number
(*e*) refractive index.

15.806. A grinding wheel gets glazed due to
(*a*) wear of abrasive grains
(*b*) wear of bond
(*c*) breaking of abrasives
(*d*) cracks in wheel
(*e*) sharpening of wheel.

15.807. In grinding practice, the term "hardness of the wheel" or "grade of the wheel" refers to
(*a*) hardness of the abrasives used
(*b*) strength of the bond of the wheel
(*c*) finish of the wheel
(*d*) hardness of the workpiece
(*e*) type of abrasive used.

15.808. Which abrasive particle would you choose for grinding tungsten carbide tool inserts
(*a*) silicon carbide
(*b*) aluminium oxide
(*c*) diamond
(*d*) cubic boron carbide

(*e*) none of the above.

15.809. Which of the following is the natural abrasive
(*a*) Al_2O_3 (*b*) SiC
(*c*) borron-carbide (*d*) corundum
(*e*) borolon.

15.810. Which of the following is the manufactured abrasive
(*a*) corundum (*b*) quartz
(*c*) emery (*d*) SiC
(*e*) diamond.

15.811. Which abrasive particle would you choose for grinding steel fittings
(*a*) silicon carbide
(*b*) aluminium oxide
(*c*) diamond
(*d*) cubic boron nitride
(*e*) any one of the above

15.812. Which bond is used in cut off wheels
(*a*) rubber (*b*) vitrified
(*c*) resinoid (*d*) shellac
(*e*) any one of the above.

15.813. Which of the following abrasives will be used for grinding ceramics
(*a*) diamond (*b*) Al_2O_3
(*c*) SiC (*d*) boron carbide
(*e*) none of the above.

15.814. Pick up the incorrect statement about grinding
(*a*) for cutting soft material, hard wheel is used
(*b*) for cutting hard material, hard wheel is used
(*c*) for grinding soft material, dry condition is required
(*d*) for grinding hard material, wet condition is required
(*e*) slower wheel speeds cause the wheel to act as if it were harder.

15.815. Grinding wheel is flooded with coolant in
(*a*) remove chips
(*b*) remove heat
(*c*) clean the wheel
(*d*) clean the job
(*e*) clean the machine.

15.816. Hardness of grinding wheel is determined by
(*a*) the resistance exerted by the bond against grinding stress
(*b*) hardness of abrasive grains
(*c*) hardness of bond
(*d*) its ability to penetration
(*e*) its ability to work without scratches.

15.817. The process of improving cutting action of grinding wheel is called
(*a*) dressing operation
(*b*) turning operation
(*c*) cutting operation
(*d*) facing operation
(*e*) clearing operation.

15.818. In cylindrical grinding operations, the work compared to grinding wheel is always rotated
(*a*) at a much slower speed
(*b*) at a much faster speed
(*c*) at the same speed
(*d*) at 100 rpm more
(*e*) there is no such correlationship.

15.819. Pick up the wrong statement
(*a*) for grinding hard as well as brittle materials, fine grained grinding wheel is used
(*b*) for grinding metal at fast rate, coarse grained wheel is used
(*c*) for grinding hard materials, soft grade is used and viceversa
(*d*) for grinding soft material, fine grain is used
(*e*) for grinding soft and ductile materials, coarse grained wheel is used.

15.820. A slight taper on the full length of a long shaft mounted between centres on a universal cylindrical grinder, can be ground by
(*a*) off setting the tail stock
(*b*) swivelling the table on its base
(*c*) swivelling the wheel head
(*d*) swivelling the workpiece
(*e*) taper turning attachment.

15.821. What kind of abrasive cut-off wheel should be used to cut concrete, stone and masonry ?
(*a*) SiC (*b*) Al_2O_3
(*c*) diamond grit (*d*) garnet
(*e*) glass.

15.822. Aluminium oxide wheel would be selected for grinding
(*a*) cast iron
(*b*) cemented carbide
(*c*) ceramic materials
(*d*) HSS
(*e*) all of the above.

15.823. The grit, grade and structure of grinding wheels for specific operations are based on
(*a*) grinder clearance
(*b*) spindle size of the grinder
(*c*) diameter of wheel
(*d*) speed at which the wheel is to be used
(*e*) thickness of wheel.

15.824. When it is required to run a grinding wheel safely at very high speed, following bond should be used
(*a*) vitrified
(*b*) shellac
(*c*) silicate
(*d*) resinoid and rubber
(*e*) any one of the above.

15.825. In grinding operation, for grinding softer material
(*a*) softer grade is used
(*b*) high grade is used
(*c*) medium grade is used
(*d*) any grade may be used
(*e*) none of the above.

15.826. Crack is developed in grinding wheel due to
(*a*) generation of heat
(*b*) high speed
(*c*) slower speed
(*d*) hard work
(*e*) none of the above.

15.827. The face of the wet type grinder is crowned slightly to minimise the amount of contact between the wheel and the work. This reduces the possibility of the carbide tip
(*a*) being damaged or destroyed by excessive heat
(*b*) being ground away too rapidly
(*c*) damaging the wheel by causing it to wear rapidly
(*d*) all of the above
(*e*) none of the above.

15.828. In grinding operation, for grinding harder material
(*a*) softer grade is used
(*b*) high grade is used
(*c*) medium grade is used
(*d*) any grade may be used
(*e*) none of the above.

15.829. The following material is used for diamond lapping
(*a*) HSS (*b*) copper
(*c*) aluminium oxide
(*d*) high carbon steel
(*e*) none of the above.

15.830. A dense structure in grinding wheel is used for
(*a*) heavy cuts
(*b*) ductile material
(*c*) elastic material
(*d*) hard material
(*e*) finishing cuts.

15.831. Pick up the incorrect statement about Al_2O_3 grinding wheel
(*a*) it is less tough than SiC
(*b*) it is suitable for high tensile strength material
(*c*) it is used for grinding hardened steel, hard bronze, steel billets etc.
(*d*) it is less hard than SiC
(*e*) it is more shock resistant.

15.832. Ball grinding compared to cylindrical and flat grinding requires
(*a*) harder wheel
(*b*) softer wheel
(*c*) medium wheel
(*d*) harder/softer wheel depending on material
(*e*) softest wheel.

15.833. Hard materials require
(*a*) fine grit sizes and hard grades
(*b*) coarse grit sizes and hard grades
(*c*) coarse grit sizes and soft grades
(*d*) fine grit sizes and soft grades
(*e*) none of the above.

15.834. Soft ductile materials require
(*a*) fine grit sizes and hard grades
(*b*) coarse grit sizes and hard grades
(*c*) coarse grit sizes and soft grades
(*d*) fine grit sizes and soft grades
(*e*) none of the above.

15.835. When the grains of a grinding wheel become dulled, then it needs to be
(*a*) replaced (*b*) trued
(*c*) dressed (*d*) treated
(*e*) reground.

15.836. The hardness of a grinding wheel is specified by
(*a*) BHN
(*b*) Rockwell hardness number
(*c*) LPN
(*d*) search test
(*e*) letter of alphabet.

15.837. Honing operation produces normal quality of finish of the order of
(*a*) 0.01 to 0.08 μm CLA value
(*b*) 0.08 to 0.2 μm CLA value
(*c*) 0.2 to 0.4 μm CLA value
(*d*) 0.4 to 0.8 μm CLA value
(*e*) 0.8 to 1.5 μm CLA value.

15.838. A 5 mm thick shoulder on a 100 mm diameter shaft will be ground by the following operation
(*a*) cylindrical grinding
(*b*) centreless grinding
(*c*) plunge grinding
(*d*) surface grinding
(*e*) diamond dressing.

