

Workshop Calculation and Science

Q. ID: ITISKILL3164YP

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Question Paper

Duration: 30 Mins

Total Marks: 413

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Student Name: _____ Roll No: _____

1. What is called for the materials that restricts heat flow by radiation, conduction and convection?

- A) Insulators B) Ferrous
C) Non-ferrous D) Conductors

2. What is the square root of decimal number 550.37?

- A) 21.26 B) 23.46
C) 22.46 D) 22.26

3. Which of the impurity in cast iron makes it hard and brittle?

- A) Manganese B) Sulphur
C) Phosphorus D) Silicon

4. Which IE rules are to be verified on completion of wiring on any new installation?

- A) IE Rules, 1967 B) IE Rules, 1956
C) IE Rules, 1960 D) IE Rules, 1961

5. What force will be required to punch a hole of 10 mm dia in a 1 mm thick plate, if the allowable shear stress is 50N/mm^2 ? ($\pi = 22/7$)

- A) 1757 N B) 1577 N
C) 1575 N D) 1571.4 N

6. Which alloy steel is using for making precious instrument?

- A) Manganese steel B) Invar steel
C) Vanadium D) Silicon steel

7. What is the centre of gravity of a solid hemisphere from its base?

- A) $4r/5$ B) $3r/8$
C) $3r/4$ D) $r/2$

8. What is the current? $R = 50\text{ Ohms}$ $V = 220\text{ Volts}$
 $I = \underline{\hspace{1cm}}\text{Amps}$

- A) 4.2 Amps B) 4.1 Amps
C) 4.3 Amps D) 4.4 Amps

9. What is the expansion of $(a+b+c)^2$?

- A) $a^2 + b^2 + c^2 - 2ab + 2bc + 2ca$ B) $a^2 + b^2 + c^2 + 2ab - 2bc + 2ca$
C) $a^2 + b^2 + c^2 - 2ab + 2bc + 2ca$ D) $a^2 + b^2 + c^2 + 2(ab + bc + ca)$

10. What is the ratio of ultimate load to area of original cross section?

- A) Factor of safety B) Ultimate stress
C) Yield point D) Youngs modulus

11. What is the boiling point of mercury?

- A) 759 Degree C B) 280 Degree C
C) 767 Degree C D) 357 Degree C

12. Which type of levers is bell cranked lever?

- A) 1st order lever B) 2nd order lever
C) 3rd order lever D) Curved lever

13. How many degrees is equal to one radian?

- A) $(360)/(\pi)$ B) $(\pi)/(360)$
C) $(\pi)/(180)$ D) $(180)/(\pi)$

14. What is the mass if the density of a body is 7.6 g/cm^3 and its volume is 25 cm^3 ?

- A) 200 grams B) 220 grams
C) 210 grams D) 190 grams

15. What is the capacity of a conical tank of radius 2 m and height 5m?

- A) 21 m^3 B) 31 m^3
C) 41 m^3 D) 11 m^3

16. What is the area of the circle, whose diameter is 50 cm?

- A) 1962.5 cm^2 B) 1950 cm^2
C) 1960 cm^2 D) 1900 cm^2

17. What is the ratio between the distance moved by the

effort to the distance moved by the load?

- | | |
|-------------------|-------------------------|
| A) Velocity ratio | B) Mechanical advantage |
| C) Efficiency | D) Fulcrum |

18. What is term used for 2 x linear expansion?

- | | |
|--------------------------------------|--|
| A) Co-efficient of cubical expansion | B) Co-efficient of friction |
| C) Co-efficient of linear expansion | D) Co-efficient of superficial expansion |

19. What is the maximum percentage of stretch of its original length is allowable for elastic materials?

- | | |
|---------|---------|
| A) 400% | B) 100% |
| C) 200% | D) 300% |

20. What is the specific gravity of the solid, if density of the solid is 19.5 g/cm^3 ?

- | | |
|---------|---------|
| A) 8 | B) 19 |
| C) 18.5 | D) 19.5 |

21. What is the minimum permissible area of conductor (U/G cable) for three and half cores cable?

- | | |
|-------------|--------------|
| A) 25 sq.mm | B) 5 sq.mm |
| C) 50 sq.mm | D) 100 sq.mm |

22. What is the length of arc of a sector whose radius is 3.6 cm and angle is 36 Degree?

- | | |
|------------|------------|
| A) 2.26 cm | B) 22.6 cm |
| C) 2.10 cm | D) 21.0 cm |

23. Which instrument is used to measure heat?

- | | |
|------------------|----------------|
| A) Pyrometer | B) Thermometer |
| C) Calorie meter | D) Barometer |

24. What is the carbon percentage in low carbon steel?

- | | |
|-------------------|-------------------|
| A) 0.25% to 0.50% | B) 0.50% to 1.50% |
| C) 0.02% to 0.03% | D) 0.15% to 0.25% |

25. What is the formula for speed?

- | | |
|----------------------------|---|
| A) Change in velocity/Time | B) Distance in definite direction /Time |
| C) Change in momentum/Time | D) Distance covered/Time |

26. What is the relative permittivity of rubber?

- | | |
|----------------------|---------------------|
| A) Between 12 and 14 | B) Between 8 and 10 |
| C) Between 5 and 6 | D) Between 2 and 3 |

27. How the years is denoted in simple interest calculations?

- | | |
|------|------|
| A) I | B) n |
|------|------|

C) r

D) P

28. Which one of the following geometrical shape's centre of gravity lies from its base is $\frac{1}{3}$ of its height?

- | | |
|-----------|-------------|
| A) Cone | B) Triangle |
| C) Square | D) Rhombus |

29. What is the compound interest on a principal of Rs.25000/- after 3 years at the rate of 12% per annum?

- | | |
|-------------|----------------|
| A) Rs. 9000 | B) Rs.10123.20 |
| C) Rs.9720 | D) Rs.10483.20 |

30. What is the profit % if the cost price of 16 bolts is equal to the selling price of 12 bolts?

- | | |
|----------|----------|
| A) 23.33 | B) 33.33 |
| C) 13.33 | D) 43.33 |

31. Convert - 273 Degree C (Centigrade) into kelvin scale?

- | | |
|---------------|---------------|
| A) 0 Degree K | B) 3 Degree K |
| C) 1 Degree K | D) 2 Degree K |

32. What is the value of any number raised to the power of 0?

- | | |
|--------------|---------|
| A) 1 | B) (-1) |
| C) Alpha (?) | D) 0 |

33. What is the perimeter of a rectangle whose length and breadth are 20 cm and 18 cm?

- | | |
|----------|----------|
| A) 86 mm | B) 56 cm |
| C) 76 cm | D) 66 cm |

34. What is the simple interest for the principal amount of Rs.100000 at 10% per annum for 1 year period?

- | | |
|---------------|---------------|
| A) Rs.10000/- | B) Rs.50000/- |
| C) Rs.5000/- | D) Rs.1000/- |

35. What is the length of arc of a sector, whose radius is 15 cm and angle is 40 Degree?

- | | |
|------------|-------------|
| A) 9.75 cm | B) 10.60 cm |
| C) 10.4 cm | D) 9.8 cm |

36. How much load is lifted if an effort of 25 kg is applied to a simple machine having velocity ratio of 4 and efficiency 75%?

- | | |
|----------|----------|
| A) 75 kg | B) 70 kg |
| C) 80 kg | D) 65 kg |

37. What is the diameter of the circle, if the area of the circle is 706.5 cm^2 ?

- | | |
|------------|----------|
| A) 30.5 cm | B) 29 cm |
|------------|----------|

C) 30 cm

D) 29.5 cm

38. What is the centre of gravity of a semi circle of diameter 12 cm?

A) 3.25 cm

B) 2.75 cm

C) 2.54 cm

D) 2.24 cm

39. What is the formula to find selling price (S.P) if there is a loss?

A) $\frac{(100)}{(100-\text{Loss \%})} \times \text{S.P}$

B) $\frac{(100)}{(100+\text{Profit \%})} \times \text{S.P}$

C) $\frac{(100+\text{Profit \%})}{(100)} \times \text{C.P}$

D) $\frac{(100-\text{Loss \%})}{(100)} \times \text{C.P}$

40. What is the velocity ratio of a simple machine of a mass 120 kg is lifted to a height of 5 metres by a force of 60 kg moving 15 metre. Calculate velocity ratio?

A) 4

B) 1

C) 2

D) 3

41. What is called mass per unit volume of a substances?

A) Volume

B) Weight

C) Density

D) Mass

42. What is the quantity of heat required to raise the temperature of 1 gram of water through 1 Degree Centigrade is called?

A) Centigrade heat unit

B) Colorie

C) British thermal unit

D) Specific heat

43. Which is equal to $(a^m)^n$?

A) $a^{m/n}$

B) a^{mn}

C) a^{m+n}

D) a^{m-n}

44. What is the total labour charges for a particular wiring work completed in 2 days by one electrician and one helper.(Electrician @ ₹800/day and helper @ Rs 400/day)

A) Rs. 3000

B) Rs. 2000

C) Rs. 1400

D) Rs. 2400

45. What is the value of x, if $x \times (120) = 960$?

A) 6

B) 8

C) 7

D) 10

46. Which force acts on crank shaft?

A) Compressive stress

B) Shear stress

C) Tensile stress

D) Torsional stress

47. Which law states that within elastic limit stress is directly proportional to strain?

A) Joules law

B) Newtons law

C) Charles law

D) Hooks law

48. What is the expanded form of $(a+b)^2$?

A) $a^2 - 2ab + b^2$

B) $(-a^2 - 2ab + b^2)$

C) $a^2 + 2ab + b^2$

D) $a^2 + 2ab + b^2$

49. What is velocity of a body travels a distance of 168 metres in a line in 21 seconds?

A) 12 m/sec

B) 8 m/sec

C) 10 m/sec

D) 6 m/sec

50. What is the radius of the circle, whose circumference is 440 cm?

A) 70.5 cm

B) 72.2 cm

C) 70 cm

D) 71.5 cm

51. Which heat treatment process is done to refine the grain structure of the steel?

A) Annealing

B) Hardening

C) Tempering

D) Normalising

52. Which is the formula for $a^m \div a^n$?

A) a^{m-n}

B) a^{m+n}

C)

$(a^m)^n$

D) a^{mxn}

53. What denotes letter M in MKS system?

A) Micron

B) Mile

C) Meter

D) Millimeter

54. How many newtons for 1 kilogram?

A) 0.981 Newtons

B) 98.1 Newtons

C) 9.81 Newtons

D) 981 Newtons

55. What is a under estimate?

A) An estimate is exceeded the actual estimate

B) No work started as per estimate

C) An estimate perfectly matches with actual

D) An estimate is fell short of the actual estimate

56. What is the purpose of tempering a steel?

A) To increase the brittleness

B) To reduce the brittleness

C) To increase the hardness

D) To remove the ductility

57. What is the simplified value of $(3x + 15) / 5x + 25$

A) $(5/3)$

B) $(-3/5)$

C) $(-5/3)$

D) $(3/5)$

58. How much quantity of heat is required to raise the

temperature of 300 grams of copper (sp.heat 0.092 cal/gram) from 25 Degree C to 75 Degree C in Kcal?