15.839. When the area of contact between wheel and work is small, then following grade should be used for grinding wheel
(*a*) harder (*b*) hardest
(*c*) medium (*d*) softer
(*e*) softest.

15.840. The standard marking system for grinding wheels has following number of symbols
(*a*) 1 (*b*) 2
(*c*) 3 (*d*) 4
(*e*) 5

15.841. A grinding wheel is balanced as follows so that it will not vibrate
(*a*) putting balancing weights on the wheel
(*b*) enlarging the spindle hole
(*c*) using wheel dampers
(*d*) dressing the wheel with dressing tool
(*e*) none of the above.

15.842. The operation of sharpening a grinding wheel is called
(*a*) trueing (*b*) dressing
(*c*) aligning (*d*) balancing
(*e*) bonding.

15.843. The most popular chuck used on surface grinders is
(*a*) pneumatic chuck
(*b*) hydraulic chuck
(*c*) three-jaw chuck
(*d*) magnetic chuck
(*e*) independent chuck.

15.844. An open structure of a grinding wheel is used for
(*a*) tough materials
(*b*) ductile materials
(*c*) heavy cuts
(*d*) soft materials
(*e*) all of the above.

15.845. Dressing of grinding wheels to restore sharpness is done by
(*a*) pumice stone dresser
(*b*) tool steel dresser
(*c*) diamond dresser
(*d*) sharp edged H.S.S. cutter
(*e*) solid carbon steel bar.

15.846. In a hard grade grinding wheel, the abrasives
(*a*) are hard
(*b*) have dense structure
(*c*) get lodged off easily
(*d*) are of fine grain
(*e*) are held more securely.

15.847. When grinding wheels become loaded or glazed, they must be
(*a*) balanced properly
(*b*) aligned accurately
(*c*) trued
(*d*) dressed
(*e*) discarded.

15.848. For grinding high tensile strength materials, following abrasive is recommended
(*a*) Al_2O_3 (*b*) SiC
(*c*) diamond (*d*) corundum
(*e*) boron carbide.

15.849. A centre type cylindrical grinder that permits swivelling the wheel head and head stock at an angle to the table ways is called a
(*a*) tool and cutter grinder
(*b*) surface grinder

(c) internal grinding machine
(d) bench grinder
(e) universal grinder.

15.850. The first symbol in a grinding wheel code is the
(a) bond type (b) abrasive type
(c) grain size (d) structure
(e) bond grade.

15.851. In grinding operation, for faster removal of material
(a) fine grain size is used
(b) medium grain size is used
(c) coarse grain size is used
(d) any grain size may be used
(e) none of the above.

15.852. A grinding wheel is completely specified by the following elements taken in order
(a) type of abrasive, grain size, grade, structure, bond
(b) grain size, grade, structure, type of abrasive, bond
(c) structure, bond, grain size, type of abrasive, grade
(d) bond, structure, grain size, type of abrasive, grade, bond
(e) none of the above.

15.853. Which of the following parts of a universal grinding machine can be swivelled with respect to table travel
(a) grinding wheel
(b) table
(c) headstock
(d) table slide
(e) all of the above.

15.854. Tolerances are specified
(a) to obtain desired fits
(b) because it is not possible to manufacture a size exactly
(c) to obtain higher accuracy
(d) to have proper allowances
(e) to have proper inspection.

15.855. Drilling is an example of
(a) simple cutting
(b) uniform cutting
(d) orthogonal cutting
(e) oblique cutting
(e) complex cutting.

15.856. In a cutting operation, the largest force is
(a) axial or longitudinal force
(b) tangential force
(c) radial force
(d) along shear plane
(e) (a) and (b) above.

15.857. When radial force in cutting operation is too large, it will cause
(a) best finish
(b) chatter and poor finish
(c) finish has nothing to do with radial force
(d) shorten tool life
(e) all of the above.

15.858. The cutting force is affected by
(a) feed, speed and depth of cut
(b) cutting tool angle
(c) material hardness
(d) type of lubricant
(e) (a) and (c) above.

15.859. Titanium carbide coated tools
(a) require frequent regrindings
(b) require a few regrindings
(c) require regrinding according to equipment
(d) require no regrinding
(e) none of the above.

15.860. Tolerances on commonly used twist drill diameters are held quite close, averaging
(a) + 0.02 mm. – 0.02 mm
(b) + 0, – 0.02 mm
(c) 0.0 mm, – 0 mm
(d) + 0.002 m, – 0.002 mm
(e) + 0, – 0.2 mm.

15.861. Drill diameter is measured over the
(a) main body
(b) plain shank portion
(c) margins at the drill point
(d) heel (e) lips.

15.862. Point angle of 90° on drills is used for
(a) all general applications on mild stee
(b) bakelite, hard rubber and fibrous plastics
(c) hard steels and nickel alloys
(d) thin sheet metal
(e) there is no such criterion.

15.863. An oversize hole will be produced in drilling, if
(a) feed rate is very high
(b) cutting speed is too low
(c) lips of drill are of unequal length

(*d*) unsufficient coolant is used
(*e*) drill is not properly fixed.

15.864. The most widely used material for drills, taps and reamers is
(*a*) low alloy carbon steel
(*b*) high speed steel
(*c*) carbon steel
(*d*) cemented carbide
(*e*) ceramic.

15.865. Choose the correct statement
A twist drill produces a hole of
(*a*) fine finish (*b*) accurate size
(*c*) exactly round (*d*) exactly positioned
(*e*) none of the above.

15.866. The most suitable machine for drilling holes in rifle barrels is
(*a*) ultrasonic machining
(*b*) laser machining
(*c*) radial drilling machine
(*d*) deep hole drilling machine
(*e*) plasma arc drilling.

15.867. Time taken to drill a hole through a 25 mm thick plate at 300 r.p.m. at a feed rate of 0.25 mm/revolution will be
(*a*) 10 sec (*b*) 20 sec
(*c*) 25 sec (*d*) 40 sec
(*e*) 50 sec.

15.868. A twist drill is specified by
(*a*) an alphabet specifying hole size
(*b*) A number specifying hole size
(*c*) the size of hole it can drill
(*d*) any one of the above
(*e*) none of the above.

15.869. The metal is removed in drilling operation by
(*a*) work hardening of metal
(*b*) compression
(*c*) shearing
(*d*) extrusion
(*e*) shearing and extrusion.

15.870. The optimum lip angle of the twist drill for the work material of mild steel should be
(*a*) 108° (*b*) 110°
(*c*) 118° (*d*) 120°
(*e*) 181°.

15.871. A twist drill is specified by its shank, material and
(*a*) lip angle
(*b*) diameter
(*c*) length of body
(*d*) size of flute
(*e*) all of the above.

15.872. The best way to check the sharpness of a drill of tungsten carbide-tipped bit is to
(*a*) inspect it physically
(*b*) test hardness
(*c*) drill a test hole
(*d*) judge its finish
(*e*) rub it against a known surface.

15.873. Quill in connection with drilling machine refers to
(*a*) drill holding mechanism
(*b*) rack
(*c*) keyway
(*d*) pinion
(*e*) none of the above.

15.874. The helix angle on a HSS twist drill for drilling cast iron is of the order of
(*a*) 14 – 22° (*b*) 24 – 32°
(*c*) 35 – 40° (*d*) 40 – 45°
(*e*) 45 – 55°.

15.875. Twist fluted drills are preferred because
(*a*) it cuts holes efficiently
(*b*) it is a light weight tool
(*c*) cutting lip is supported rigidly
(*d*) it moves swiftly in the metal
(*e*) chips move out automatically.

15.876. A portable drilling machine is specified by
(*a*) the size of the job it can hold
(*b*) maximum diameter of drill it can hold
(*c*) spindle speeds and feeds
(*d*) maximum spindle travel
(*e*) size of the table.

15.877. The important purpose of flutes in a drill is that they enable the
(*a*) cutting fluid to enter the working zone
(*b*) chips to come out
(*c*) strength of the drill at the cutting point
(*d*) weight of the drill to be reduced
(*e*) cutting edges to be formed.

15.878. The usual value of helix angle of a drill is
(*a*) 10° (*b*) 20°
(*c*) 30° (*d*) 60°

(*e*) 118°

15.879. The point angles and clearance angles of drills depend on
(*a*) drill diameter
(*b*) material to be drilled
(*c*) r.p.m. of the drill
(*d*) depth of the hole to be drilled
(*e*) type of lubricant used.

15.880. The rake angle of a single point cutting tool corresponds to following angle of a twist drill
(*a*) point angle
(*b*) helix angle
(*c*) lip diameter angle
(*d*) chisel edge angle
(*e*) primary angle.

15.881. A twist drill is specified by
(*a*) its diameter and lip angle
(*b*) its material and shank
(*c*) it shank and diameter
(*d*) shank, material and flute size
(*e*) shank, material and diameter.

15.882. All straight-shanked drills used in drill press work must be held in the
(*a*) spindle of the drill press
(*b*) key type drill chuck
(*c*) tapers sleeve
(*d*) vise
(*e*) universal head.

15.883. Point angle of 118° on drills is used for
(*a*) all general applications on mild steel
(*b*) bakelite, hard rubber and fibrous plastics
(*c*) hard steel and nickel alloys
(*d*) thin steel metal
(*e*) there is no such criterion.

15.884. Cutting fluid in drilling operation is used to
(*a*) cool the drill
(*b*) cool the work
(*c*) aid in rapid removal of chips
(*d*) improve the finish of the drilled hole
(*e*) all of the above.

15.885. The work is usually rotated while the drill is fed into the work in
(*a*) hand drilling machine
(*b*) radial drilling machine
(*c*) deep hole drilling machine
(*d*) multiple spindle drilling machine
(*e*) none of the above.

15.886. Point angle of 135° on drills is used for
(*a*) all applications on M.S.
(*b*) bakelite, hard rubbers and fibrous plastics
(*c*) hard steels and nickel alloys
(*d*) thin sheet metal
(*e*) (*c*) and (*d*) above.

15.887. For drilling aluminium, a drill with
(*a*) high helix angle is required
(*b*) low helix angle is required
(*c*) any helix angle can be used
(*d*) zero helix angle is required
(*e*) none of the above.

15.888. For drilling glass, slate, ceramic and masonry, following drill is used
(*a*) twist drill
(*b*) spade bit
(*c*) tungsten carbide-tipped bit
(*d*) auger
(*e*) hardened steel drill.

15.889. When the lip clearance of a drill is too small, *i.e.* when it requires resharpening
(*a*) it will drill a bigger hole
(*b*) it will drill an eccentric hole
(*c*) it will drill and elliptical hole
(*d*) it will drill a rough hole
(*e*) drill will not be able to enter the work.

15.890. The twist drill works by
(*a*) being forced through the material
(*b*) rotating against the material with sufficient pressure to cause it to penetrate the material
(*c*) rotating against the material and being pulled through by spiral of the flutes
(*d*) all of the above
(*e*) none of the above.

15.891. The rake angle of single point cutting tool is equivalent to
(*a*) helix angle of a twist drill
(*b*) the lip angle of twist drill
(*c*) end cutting edge angle of a twist drill
(*d*) the relief angle of a twist drill
(*e*) none of the above.

15.892. For drilling brass, a drill with
(*a*) high helix angle is required
(*b*) low helix angle is required

(c) any helix angle can be used
(d) zero helix angle is required
(e) none of the above.

15.893. To provide a positive drive, all taper shanked drills are provided with
(a) sleeve (b) socket
(c) tang (d) neck
(e) head.

15.894. If a drill does not cut, the probable cause could be that
(a) material is hard
(b) speed is low
(c) no lubricant is used
(d) drill is blunt
(e) drill is not mounted properly.

15.895. Which portion of a taper shank drill prevents drill from slipping and thus ensures a positive drive
(a) sleeve (b) socket
(c) neck (d) tang
(e) flutes.

15.896. If a drill breaks when drilling a soft and tough material, it could be due to
(a) low speed
(b) blunt drill
(c) hard drill
(d) obstruction of flute of drill by chips
(e) no lubricant.

15.897. To reduce the feeding pressure needed for drilling larger holes, it is a good practice first to
(a) anneal the workpiece
(b) drill a countersunk hole
(c) drill a small pilot hole
(d) drill a stepped hole
(e) mark a centre hole.

15.898. A drill having flat side and two cutting edges for drilling large holes is called
(a) micro-drill (b) spade drill
(c) boring tool (d) counter-boring tool
(e) deep hole drill.

15.899. Kerosene is a good cutting fluid to use when drilling
(a) cast iron (b) mild steel
(c) aluminium (d) brass
(e) bronze.

15.900. The taper usually employed in drill sleeves is known as :
(a) Girling taper
(b) Morse taper
(c) Brown and Sharpe taper
(d) 1 : 1 taper
(e) metric taper.

15.901. A taper shank drill is removed from the drill spindle by
(a) tapping the drill by a hammer
(b) a screw driver
(c) a draft
(d) a drift
(e) a tang.

15.902. Oversized holes in drilling are caused by:
(a) equal lengths of lips
(b) unequal length of lips
(c) larger helix angle
(d) smaller helix angle
(e) wornout drills.

15.903. When the cutting lips of a drill are uneven in length, the drill will cut a
(a) larger hole than the drill size
(b) small hole than the drill size
(c) same size hole as the drill size
(d) unpredictable
(e) none of the above.

15.904. The flutes of a drill perform the following function
(a) help form the cutting edge of the drill point
(b) curb the chip tightly for easier removal
(c) form channels through which the chips can escape from the hole being drilled
(d) allow the coolant and lubricant to get down to the cutting edge
(e) all of the above.

15.905. For reaming operation in blind hole, following type of reamer should be used
(a) straight flute reamer
(b) right hand spiral fluted reamer
(c) left hand spiral fluted reamer
(d) any one of the above
(e) none of the above.

15.906. Drills are usually made of
(a) plain high-carbon tool steel
(b) alloy steel
(c) high-speed steel
(d) tungsten carbide
(e) cast alloys.

15.907. A boring tool for boring a hole over a large length should have
(*a*) one tool bit on a bar
(*b*) 2 tool bits fitted on diamertically opposite sides of bar
(*c*) 3 tool bits equally spaced
(*d*) 4 or more tool bits
(*e*) none of the above.

15.908. The machining process which makes a cone-shaped recess at the top of a drilled hole for a flat head machine screw is called :
(*a*) counter-boring
(*b*) die-sinking
(*c*) counter-sinking
(*d*) taper drilling
(*e*) spot-facing.

15.909. The groove in the body of the drill which allows the chips to come out is known as:
(*a*) chip breaker (*b*) lip
(*c*) flute (*d*) margin
(*e*) chip-follower.

15.910. Which is correct statement :
A twist drill
(*a*) should not be relied on for accurately sized holes
(*b*) can be relied on for accurately sized holes
(*c*) capability for production of accurately sized holes depends on its condition
(*d*) is most commonly used for production accurately sized holes
(*e*) none of the above.

15.911. The reamer is always removed from the finished holes
(*a*) by reversing the drill press
(*b*) by stopping the machine before removing the reamer
(*c*) by slowing the machine before removing the reamer
(*d*) before stopping the machine
(*e*) none of the above.