- A) 138 Kcal
- B) 1.38 Kcal
- C) 2.07 Kcal
- D) 207 Kcal

59. What is the carbon percentage in high carbon steel?

- A) 0.02% to 0.03%
- B) 0.50% to 1.50%
- C) 0.15% to 0.25%
- D) 0.25% to 0.50%

60. What is the voltage?
 R = 250 Ohms
 I = 0.44 Amps
 V = ____Volts

- A) 110 Volts
- B) 105 Volts
- C) 108 Volts
- D) 100 Volts

61. What is the filament resistance if a 6 volt bulb draws a current of 0.5 Amps?

- A) 10 W
- B) 1.2 W
- C) 12 W
- D) 3 W

62. What is the other term used for reference table?

- A) Bibliography
- B) Biography
- C) Information Table
- D) Dictionary

63. Which machine converts mechanical energy into electrical energy?

- A) Iron box
- B) Generator
- C) Heater
- D) Battery

64. What is the name of the metal which do not contain iron?

- A) Non-Insulating metals
- B) Non-ferrous metals
- C) Insulating metals
- D) Ferrous metals

65. What is the total resistance if two resistances of 4 ohms and 6 ohms are connected in parallel?

- A) 4
- B) 10
- C) 5
- D) 2.4

66. What is termed as the quantity of matter contained in a body?

- A) Mass
- B) Density
- C) Volume
- D) Specific gravity

67. Which authority publishes schedule of rates?

- A) Individual
- B) Partnership firm
- C) Government department
- D) Corporate

68. Which is example for first order lever?

- A) A wheel barrow
- B) Lime squeezer
- C) A pair of scissors
- D) Fire tongs

69. What is the volume of a rectangular tank of 30 m length, 20m width and 10m height?

- A) 6100 m^3
- B) 5900 m^3
- C) 6000 m^3
- D) 6200 m^3

70. What is the value of x if $(x + 2) / 2 = 19$?

- A) 35
- B) 36
- C) 33
- D) 38

71. What effort required to lift a load of 150 kg in a wheel and axle, if the velocity ratio is 2.5 and the efficiency of the machine is 75%?

- A) 90 kg
- B) 100 kg
- C) 80 kg
- D) 70 kg

72. What is the centre of gravity of a solid hemisphere from its base?

- A) $3r/4$
- B) $4r/5$
- C) $r/2$
- D) $3r/8$

73. Which refers the temperature?

- A) It is measured by calorie meter
- B) It tells specific heat of substance
- C) It tells the state of heat
- D) It is a form of energy