15.912. For reaming copper or soft aluminium, following type of reamer should be used :
(*a*) straight flute reamer
(*b*) right hand spiral fluted reamer
(*c*) left hand spiral fluted reamer
(*d*) any one of the above
(*e*) none of the above.

15.913. The operation of providing a smooth seat or bearing surface around a previously drilled hole for a washer or nut is called :
(*a*) boring
(*b*) counter-boring
(*c*) counter-sinking
(*d*) spot-facing
(*e*) chamfering.

15.914. Broken bolts and studs can be removed from hole by the following tool
(*a*) Ezy-out
(*b*) screw driver
(*c*) cold punch
(*d*) telescopic rod
(*e*) emery rod.

15.915. The operation of making a recess at the top of a drilled hole for a flat-head machine screw is called
(*a*) boring (*b*) counter-sinking
(*c*) micro-boring (*d*) reaming
(*e*) spot-facing.

15.916. A cutting tool used to make a recess at the top of a drilled hole for a flat head machine screw is known as
(*a*) a core drill (*b*) a spade drill
(*c*) a reamer (*d*) an end mill
(*e*) a countersink tool.

15.917. Which of the following drilling machine is not equipped with power feeds :
(*a*) sensitive drill press
(*b*) multiple-spindle drilling machine
(*c*) radial drilling machine
(*d*) gang drilling machine
(*e*) none of the above.

15.918. When a number of single spindle drilling machine columns are placed side by side on a common work table, the machine is known as
(*a*) radial drilling machine
(*b*) gang drilling machine
(*c*) multiple-spindle drilling machine
(*d*) universal drilling machine
(*e*) pillar type drilling machine.

15.919. The purpose of reaming is
(*a*) for making a hole initially
(*b*) to enlarge the diameter of the hole
(*c*) to improve the finish of the hole
(*d*) to achieve correct diameter

(*e*) to correct location of hole.

15.920. For reaming holes with solid reamers, reamer is mounted in
(*a*) a rigid holder
(*b*) a floating holder
(*c*) a semi-rigid holder
(*d*) a collet
(*e*) universal holder.

15.921. Reamer is always held in
(*a*) floating chuck
(*b*) mandrel
(*c*) collet chuck
(*d*) self and centering chuck
(*e*) universal chuck.

15.922. Solid reamers do almost all their cutting with
(*a*) flutes
(*b*) bottom-most surface
(*c*) 45° chamfered front end
(*d*) all of the above
(*e*) none of the above.

15.923. The tool used to withdraw a drill from its sleeve is called
(*a*) allen key
(*b*) drift
(*c*) taper key
(*d*) drill puller
(*e*) none of the above.

15.924. The depth of a drilled hole is measured from the work surface to
(*a*) the point made by the drill
(*b*) the depth of the full diameter of the drill
(*c*) a point midway between the point and full diameter
(*d*) all of the above
(*e*) none of the above.

15.925. The function of flutes of the reamer is to
(*a*) cut the metal
(*b*) guide the reamer
(*c*) slightly improve the finish
(*d*) (*b*) and (*c*) above
(*e*) none of the above.

15.926. When drilling cast iron, the following coolant should be used
(*a*) kerosene
(*b*) lard oil
(*c*) compressed air
(*d*) water with soluble oil
(*e*) none of the above.

15.927. For reaming purposes, the diameter of drill hole upto size of 25 mm should be made smaller than the desired final size by
(*a*) 0.01 mm (*b*) 0.05 mm
(*c*) 0.1 mm (*d*) 0.5 mm
(*e*) 1.0 mm.

15.928. The cutting speed to be used in reaming a hole in comparison to speed used in drilling that hole should be
(*a*) same
(*b*) more
(*c*) less
(*d*) could be any speed
(*e*) as large as possible.

15.929. The operation of threading a drilled hole is called
(*a*) lapping (*b*) reaming
(*c*) broaching (*d*) tapping
(*e*) threading.

15.930. A fluted tool used to cut internal threads is called :
(*a*) a tap (*b*) a chisel
(*c*) a die (*d*) an end mill
(*e*) spade drill.

15.931. Hand-tapping is an operation for generation of internal threads. The number of taps generally used for hand tapping are
(*a*) 1 (*b*) 2
(*c*) 3 (*d*) 4
(*e*) depends on the diameter of the hole.

15.932. For making a chamfer on the edge of a hole, the following operation is required
(*a*) counter sinking
(*b*) spot facing
(*c*) counter boring
(*d*) reaming
(*e*) wide drilling.

15.933. The chips formed in making threads by plug tap
(*a*) get out through grooves
(*b*) get out along with lubricant
(*c*) get out through flutes
(*d*) cannot get out
(*e*) none of the above.

15.934. A tap drill
(*a*) is a special type of drill

(*b*) does drilling and tapping operations simultaneously
(*c*) is merely a convenient way to refer to the proper size drill to be used before using a tap
(*d*) does not exist
(*e*) none of the above.

15.935. Nominal diameter of a bolt or screw is
(*a*) larger than the actual diameter
(*b*) smaller than the actual diameter
(*c*) same as the actual diameter
(*d*) depends on the range in which actual diameter falls
(*e*) none of the above.

15.936. Bottoming tap is used
(*a*) for most of the threading applications
(*b*) for threading in bottom surface
(*c*) only for threading in blind holes
(*d*) does not exists
(*e*) none of the above.

15.937. A tool used in cutting and external thread is called a
(*a*) twist drill (*b*) tap
(*c*) die (*d*) end mill
(*e*) half nut.

15.938. Following type of reamer is used for soft aluminium or copper
(*a*) straight fluted
(*b*) left hand spiral fluted
(*c*) right hand spiral fluted
(*d*) bottoming reamer
(*e*) taper reamer.

15.939. Following type of reamer is used for blind hole
(*a*) straight fluted
(*b*) left hand spiral fluted
(*c*) right hand spiral fluted
(*d*) bottoming reamer
(*e*) taper reamer.

15.940. Screw threads may be cut on a 10 mm dia. steel rod by using
(*a*) a circular split die
(*b*) a set of taps
(*c*) a drill and a reamer
(*d*) as knurling tool
(*e*) end mill.

15.941. Fluteless taps
(*a*) are not round
(*b*) form threads with no chips
(*c*) both (*a*) and (*b*)
(*d*) do not exist
(*e*) none of the above.

15.942. For setting the heads of socket-head cap screw flush or below the surface, following operation is required
(*a*) counter boring
(*b*) counter sinking
(*c*) spot facing
(*d*) reaming
(*e*) wide drilling.

15.943. For tapping purpose, drilling is done by a drill which cuts a hole
(*a*) of outside diameter of thread
(*b*) of inside diameter of thread
(*c*) of effective diameter of thread
(*d*) which leaves only about 60–75% of depth of triangle to be taken out by tap
(*e*) none of the above.

15.944. In down milling cutter teeth and workpiece move in
(*a*) same direction
(*b*) opposite direction
(*c*) perpendicular direction
(*d*) tool moves down and work move up
(*e*) work move down and tool moves up.

15.945. In which type of milling operation, the chip is cut off at thinnest place and the chip thickness increases along chip length
(*a*) up milling (*b*) down milling
(*c*) end milling (*d*) climb milling
(*e*) keyway milling.

15.946. In which type of milling maximum friction is caused
(*a*) up milling (*b*) down milling
(*c*) end milling (*d*) climb milling
(*e*) keyway milling.

15.947. In which milling operation, the cutting force tends to lift the workpiece
(*a*) conventional (*b*) down
(*c*) climb (*d*) end
(*e*) form milling.

15.948. Any number of equal divisions can be obtained on milling machine by
(*a*) plain indexing
(*b*) simple indexing
(*c*) compound indexing
(*d*) differential indexing

(*e*) any one of the above.

15.949. Listed below are some of the advantages of conventional (up) milling and some of the climb (down) milling
(*i*) Older machines having backlash in their leadscrew can be used
(*ii*) Downward force helps keep work flat and thus very helpful for machining thin parts
(*iii*) Chips are thrown away from the direction of the cutter's travel
(*iv*) On sand castings, cutter is not damaged
(*v*) Better finish obtained on steel, but not on aluminium
(*vi*) Normal pressure on material is less, thereby advantageous for work hardening materials.
The advantages of conventional milling are
(*a*) (*i*), (*ii*) and (*iii*)
(*b*) (*i*), (*ii*) and (*vi*)
(*c*) (*i*), (*iv*), (*v*)
(*d*) (*ii*), (*v*), (*vi*
(*e*) (*iii*), (*iv*), (*v*).

15.950. The advantages of climb milling are
(*a*) (*ii*), (*iii*), (*v*) (*b*) (*ii*), (*iv*), (*vi*)
(*c*) (*iii*), (*v*), (*vi*) (*d*) (*i*), (*iv*), (*v*)
(*e*) (*ii*), (*iii*), (*vi*).

15.951. Listed below are some of the disadvantages of coventional and some of the climb milling
(*i*) Chips get picked up and carried around the cutter, thereby spoiling the finish
(*ii*) Cutter force tends to lift the work off the table
(*iii*) On steel, finish may be slightly rougher
(*iv*) Machine must have zero backlash or there will be chatter as the cutter tries to pull the table faster than the feed rate.
The disadvantages of climb milling are
(*a*) (*i*) and (*ii*) (*b*) (*i*) and (*iii*)
(*c*) (*ii*) and (*iii*) (*d*) (*iii*) and (*iv*)
(*e*) (*i*) and (*iv*).

15.952. The disadvantages of conventional milling are
(*a*) (*i*) and (*ii*) (*b*) (*i*) and (*iii*)
(*c*) (*ii*) and (*iii*) (*d*) (*iii*) and (*iv*)
(*e*) (*i*) and (*iv*).

15.953. In finish grinding, the grinding ratio varies from
(*a*) 1.0 to 5.0 (*b*) 5.0 to 10.0
(*c*) 10.0 to 25.0 (*d*) 25.0 to 50.0
(*e*) 50.0 to 100.0.

15.954. Grinding operation is used for
(*a*) removing material
(*b*) shaping (*c*) dressing
(*d*) forming (*e*) finishing.

15.955. Grinding wheel is balanced
(*a*) at the time of manufacture
(*b*) before grinding
(*c*) after grinding operation
(*d*) frequently
(*e*) none of the above or true.

15.956. Which of the following processes would remove least material
(*a*) grinding (*b*) lapping
(*c*) honing (*d*) super-finishing
(*e*) buffing.

15.957. Which of the following operations would be performed at maximum peripheral speed
(*a*) surface grinding
(*b*) internal grinding
(*c*) cylindrical grinding
(*d*) grinding with rubber, shellac and resinoid bonded wheel
(*e*) snagging off hand grinding with vitrified wheel.

15.958. The process of precision grinding of part with loose dust type abrasives is known as
(*a*) honing (*b*) buffing
(*c*) superfinishing (*d*) lapping
(*e*) polishing.

15.959. Majority of the grinding wheels use the following type of bond
(*a*) resinoid (*b*) silicate
(*c*) shellac (*d*) vitrified
(*e*) rubber.

15.960. Workpiece is supported as follows in centreless grinding
(*a*) on magnetic chucks
(*b*) in centre
(*c*) in collet chuck
(*d*) in universal chuck
(*e*) none of the above.

15.961. Buffing is the operation of
(*a*) cleaning castings
(*b*) depositing metal by spraying
(*c*) broaching in reverse direction
(*d*) producing luster on metal surface
(*e*) preventing damage of metal by corrosion.

15.962. The workpiece is advanced as follows in centreless grinding
(*a*) manually by operator
(*b*) automatically by machine drive
(*c*) on its own
(*d*) force exerted by regulating wheel
(*e*) force exerted by grinding wheel.

15.963. Grinding wheel is balanced frequently because of
(*a*) high rpm (*b*) random wear
(*c*) uneven wear (*d*) frequent glazing
(*e*) high stresses.

15.964. For grinding steel and alloy steel, following material of wheel should be chosen
(*a*) aluminium oxide
(*b*) silicon carbide
(*c*) borazon
(*d*) diamond
(*e*) none of the above.

15.965. Pick up incorrect statement about centreless grinding
(*a*) it is sutiable for long jobs
(*b*) rate of production as compared to cylindrical grinding is low
(*c*) wear and tear of machine is less
(*d*) cost of production as compared to cylindrical grinding is less
(*e*) regulating wheel is usually rubber bonded.

15.966. The regulating wheel in centreless grinding is usually
(*a*) smaller than grinding wheel
(*b*) bigger than grinding wheel
(*c*) of same size as grinding wheel
(*d*) smaller than workpiece
(*e*) could be of any size.

15.967. In centreless grinding machine, the maximum angular adjustment of following order is provided
(*a*) 5° (*b*) 10°
(*c*) 20° (*d*) 30°
(*e*) 40°.

15.968. Surface speed of the grinding wheel in centreless grinding is
(*a*) 15 to 60 m/mt
(*b*) 100 to 500 m/mt
(*c*) 500 to 1000 m/mt
(*d*) 1000 to 1500 m/mt
(*e*) 1500 to 1800 m/mt.

15.969. The surface speed of regulating wheel in centreless grinding varies from
(*a*) 10–15 m/mt
(*b*) 15–60 m/mt
(*c*) 60–120 m/mt
(*d*) 120–240 m/mt
(*e*) 240–500 m/mt.

15.970. Following grinding speed (surface metres per minute) is used for grinding plain carbon steels
(*a*) 250–500 (*b*) 500–900
(*c*) 1000–1500 (*d*) 1500–2000
(*e*) 2000–3000.

15.971. For very fine finishing and polishing of metals such as ball bearing races, following type of bond is used
(*a*) vitrified (*b*) resinoid
(*c*) shellac (*d*) silicate
(*e*) rubber.

15.972. Following operation needs to be performed to obtain surface finish of the order of 0.75 to 1.25 μm
(*a*) grinding (*b*) honing
(*c*) buffing (*d*) lapping
(*e*) burnishing.

15.973. In centreless grinding operation, the regulating wheel rotates at
(*a*) 1 to 15 m/mt
(*b*) 25 to 60 m/mt
(*c*) 60 to 100 m/mt
(*d*) 100 to 180 m/mt
(*e*) 180 to 250 m/mt.

15.974. The sizes (diameter) of grinding wheel and regulating wheel in centreless grinding operation are
(*a*) 100 mm, 50 mm
(*b*) 200 mm, 100 mm
(*c*) 300 mm, 150 mm
(*d*) 500 mm, 300 mm
(*e*) 800 mm, 500 mm.

15.975. The finish of a ground surface could be poor due to

(*a*) low rpm
(*b*) vibrations in machine
(*c*) unbalanced wheel
(*d*) using soft wheel
(*e*) dulling of the abrasive grains.

15.976. In centreless grinding operation, the regulating wheel is inclined at
(*a*) 0 – 8° (*b*) 9 – 12°
(*c*) 12 – 15° (*d*) 15 – 20°
(*e*) 20 – 25°.

15.977. The hardness or softness of a grinding wheel is determined by
(*a*) hardness of abrasive
(*b*) hardness of bond
(*c*) wheel structure
(*d*) amount and kind of bonding material used
(*e*) abrasive grain size.