74. What is the ratio between stress and strain?

- A) Poisson's ratio
- B) Factor of safety
- C) Yield point
- D) Young's Modulus

75. What is the retardation of a car moving with a velocity of 50 km/hr is brought to rest in 45 seconds?

- A) 0.20 m/sec^2
- B) 0.30 m/sec^2
- C) 0.40 m/sec^2
- D) 0.10 m/sec^2

76. What is the boiling point of water?

- A) 212 Degree C
- B) 0 Degree C
- C) 100 Degree C
- D) 32 Degree C

77. What is the value of adding $(5x+2y)$, $(4x - 7z)$ and $(15z - 3y)$?

- A) $x + 9y + 8z$
- B) $9x + y - 8z$
- C) $x - 9y + 8z$
- D) $9x - y + 8z$

78. What is the density of aluminium?

- A) 5.7 g/cm^3
- B) 2.7 g/cm^3
- C) 4.7 g/cm^3
- D) 3.7 g/cm^3

79. What is the distance of the load from the fulcrum called?

- A) Effort arm
- B) Effort

C) Power arm

D) Load arm

80. What is the change in length per unit original length per degree rise in temperature is called?

A) Co-efficient of cubical expansion

B) Co-efficient of superficial expansion

C) Co-efficient of friction

D) Co-efficient of linear expansion

81. What is the freezing point of water in kelvin scale (K)?

A) 313 Degree K

B) 373 Degree K

C) 303 Degree K

D) 273 Degree K

82. Which state of equilibrium's example is A cone resting on its tip?

A) Neutral

B) Unstable

C) Horizontal

D) Stable

83. What is the LCM of 12, 18, 6, 36?

A) 18

B) 12

C) 42

D) 36

84. What is the radius of the semicircle, if the circumference of the semicircle is 28.26 cm?

A) 8.5 cm

B) 6.49 cm

C) 5.49 cm

D) 8.75 cm

85. What is the formula for acceleration?

A) Metre/second²

B) Metre/minute

C) Metre/hour

D) Metre/second

86. What is the ratio of force (or) thrust per unit area?

A) Pressure

B) Work

C) Energy

D) Power

87. How many ergs for 1 Joule?

A) 10^3 ergs

B) 10^9 ergs

C) 10^7 ergs

D) 10^5 ergs

88. What is the work done in joules if a load of 15.5 kg is lifted through a height of 4.4 metres?

A) 659 Joules

B) 649 Joules

C) 669 Joules

D) 639 Joules

89. What is the perimeter of scalene. Triangle having sides of 40mm, 20mm and 28mm?

A) 98 mm

B) 88 mm

C) 68 mm

D) 78 mm

90. What is the power required? $I = 0.455$ Amps $R = 484$ Ohms $P = \underline{\hspace{1cm}}$ Watts

A) 98.2 watts

B) 101.2 watts

C) 99.2 watts

D) 100.2 watts

91. What is the diagonal of a square plate whose side is 28 cm?

A) 39.59 cm

B) 39.39 cm

C) 39.49 cm

D) 39.29 cm

92. Where the centre of gravity of a circle lies?

A) Any where on its radius

B) At its centre

C) Any where on its diameter

D) Any where on its circumference

93. Which one is included in machining estimation sheet?

A) Advertisement cost

B) Transport cost

C) Tax

D) Raw material cost

94. What is the S.I unit of heat?

A) Calorie

B) British thermal unit

C) Joule

D) Centigrade heat unit

95. What is a total cost?

A) Raw material cost only

B) Machining cost only

C) Advertisement cost only

D) Raw materials cost and machining cost

96. Which is the example for dynamically induced Emf?

A) Motor

B) Motor bike

C) Generator

D) Car

97. Which insulating material is used for making switches?

A) Ebonite

B) PVC

C) Bakelite

D) Porcelain

98. What will be the rpm of smaller gear if a 180 mm dia meshes with 60 mm dia gear and the bigger gear makes 60 rpm?

A) 120 rpm

B) 140 rpm

C) 160 rpm

D) 180 rpm

99. Which mechanical property of a metal offers resistance to elastic deformation in a cutting tool?

A) Toughness

B) Ductility

C) Malleability

D) Hardness

100. Which property of a metal enables it by which it can be drawn out into wires under tension without rupture?

- A) Brittleness
C) Hardness

- B) Malleability
D) Ductility

C) "7/52"

D) "7/28"

101. Which symbol is used to express change in length?

- A) e
C) l
B) delta l
D) L

102. What is the term, for the details of materials, brand name, grade of quality, rating of current and voltage etc.?

- A) Price catalogue
C) Raw materials
B) Specification of materials
D) Drawing

103. What is the volume (V) of mercury in cm^3 , if mass (m) of mercury is 1 kg and density (r) is 13.6 g/cm^3 ?

- A) 73.23 cm^3
C) 73.33 cm^3
B) 73.53 cm^3
D) 73.43 cm^3

104. What is the total cost of Air-conditioners installed in a college, 40 class room-each 1 Air-conditioner, Computer lab 5 Air- conditioners and conference hall 5 Air-conditioners (Cost of one air conditioner Rs.30000/- including installation)?

- A) Rs. 20 lakhs
C) Rs. 12 lakhs
B) Rs. 15 lakhs
D) Rs.10 lakhs

105. What is the velocity ratio of a wheel and axle if the radii of wheel and axle are 375 mm and 75 mm respectively?

- A) 5
C) 4
B) 6
D) 3

106. What is the area of the sector, if the diameter is 12 cm and the angle is 60 Degree?

- A) 19.00 cm^2
C) 18.0 cm^2
B) 18.84 cm^2
D) 17.75 cm^2

107. Which is example for second order lever?

- A) Common balance
C) Bottle opener
B) A pair of scissors
D) Human forearm

108. What is the SI unit of pressure?

- A) Bar
C) Pascal
B) Newton
D) Joule

109. Which state of equilibrium's example is A cone resting on its tip?

- A) Horizontal
C) Neutral
B) Unstable
D) Stable

110. What is the improper fraction for the given mixed fraction ? $7 \frac{3}{7}$

- A) $(52/7)$
B) "28/7"

111. What is the total surface area of a cylinder having radius 2 metres and height 5 metres?

- A) 88 sq.metre
C) 90 sq.metre
B) 86 sq.metre
D) 92 sq.metre

112. What is the equivalent unit for 1 horse power in metric system?

- A) 77 kg.m/sec
C) 78 kg.m/sec
B) 75 kg.m/sec
D) 76 kg.m/sec

113. What is the centre of gravity of a semi circle of diameter 12 cm?

- A) 2.24 cm
C) 2.75 cm
B) 3.25 cm
D) 2.54 cm

114. What is the value of $12x^3y^2 / 4x^2y$?

- A) $(-3xy)$
C) $3xy$
B) $8xy$
D) $16xy$

115. What is the value of $x^2 - y^2$ if $(x+y) = 9$, $(x - y) = 4$?

- A) 65
C) 13
B) 46
D) 36

116. What is the area of an ellipse if the major and minor axes are 5 cm and 3 cm respectively?

- A) 37 cm^2
C) 57 cm^2
B) 47 cm^2
D) 27 cm^2

117. What is called the ratio between the density of a substances density of water at 4 Degree Centigrade?

- A) Specific gravity
C) Weight
B) Mass
D) Density

118. What is the name of the point at which all the weight of the body concentrated?

- A) Centroid
C) Central point
B) Initial point
D) Centre of gravity

119. Who prepares the cost of estimation?

- A) Estimator
C) Quality Inspector
B) Draughts man
D) Operator

120. What is the principal amount deposited, if the maturity proceeds to an amount of Rs.25000/- and interest earned Rs.6000/-?