15.978. Lapping, honing etc. are following type of machining processes
(*a*) high speed abrasive
(*b*) low speed abrasive
(*c*) medium speed abrasive
(*d*) large material removal
(*e*) none of the above.

15.979. For lapping operation, it is customary to leave only following amount of stock to be removed
(*a*) 0.001 to 0.01 mm
(*b*) 0.01 to 0.1 mm
(*c*) 0.1 to 0.5 mm
(*d*) 0.5 to 1.0 mm
(*e*) none of the above.

15.980. Honing operation
(*a*) can be used to change the location of hole or correct a sloped condition of a hole
(*b*) can't be used for the application in (*a*) above
(*c*) above application is possible under some circumstances
(*d*) above application depends upon the size of hole
(*e*) none of the above.

15.981. For grinding cast iron, brass, aluminium, etc. use following material of wheel
(*a*) aluminium oxide
(*b*) silicon carbide
(*b*) borazon
(*d*) diamond
(*e*) none of the above.

15.982. Accuracy of measuring equipment is
(*a*) the closeness with which a measurement can be read directly from a measuring instrument
(*b*) a measure of how close the reading is to the true size
(*c*) the difference between measured value and actual value
(*d*) the smallest change in measurand that can be measured
(*e*) the capability to indicate the same reading again and again for a given measurand.

15.983. Pressure applied on workpiece in case of lapping operation is
(*a*) 0.01 kg/cm^2 (*b*) 0.1 kg/cm^2
(*c*) 0.5 kg/cm^2 (*d*) 1.0 kg/cm^2
(*e*) none of the above.

15.984. Buffing process is used
(*a*) to achieve flatness
(*b*) to achieve roundness
(*c*) to improve surface finish
(*d*) to obtain very smooth reflective surfaces
(*e*) not used in workshops.

15.985. The following is the process used for producing fine surface finish
(*a*) shot peening (*b*) sintering
(*c*) broaching (*d*) tumbling
(*e*) swaging.

15.986. Tumbling process
(*a*) can be applied to any size, shape and material of workpiece
(*b*) can be applied only to simple and uniform shaped workpieces
(*c*) can be applied only to machine finished product
(*d*) is not suitable for cast components
(*e*) none of the above.

15.987. Precision of measuring equipment is
(*a*) the closeness with which a measurement can be read directly from a measuring instrument
(*b*) a measure of how close the reading is to the true size
(*c*) the difference between measured value and actual value

(*d*) the smallest change in measurand that can be measured
(*e*) the capability to indicate the same reading again and again for a given measurand.

15.988. Which of the following can be used to scribe lines parallel to the edges of a part
(*a*) vernier calipers
(*b*) screw gauge
(*c*) divider
(*d*) hermaphrodite caliper
(*e*) combination set.

15.989. Which of the following instruments is most accurate
(*a*) vertical caliper
(*b*) manometric screw gauge
(*c*) optical projector
(*d*) mechanical comparator
(*e*) slip gauges.

15.990. A surface gauge is used for
(*a*) levelling the surface plate
(*b*) checking the surface finish
(*c*) laying out the work accurately
(*d*) finding the depth of the surface
(*e*) finding flatness of surfaces.

15.991. A feeler gauge is used to check
(*a*) radius (*b*) screw pitch
(*c*) surface roughness
(*d*) unsymmetrical shape
(*e*) thickness of clearance.

15.992. Work is usually required to be held in a vertical position for laying out. For this purpose, it is clamped to
(*a*) surface plate (*b*) an angle plate
(*a*) a V-block (*d*) a machine bed
(*e*) engineer's square.

15 993. A hacksaw is specified by the following parameter of its blade
(*a*) material (*b*) length
(*c*) width (*d*) number of teeth
(*e*) distance between two holes at extreme.

15.994. Thin metal pieces can be cut by
(*a*) using a blade with very fine teeth
(*b*) placing several pieces together and cutting them at the same time
(*c*) placing the metal between two pieces of wood and cutting through both metal and wood
(*d*) all of the above
(*e*) none of the above.

15.995. The length of a hacksaw blade is measured
(*a*) over toothed length
(*b*) from one extreme to other
(*c*) in between centres of two holes at both the ends
(*d*) as the length of cut
(*e*) as certain multiples of the width of blade.

15.996. To prevent the blade of the saw from binding in the saw, blade is
(*a*) reinforced (*b*) strengthened
(*c*) twisted (*d*) set
(*e*) tinned and sharpened.

15.997. When the file is pushed and pulled across the work, it is called
(*a*) push-pull filing
(*b*) straight filing
(*c*) draw filing
(*d*) all of the above
(*e*) none of the above.

15.998. The thickness of light gauge sheet steel can be best checked with a
(*a*) finely divided steel scale
(*b*) depth gauge
(*c*) hermaphrodite caliper
(*d*) micrometer
(*e*) thickness measuring machine fitted with dial gauge.

15.999. Optical flats are made of
(*a*) quartz (*b*) glass
(*c*) plastic (*d*) steel
(*e*) silicon.

15.1000. The least count of a metric vernier caliper having 25 divisions on vernier scale, matching with 24 divisions of main scale (1 m.s division = 0.5 mm) is
(*a*) 0.05 mm (*b*) 0.01 mm
(*c*) 0.02 mm (*d*) 0.001 mm
(*e*) 0.005 mm.

15.1001. The thread micrometer measures
(*a*) the major diameter of the thread
(*b*) the minor diameter of the thread
(*c*) the effective diameter of the thread
(*d*) the root diameter of the thread
(*e*) all the diameters of the thread.

15.1002. An important precaution to be observed during filing operation is to
(*a*) not rub finger over file
(*b*) not rub finger over the work
(*c*) apply equal pressure on file
(*d*) properly support file
(*e*) clean file frequently

15.1003. If a hole is to be tapped its size should be
(*a*) equal to diameter of the desired thread
(*b*) a few microns larger than the desired threads
(*c*) a few microns smaller than the desired threads
(*d*) any one of the above
(*e*) none of the above.

15.1004. V-block is used in the workshop to check
(*a*) roundness of a cylindrical work
(*b*) surface roughness
(*c*) dimensions of oval job
(*d*) taper on a job
(*e*) none of the above.

15.1005. Repeatability of measuring equipment is
(*a*) the closeness with which a measurement can be read directly from a measuring instrument
(*b*) a measure of how close the reading is to the true size
(*c*) difference between measured value and actual value
(*d*) the smallest change in measurand that can be measured
(*e*) the capability to indicate the same reading again and again for a given measurand.

15.1006. The taper of internal dovetail can be measured with the help of
(*a*) sine bar
(*b*) combination set
(*c*) balls of standard dimensions and slip gauges
(*d*) clinometer
(*e*) dial gauge.

15.1007. External taper can be accurately measured with the help of
(*a*) sine bar and slip gauges
(*b*) dividing head
(*c*) precision balls and height gauge
(*d*) combination set
(*e*) clinometer.

15.1008. A sine bar is specified by
(*a*) its total length
(*b*) the centre distance between the two rollers
(*c*) the size of the rollers
(*d*) the distance between rollers and upper surface
(*e*) weight of sine bar.

15.1009. Profile of a gear tooth can be checked by
(*a*) sine bar
(*b*) bench micrometer
(*c*) optical pyrometer
(*d*) optical projector
(*e*) slip gauges.

15.1010. Gear tooth caliper is used to find the chordal thickness of following type of gear tooth
(*a*) spur gears (*b*) helical gears
(*c*) worm gears (*d*) bevel gears
(*e*) any type of gear.

15.1011. All the thread characteristics can be measured precisely with
(*a*) screw pitch gauge
(*b*) micrometer with V anvil
(*c*) tool room microscope
(*d*) thread gauge
(*e*) thread measuring machine.

15.1012. The advantage of vernier caliper over micrometer is that it
(*a*) is easier and quicker to use
(*b*) is more accurate
(*c*) can be used to make both inside and outside measurements over a range of sizes
(*d*) all of the above
(*e*) none of the above.

15.1013. The combination set can be used to
(*a*) check angular surfaces
(*b*) draw circles and arcs
(*c*) scribe lines
(*d*) all of the above
(*e*) none of the above.

15.1014. Before drilling at a point, it should be ensured that
(*a*) punch mark has been made at the point
(*b*) position of point has been marked by two intersecting lines

(*c*) centre drill has been used at the point
(*d*) diameters have been located
(*e*) surface is flat.

15.1015. In layout work, a pencil should not be used to draw lines on metal because
(*a*) it will wipe off easily
(*b*) the line will be too wide for accurate work
(*c*) the lines will smudge and be difficult to see
(*d*) the lines do remain on metal even after good rubbing
(*e*) all of the above.

15.1016. Surface plate is usually made of grey cast iron because it provides
(*a*) non wearing plate
(*b*) very hard plate
(*c*) easy to cast plate
(*d*) lubrication due to graphite flakes
(*e*) stable plate.

15.1017. Constant measuring pressure in micrometer screw gauges is ensured by
(*a*) locknut (*b*) barrel and thimble
(*c*) spindle (*d*) spanner
(*e*) ratchet.

15.1018. Optical gauge work on the principle of
(*a*) refraction (*b*) reflection
(*c*) dispersion (*d*) polarisation
(*e*) interference of light rays.

15.1019. Millimeter scale in a micrometer is marked on
(*a*) barrel (*b*) thimble
(*c*) spindle (*d*) anvil
(*e*) ratchet.

15.1020. Circular scale of the micrometer is marked on
(*a*) anvil (*b*) barrel
(*c*) ratchet (*d*) thimble
(*e*) spindle.

15.1021. The following type of gauge has gauging sections combined on one end
(*a*) combination gauge
(*b*) limit gauge
(*c*) Go and No Go gauge
(*d*) fixed gauge
(*e*) progressive gauge.

15.1022. Gear tooth vernier is used to measure
(*a*) circular pitch
(*b*) depth of tooth
(*c*) tooth thickness
(*d*) addendum and dedendum
(*e*) pitch line thickness of tooth.

15.1023. Error of measuring equipment is
(*a*) the closeness with which a measurement can be read directly from a measuring instrument
(*b*) a measure of how close the reading is to the true size
(*c*) the difference between measured value and actual value
(*d*) the smallest change in measurand that can be measured
(*e*) the capability to indicate the same reading again and again for a given measurand

15.1024. The two slip gauges in precision measurement are joined by
(*a*) assembling (*b*) sliding
(*c*) adhesion (*d*) wringing
(*e*) slipping.

15.1025. Plug gauges are used to
(*a*) measure the diameter of the workpieces
(*b*) measure the diameter of the holes in the workpieces
(*c*) check the diameter of the holes in the workpieces
(*d*) check the length of the holes in the workpieces
(*e*) check the outside diameter of workpieces.

15.1026. The term "allowance" in limits and fits is usually referred to
(*a*) minimum clearance between shaft and hole
(*b*) maximum clearance between shaft and hole
(*c*) difference of tolerances of hole and shaft
(*d*) difference between maximum size and minimum size of the hole
(*e*) difference between maximum size and minimum size of the shaft.

15.1027. Sensitivity of measuring equipment is
(*a*) the closeness with which a measurement can be read directly from a measuring instrument

(*b*) a measure of how close the reading is to the true size
(*c*) the difference between measured value and actual value
(*d*) the smallest change in measurand that can be measured
(*e*) the capability to indicate the same reading again and againfor a given measurand

15.1028. Expressing a dimension as $25.3^{\pm 0.05}$ mm is the case of
(*a*) unilateral tolerance
(*b*) bilateral tolerance
(*c*) limiting dimensions
(*d*) all of the above
(*e*) none of the above.

15.1029. Surface roughness on a drawing is represented by
(*a*) triangles (*b*) circles
(*c*) squares (*d*) rectangles
(*e*) none of the above.

15.1030. No. of taps generally used in tapping by hand is
(*a*) one (*b*) two
(*c*) three (*d*) four
(*e*) more than three depending on the finish desired.

15.1031. Expressing a dimension as $\frac{32.5}{32.3}$ mm is the case of
(*a*) unilateral tolerance
(*b*) bilateral tolerance
(*c*) limiting dimension
(*d*) all of the above
(*e*) none of the above.

15.1032. A bore of 14.67 mm in a workpiece can be measured by
(*a*) steel rule
(*b*) vernier caliper
(*c*) pneumatic gauge
(*d*) micrometer
(*e*) plug gauge.

15.1033. Ceramic tool inserts are fixed to tool holder by following process
(*a*) brazing (*b*) soldering
(*c*) welding (*d*) clamping
(*e*) casting.

15.1034. Sintering is used for
(*a*) fixing tool inserts on tool holders
(*b*) manufacturing cutting tools
(*c*) heating the powdered metal below its melting point
(*d*) manufacturing powdered metal
(*e*) casting.

15.1035. In banking operation, the force on punch depends upon
(*a*) sheet thickness
(*b*) clearance (*c*) diameter of punch
(*d*) all of the above
(*e*) none of the above.

15.1036. Wire is fabricated by the following process
(*a*) drawing (*b*) extrusion
(*c*) piercing (*d*) rolling
(*e*) none of the above.

15.1037. In equation $VT^n = C$, value of n depends on
(*a*) material of workpiece
(*b*) material of tool
(*c*) condition of machine
(*d*) working conditions
(*e*) constant.

15.1038. With continuous chip cutting, maximum heat is taken by
(*a*) chip (*b*) tool
(*c*) job
(*d*) depends on velocity of cutting
(*e*) none of the above.

15.1039. Shear angle is the angle between
(*a*) shear plane and tool face
(*b*) shear plane and job surface
(*c*) shear plane and horizontal
(*d*) shear plane and vertical
(*e*) none of the above.

15.1040. The diameter of a finish turned shaft can best be checked with a
(*a*) combination set
(*b*) slip gauges (*c*) height gauge
(*d*) micrometer screw gauge
(*e*) dial indicator.

15.1041. One micron is equal to
(*a*) 1 mm (*b*) 0.1 mm
(*c*) 0.01 mm (*d*) 0.001 mm
(*e*) 0.0001 mm.

15.1042. Accurate centring of work mounted in an independent chuck can be determined by using a

(*a*) centre gauge
(*b*) height gauge
(*c*) dial indicator
(*d*) surface gauge
(*e*) micrometer.

15.1043. Which of the following is not the angle measuring device
(*a*) angle plate (*b*) sine bar
(*c*) bevel protector
(*d*) angle gauge
(*e*) combination square.

15.1044. To check the diameter of a twist drill with a micrometer, the measurement must be taken across the
(*a*) margins of the drill
(*b*) flutes of the drill
(*c*) cutting edges of the drill
(*d*) lips of the drill
(*e*) web of the drill.

15.1045. Expressing a dimension as $18.3^{+\,00.0}_{-\,00.2}$ mm is the case of
(*a*) unilateral tolerance
(*b*) bilateral tolerance
(*c*) limiting dimensions
(*d*) all of the above
(*e*) none of the above.

15.1046. Commonly used units of feed in drilling operation are
(*a*) mm (*b*) mm/rev.
(*c*) mm/sec. (*d*) mm/mt.
(*e*) mm/hr.