- A) Rs.25000/-
B) Rs.20000/-

C) Rs.19000/-

D) Rs.31000/-

121. Which one is heat insulator?

A) Brass

B) Copper

C) Aluminium

D) Thermocole

122. What is the radius of the circle if the angle of sector is 90 Degree and the area of the circle is 196 cm^2 ?

A) 14.95 cm

B) 15 cm

C) 14.85 cm

D) 15.77 cm

123. What is the length of each part is a copper wire of 225 metre long is cut into 900 equal parts?

A) 0.28 metre

B) 0.25 metre

C) 0.29 metre

D) 0.23 metre

124. What is the profit amount, if the i - phone cost price is Rs.50000/- and selling price is Rs.70000/-?

A) Rs. 20000/-

B) Rs. 10000/-

C) Rs. 2000/-

D) Rs. 50000/-

125. Convert 45 Degree C (Centigrade) into Degree F (Fahrenheit)

A) 111 Degree F

B) 110 Degree F

C) 112 Degree F

D) 113 Degree F

126. What is the total construction cost of a house construction area of 3000 sq.ft. (cost of construction Rs.2000/- per sq.ft including material and labour)?

A) Rs.30,000,000

B) Rs.6,000,000

C) Rs.60,00,000

D) Rs.6,00,000

127. Which hand book referred by machine engineer?

A) Mark standard

B) CRC

C) Parry's cheorikal

D) Oxford Dictionary

128. What is the term used for maximum stress attained by a material before rupture?

A) Ultimate stress

B) Compressive stress

C) Working stress

D) Tensile stress

129. Which property of metal has its power of returning to its original shape after the applied force is released?

A) Plasticity

B) Malleability

C) Elasticity

D) Tenacity

130. Which property of a metal possessed by it melts when heat is applied?

A) Conductivity

B) Malleability

C) Tenacity

D) Fusibility

131. What is the formula for total surface area of a cylinder?

A) $2\pi r(h + r)$

B) $\pi r(h + r)$

C) $2\pi rh$

D) πrh

132. Which force acts on rivets?

A) Tensile force

B) Bending force

C) Compressive force

D) Shear force

133. What is called if a body changes its position with respect to its surroundings?

A) Body at rest

B) Speed

C) Body at motion

D) Velocity

134. What is the block weighs (W) in kg, if volume (V) is 320 cm^3 and density 8.9 g/cm^3 ?

A) 2.648 kg

B) 2.848 kg

C) 2.948 kg

D) 2.448

135. How many days a mechanic takes to assemble 64 machines if he assembles 8 machines in 3 days?

A) 20 days

B) 26 days

C) 22 days

D) 24 days

136. What is the specific gravity of the metal, if the piece of metal weighs 150 grams in air and 125 grams in water?

A) 15

B) 10

C) 25

D) 6

137. Which law states about electromagnetic induction?

A) Hooke's law

B) Faraday's law

C) Lenz's law

D) Ohm's law

138. What is the square root of 0.017?

A) 0.13

B) 0.000001

C) 0.001

D) 0.00001

139. What is the potential energy, if a body of mass 250 kg is at a height of 30 metre?

A) 75.57 KJ

B) 73.57 KJ

C) 72.57 KJ

D) 74.57 KJ

140. Which order lever is claw hammer?

A) Curved lever

B) 1st order lever

C) 2nd order lever

D) 3rd order lever

141. What is the unit of intensity of magnetic field?

A) wb/m

B) Hertz

C) m/wb	D) Coloumb
142. What is the area of a circle of diameter 50 cm?	
A) 1962.5 cm^2	B) 1942.5 cm^2
C) 1932.5 cm^2	D) 1952.5 cm^2
143. How much heat is absorbed by a copper ingot weighing 400 Kg is heated from 40 Degree C to 72 Degree C for the purpose of forging? (sp.heat of copper is 0.09)	
A) 1152 Kcal	B) 1521 Kcal
C) 1251 Kcal	D) 1215 Kcal
144. What is the product of 0.003×0.5 ?	
A) 0.00015	B) 0.0015
C) 0.015	D) 0.15
145. What is the angle of elevation of the top of a light house of 15 m height seen at a point 15 m away from the base?	
A) 45 Degree	B) 60 Degree
C) 30 Degree	D) 90 Degree
146. What is the name of furnace to obtained cast iron?	
A) Cupola	B) Alloy metal - Electric furnace
C) Steel - Rever battery	D) Mild steel - Blast furnace
147. What is the value of ab if $(a+b)^2=36$ $(a-b)^2=24$?	
A) 4	B) 3
C) 2	D) 6
148. What is the melting point of mercury?	
A) -357 Degree C	B) -7.1 Degree C
C) -38.72 Degree C	D) -209 Degree C
149. What is the interest earned, if the principal is Rs.12000/- becomes to an amount of Rs.15600/-?	
A) Rs.4600	B) Rs.3600
C) Rs.2600	D) Rs.5600
150. How many watts for 1 horse power in British system?	
A) 736 watts	B) 756 watts
C) 726 watts	D) 746 watts
151. What is denoted as 'I'?	
A) Principal	B) Year
C) Rate	D) Interest
152. What is the ratio between the change in dimension to its	

original dimension of the substance?

A) Stress	B) Factor of safety
C) Poisson's ratio	D) Strain
153. Which is equal to $\sin \theta$?	
A) Hypotenuse/Opposite side	B) Adjacent Side/Hypotenuse
C) Hypotenuse/Adjacent side	D) Opposite Side/Hypotenuse
154. Which one of the following geometrical shapes centre of gravity lies from its base is $\frac{1}{3}$ of its height?	
A) Triangle	B) Cone
C) Rhombus	D) Square
155. Convert decimal 0.000659 to fraction?	
A) $(659/1000000)$	B) $(659/100000)$
C) $(659/1000)$	D) $(659/10000)$
156. How many liters of water a cylindrical tank of radius 75 cm and height 100 cm can hold?	
A) 1768.25 liters	B) 1769.25 liters
C) 1766.25 liters	D) 1767.25 liters
157. Which affects the centre of gravity of the object?	
A) Shape	B) Weight
C) Density	D) Mass
158. What is the process of heat treatment?	
A) The process of heating to change the dimensions	B) The process of heating and bending as per our requirement
C) The process of heating and cooling to change the structure and properties	D) The process of cooling to measure the dimensions
159. What is the voltage of the immersion heater? $P = 500 \text{ watts}$ $I = 2.27 \text{ Amps}$ $V = \text{____ Volts}$	
A) 230.3 volts	B) 220.3 volts
C) 200.3 volts	D) 210.3 volts
160. Find the curved surface area of a cylinder 10 cm dia and 20 cm height?	
A) 630 cm^2	B) 628 cm^2
C) 620 cm^2	D) 638 cm^2
161. What is the total cost to assemble 10 personal computer systems, spares cost as given for one system: 1 TB hard disc Rs.4500/-, Intel i3 mother board Rs.7000/-, SMPS Rs.2500/-, monitor Rs.6000/-, keyboard Rs.1000/-, other material cost (Switches, USB, Cabl	

- A) Rs.225000/-
C) Rs.250000/-

- B) Rs.275000/-
D) Rs.265000/-

162. Where the centre of gravity of a circle lies?

- A) At its centre
C) Any where on its radius
- B) Any where on its diameter
D) Any where on its circumference

163. What is the capacity of a body to do work is called?

- A) Energy
C) Power
- B) Force
D) Acceleration

164. What is the formula for $a^m \times a^n$?

- A) a^{m-n}
C) a^{m+n}
- B) a^{mn}
D) $n.a^m$

165. What is the potential energy in a body of mass 10 kg kept on the top of a pole 20 metres height?

- A) 1952 Joules
C) 1972 Joules
- B) 1962 Joules
D) 1942 Joules

166. Which is the example for statically induced emf?

- A) Generator
C) Transformer
- B) Motor
D) Refrigerator

167. What is the safe stress if the ultimate stress of a material is 35 kg/mm^2 and factor of safety is 5?

- A) 0.143
C) 1.43
- B) 7
D) 0.7

168. Which state of equilibrium's example is, A cone resting on its base?

- A) Neutral
C) Both A and B
- B) Stable
D) Un-stable

169. What is the area of a rectangle, whose length and breadth are 10cm and 8cm respectively?

- A) 80 cm^2
C) 90 cm^2
- B) 85 cm^2
D) 75 cm^2

170. Which one is related to estimation of work?

- A) Bill of material
C) Information table
- B) Hand book
D) Packing

171. Which property of a substance is opposing the flow of electric current?

- A) EMF
C) Resistance
- B) Current
D) Voltage

172. What is the diameter of the circle, if the area of the circle is 78.5 cm^2 ?

- A) 15 cm
C) 10 cm
- B) 5 cm
D) 5.5 cm

173. What is the value of $1/a^{-5}$?

- A) a^{-5}
C) 5a
- B) $(-5a)$
D) a^5

174. Which is example for third order lever?

- A) Common balance
C) Forceps
- B) Lime squeezer
D) A pair of scissors

175. How much strain is developed in an iron rod of 1 metre length gets elongated by 1 cm, if a force of 100 kg is applied at one end?

- A) 0.1
C) 0.001
- B) 0.0001
D) 0.01

176. What is the radius of a circle whose diameter is 44 cm?

- A) 22 cm
C) 20 cm
- B) 44 cm
D) 23 cm

177. What is the mechanical advantage, if a load of 1000 kg is lifted by a simple machine and effort applied is 250 kg?

- A) 6
C) 3
- B) 8
D) 4

178. What maximum height a stone will reach if it is thrown upwards with a velocity of 20 m/sec ($g = 10 \text{ m/sec}^2$)

- A) 40 m
C) 30 m
- B) 10 m
D) 20 m

179. What is the diameter of the circle, if the circumference is 31.4 cm?

- A) 5 cm
C) 8 cm
- B) 10 cm
D) 8.5 cm

180. What is the volume of mercury in cm^3 , if the mass (m) of mercury is 136 grams (g) and density (r) of mercury is 13.6 g/cm^3 ?