15.1047. Annealing is done by cooling in
(*a*) air (*b*) furnace
(*c*) water (*d*) brine
(*e*) none of the above.

15.1048. The helical groove in drill is used
(*a*) to dispose chip
(*b*) to admit cutting fluid
(*c*) to save material
(*d*) to present sharp cutting edges
(*e*) none of the above.

15.1049. The quickest type of chuck for centring operation is
(*a*) three jaw (*b*) four jaw
(*c*) pneumatic (*d*) magnetic
(*e*) none of the above.

15.1050. Metal in electro-chemical grinding operation is removed by
(*a*) abrasion and shear
(*b*) electro-chemical decomposition
(*c*) rusting and melting
(*d*) electro-chemical decomposition and abrasion
(*e*) ionisation and abrasion.

15.1051. The metal in electro-chemical machining process is removed by
(*a*) ionisation and shearing
(*b*) transfer of electrons
(*c*) chemical action and abrasion
(*d*) migration of ions towards the tool
(*e*) electric discharge in strong solutions.

15.1052. In electro-discharge machining process
(*a*) very high voltage of the order of kilovolts is applied across electrodes
(*b*) current of the order 10,000 amps is passed through the work
(*c*) continuous sparks to erode the metal are produced
(*d*) upto around 250,000 sparks per second are produced
(*e*) metal is removed at very fast rate.

15.1053. A complicated contour is to be made exactly in a carbide piece. Which process will be used
(*a*) laser machining
(*b*) electro-chemical milling
(*c*) ultrasonic machining
(*d*) electro-discharge machining
(*e*) plasma-arc machining.

15.1054. The instruction on the tape of NC machine is prepared in the form of following system
(*a*) numeric
(*b*) alpha-numeric
(*c*) binary numbers
(*d*) binary coded decimal
(*e*) coded form.

15.1055. NC machine tool is operated by
(*a*) feedback system
(*b*) output-input modules
(*c*) a series of coded instructions
(*d*) digitising
(*e*) numerical controls.

15.1056. A combination of individual machine tools arranged sequentially and properly integrated and interlocked is known as

(*a*) production line
(*b*) numerically controlled machine
(*c*) machining centre
(*d*) transfer machine
(*e*) automat.

15.1057. Dielectric is a must in
(*a*) EDM process
(*b*) ECM process
(*c*) ultrasonic machining
(*d*) ion beam machining
(*e*) laser machining.

15.1058. In EDM process, the work-piece is connected to
(*a*) positive (*b*) negative
(*c*) earth
(*d*) any one of the above
(*e*) none of the above.

15.1059. Reproduction of sharp corners is the limitation of
(*a*) ECM (*b*) EDM
(*c*) laser (*d*) plasma
(*e*) none of the above.

15.1060. Broaching operation is frequently used in automobile industry because
(*a*) it is an automatic machine
(*b*) it is a mass production machine
(*c*) semi-skilled operators can be employed
(*d*) operation is completed in one stroke
(*e*) high degree of finish and close tolerances are achieved.

15.1061. Very large speed ranges are required for
(*a*) shaping machines
(*b*) planing machines
(*c*) semi-automatic and automatic turrets
(*d*) grinding machines
(*e*) drilling machines.

15.1062. For same tool life, maximum material per minute is removed by increasing
(*a*) cutting speed
(*b*) feed
(*c*) depth of cut
(*d*) tool hardness
(*e*) clearance angle.

15.1063. The phenomenon of stick-slip is more predominant when the sliding speed is
(*a*) zero (*b*) low
(*c*) high
(*d*) equal to the cutting speed
(*e*) at all the speeds.

15.1064. The trade name given to a non-ferrous cast alloy composed of cobalt, chromium and tungsten is
(*a*) satellite (*b*) HSS
(*c*) boron carbide
(*d*) ceramic (*e*) alnico.

15.1065. An important disadvantage of broaching process is
(*a*) the broaching tools are always longer in length
(*b*) only simple shapes can be obtained
(*c*) the return stroke is always idle
(*d*) the process is suitable only for high volume production
(*e*) all of the above.

15.1066. Broaching tools are usually made of
(*a*) high carbon steel
(*b*) high speed steel (H.S.S.)
(*c*) ceramics
(*d*) tungsten carbide
(*e*) stellite.

15.1067. The front teeth of a broach
(*a*) remove no metal
(*b*) remove maximum metal
(*c*) remove minimum metal
(*d*) perform the burnishing operation
(*e*) guide the broach.

15.1068. For proper broaching operation at least following number of teeth should be in the work at a time
(*a*) 2 (*b*) 2
(*c*) 3 (*d*) 4
(*e*) more than four.

15.1069. A gear has to be subjected to shock and vibration. Following type should be selected
(*a*) gear with full depth teeth
(*b*) hybrid gears
(*c*) bevel gears
(*d*) gear with stub teeth
(*e*) hardened gears.

15.1070. Thin gears from sheet metal can be produced commercially by
(*a*) gear hobbing
(*b*) gear shaping (*c*) extruding
(*d*) machining
(*e*) stamping.

15.1071. Which of the following is gear finishing process
(*a*) gear shaving (*b*) gear hobbing
(*c*) gear shaping (*d*) gear milling
(*e*) gear extrusion.

15.1072. Which of the following is not a production process for gears
(*a*) milling (*b*) stamping
(*c*) hot rolling (*d*) extruding
(*e*) broaching.

15.1073. Hobbing process is not suitable for cutting following type of gear
(*a*) spur (*b*) helical
(*c*) worm (*d*) bevel
(*e*) all of the above.

15.1074. Formed milling operation of cutting gears can be used for cutting following type of gears
(*a*) spur (*b*) bevel
(*c*) worm (*d*) helical
(*e*) all of the above.

15.1075. Gear forming operation can be performed by
(*a*) shaping (*b*) milling
(*c*) broaching
(*d*) any one of the above
(*e*) none of the above.

15.1076. Gear hobbing process is faster than milling because
(*a*) indexing time is less
(*b*) hob rotates faster
(*c*) work rotates faster
(*d*) plenty of lubricant is supplied in hobbing enabling faster operation
(*e*) several teeth cut at a time.

15.1077. Gear cutting with a hob does not involve the following motions
(*a*) indexing of the work
(*b*) rotation of hob
(*c*) rotation of blank
(*d*) radial feed of hob
(*e*) all of the above.

15.1078. Gear shaper can be used to cut following type of gear
(*a*) internal (*b*) external
(*c*) non conventional
(*d*) accurate
(*e*) all of the above.

15.1079. Milling method for gear cutting finds applications when following type of gears are to be cut
(*a*) external (*b*) internal
(*c*) helical
(*d*) considerable variety
(*e*) accurate.

15.1080. Which of the following can hold the work, locate the work and guide the drill at the desired position
(*a*) drill bush (*b*) drill fixture
(*c*) metal locator
(*d*) drill jig (*e*) V-block.

15.1081. The purpose of tumbling is to
(*a*) clean the surface of small parts
(*b*) coat the surface
(*c*) grind the surface
(*d*) stress relieve the surface
(*e*) increase fatigue resistance of surface.

15.1082. Typical locating devices for cylindrical job used in jigs and fixture are
(*a*) drill jigs (*b*) V-blocks
(*c*) mandrels (*d*) angle plates
(*e*) metal pins.

15.1083. The important property to be considered in the selection of a suitable material for the manufacturing of locating pins and drill jig bush used in jigs and fixtures is
(*a*) shear strength
(*b*) tensile strength
(*c*) elasticity
(*d*) wear resistance
(*e*) resilience.