- A) 13.6 cm^3
C) 10.0 cm^3
- B) 10.6 cm^3
D) 136 cm^3

181. Find the total surface area of a cast iron bar whose length, width and height are 20m, 15m and 12m.

- A) 1440 m^2
C) 1340 m^2
- B) 1640 m^2
D) 1540 m^2

182. Which is the suitable nitriding process for all alloyed and unalloyed steels?

- | | |
|--------------------------------|---------------------------|
| A) Nitriding in Quenching tank | B) Nitriding in salt-bath |
| C) Gas nitriding | D) Silver nitriding |

183. Which cast iron cannot be welded?

- | | |
|----------------------|------------------------|
| A) Nodular cast iron | B) Malleable cast iron |
| C) White cast iron | D) Grey cast iron |

184. What is the current Flow in the bulb? $P = 550$ watts $R = 22$ Ohms $I = \underline{\hspace{1cm}}$ Amps

- | | |
|-----------|-----------|
| A) 4 Amps | B) 5 Amps |
| C) 3 Amps | D) 2 Amps |

185. What is the HCF of 18, 42, 24?

- | | |
|-------|-------|
| A) 24 | B) 18 |
| C) 6 | D) 2 |

186. Which one of the following properties is the mechanical properties of metal?

- | | |
|---------------|--------------|
| A) Fusibility | B) Corrosion |
| C) Ductility | D) Structure |

187. What is the value of $\tan \theta$ if $\sin \theta = 4/5$?

- | | |
|------------|------------|
| A) $(5/3)$ | B) $(3/4)$ |
| C) $(4/5)$ | D) $(4/3)$ |

188. What is equal to $\cos \theta$?

- | | |
|-----------------------------|-----------------------------|
| A) Opposite side/Hypotenuse | B) Adjacent Side/Hypotenuse |
| C) Hypotenuse/Adjacent Side | D) Hypotenuse/Opposite Side |

189. What is the formula for velocity?

- | | |
|----------------------------|----------------------------|
| A) Displacement/Time | B) Change in velocity/Time |
| C) Change of momentum/Time | D) Distance covered/Time |

190. What is the flow of electrons in any conductor?

- | | |
|---------------|------------|
| A) Power | B) Voltage |
| C) Resistance | D) Current |

191. Which instrument is used to measure temperatures of red hot metals up to 3000 Degree C?

- | | |
|-----------------------------|------------------------|
| A) Thermoelectric pyrometer | B) Alcohol thermometer |
| C) Bimetal thermometer | D) Radiation pyrometer |

192. What is the youngs modulus if a wire of 2m long, 0.8 mm² in cross section increases its length by 1.6 mm on

suspension of 8 kg weight from it?

- | | |
|-----------------------------|----------------------------|
| A) 1.25 kg/mm ² | B) 12.5 kg/mm ² |
| C) 12500 kg/mm ² | D) 125 kg/mm ² |

193. Which insulating material is most widely used in refrigerators?

- | | |
|---------------|-----------------|
| A) Cork sheet | B) Thermocole |
| C) Glass wool | D) Polyurethane |

194. What is the length L₂, if total length (L) is 2.75 metre and L₁:L₂ = 2:3?

- | | |
|---------------|---------------|
| A) 1.25 metre | B) 1.1 metre |
| C) 1.65 metre | D) 1.75 metre |

195. What is the density (ρ) in g/cm³ of an iron cube, if it weighs (W) 4.8 kg and volume (V) is 640 cm³?

- | | |
|--------------------------|--------------------------|
| A) 6.9 g/cm ³ | B) 7.2 g/cm ³ |
| C) 6.6 g/cm ³ | D) 7.5 g/cm ³ |

196. What is the height of the wall where the ladder touches the wall if the ladder is 2.5 m long makes an angle of 60 Degree with the ground?

- | | |
|------------|-----------|
| A) 2.165 m | B) 4.43 m |
| C) 4.23 m | D) 4.13 m |

197. What is the centre of gravity of a sphere?

- | | |
|-------------------------|--------------------|
| A) On the circumference | B) At the diameter |
| C) At the radius | D) At the centre |

198. What is volume of the cylinder whose radius is 7 cm and height 12 cm?

- | | |
|-------------|-------------|
| A) 1844 c.c | B) 1846 c.c |
| C) 1847 c.c | D) 1842 c.c |

199. What is the definition of ratio?

- | | |
|--|---|
| A) Relation of two quantities of the same kind | B) Inequality between two ratios |
| C) Equality between two ratios | D) Relation of two quantities of the different kind |

200. What is the unit of speed?

- | | |
|------------------------------|-----------------|
| A) Metre/second | B) Metre/hour |
| C) Metre/second ² | D) Metre/minute |

201. Which process steel is heated in a carbonaceous atmosphere for the penetration of carbon?

- | | |
|-------------------|------------------------|
| A) Case hardening | B) Induction hardening |
| C) Carburising | D) Nitriding |

202. What is the decimal fraction of conversion of 18.5%?

- A) 0.195
- B) 0.175
- C) 0.165
- D) 0.185

203. What is the total cost of painting of a class room including ceiling, if the size of length is 6m, breadth is 5m and height is 4m. (Painting + labour cost Rs.150/- per sq.m)

- A) Rs.18700/-
- B) Rs.16700/-
- C) Rs.17700/-
- D) Rs.15000/-

204. What is the value of $14x+3y+25x+2y$?

- A) $44xy$
- B) $39x + 5y$
- C) $17x + 27y$
- D) $16x + 28y$

205. Which is equal to $(a+b)^2 - (a-b)^2$?

- A) $4ab$
- B) $5ab$
- C) $3ab$
- D) $2ab$

206. Which metal is widely used for making casting of machinery parts?

- A) Wrought iron
- B) Malleable cast iron
- C) White cast iron
- D) Grey cast iron

207. What is the diameter of the semicircle, if the circumference of the semicircle is 21.98 cm?

- A) 8.55 cm
- B) 8 cm
- C) 7 cm
- D) 7.55 cm

208. What is the carbon percentage in medium carbon steel?

- A) 0.05% to 0.15%
- B) 0.25% to 0.5%
- C) 0.5% to 1.5%
- D) 0.15% to 0.25%

209. Which insulator is used in over head lines?

- A) Porcelain
- B) Mica
- C) Rubber
- D) P.V.C

210. What is the value of 625^0 ?

- A) 0
- B) 525
- C) 25
- D) 1

211. Which steel is used for making files and cold chisel?

- A) Medium carbon steel
- B) High carbon steel
- C) Low carbon steel
- D) Stainless steel

212. What is the cost price (C.P) formula if there is a profit?

- A) $((100)/(100+\text{Profit \%})) \times \text{S.P}$
- B) $((100+\text{Profit \%})/(100)) \times \text{C.P}$
- C) $((100-\text{Loss \%})/(100)) \times \text{C.P}$
- D) $((100)/(100-\text{Loss \%})) \times \text{S.P}$

213. How the profit / gain is expressed?

- A) %
- B) *
- C) Rs.
- D) \$

214. What is the expanded form of S.P?

- A) Selected Price
- B) Selling Price
- C) Super Price
- D) Special Price

215. Which process produce equilibrium conditions?

- A) Annealing and Normalising
- B) Annealing and Hardening
- C) Normalising and Tempering
- D) Normalising and Tempering

216. What is the value of $x^3 + 3y^2x$ if $x=3$, $y=2$?

- A) 135
- B) 81
- C) 54
- D) 63

217. What is the name of fixed or supporting point of a lever?

- A) Load
- B) Mechanical advantage
- C) Effort
- D) Fulcrum

218. What is the acceleration of an aeroplane taking off from landing field has to run 700 metres if it leaves the ground in 10 seconds from the start?

- A) 8 metre/sec^2
- B) 10 metre/sec^2
- C) 14 metre/sec^2
- D) 12 metre/sec^2

219. What is the rated power if an adjustable resistor bears the following label 1.5 k ohms/ 0.08A?

- A) 9.6 watts
- B) 9.4 watts
- C) 9.8 watts
- D) 9.2 watts

220. Which type heat is the heat absorbed or given off by a substance without changing its physical state?

- A) Latent heat
- B) Sensible heat
- C) Latent heat of steam
- D) Specific heat

221. Which one is a poor heat insulator?

- A) Glass
- B) Rubber
- C) Cork
- D) Saw dust

222. Which alloy used in electric lamp as filament?

- A) Vanadium
- B) Tungsten
- C) Cobalt
- D) Silicon

223. What is equal to $\tan \theta$?

- A) Adjacent side/Opposite side
- B) Opposite Side/Hypotenuse
- C) Adjacent Side/Hypotenuse
- D) Opposite Side/Adjacent Side

224. Which one of the following is not a property of heat insulating material?

- A) Resistance to fire
- B) Ductility
- C) Low conductivity
- D) Less moisture absorption

225. What is the value of x if $11x+4=37$?

- A) 2
- B) 4
- C) 5
- D) 3

226. What is the centre of gravity of a right circular cone from its base?

- A) $h/5$
- B) $h/3$
- C) $h/2$
- D) $h/4$

227. How much voltage will be required to illuminate a 40 watts fluorescent lamp draws a current of 0.10 amperes?

- A) 390 volts
- B) 405 volts
- C) 395 volts
- D) 400 volts

228. What is the work done, if a force of 250 newtons acted upon a body and the body has been moved through a distance of 15 metres?

- A) 3750 Joules
- B) 3730 Joules
- C) 3740 Joules
- D) 3720 Joules

229. What is the selling price if the cost price is Rs.7282/- with a profit of Rs.208?

- A) Rs.7290
- B) Rs.7698
- C) Rs.7490
- D) Rs.7074

230. Which property of material enables to formation of permanent deformation without fracture?

- A) Elasticity
- B) Ductility
- C) Brittleness
- D) Plasticity

231. How much time is allowed normally in soaking zone for a 10mm thick metal piece while hardening?

- A) 15 minutes
- B) 10 minutes
- C) 5 minutes
- D) 20 minutes

232. What is a hand book?

- A) Design book of latest works
- B) Type of reference work or other collection of instruction

- C) Dictionary of materials
- D) Model book of various works

233. What is the total resistance if three resistances of 3 ohms, 9 ohms and 5 ohms are connected in series?

- A) 7 ohm
- B) 11 ohms
- C) 17 ohms
- D) $1/17$ ohms

234. Which is the expansion of $a^3 + b^3$?

- A) $a^3 + b^3 + 3ab(a+b)$
- B) $a^3 - b^3 - 3ab(a-b)$
- C) $(a+b)(a^2 + b^2 + ab)$
- D) $(a-b)(a^2 + b^2 - ab)$

235. What is called if a force of 1Newton acts on a body and moves it through a distance of 1 metre?

- A) 10 Joules
- B) 10 dynes
- C) 1 dyne
- D) 1 Joule

236. Which is brittle metal?

- A) Mild steel
- B) Steel
- C) Alloy steel
- D) Cast iron

237. Which affects the centre of gravity of the object

- A) Mass
- B) Weight
- C) Shape
- D) Density

238. What is the term used for the method of calculating various quantities and expenditure on a particular job or process?

- A) Drawing
- B) Estimation
- C) Plan
- D) Specification

239. Which one is the most reliable estimate?

- A) Cube rate estimate
- B) Plinth area estimate
- C) Detailed estimate
- D) Preliminary estimate

240. What is the area of the circle, if the circumference of the circle is 44cm?

- A) 128 cm^2
- B) 130 cm^2
- C) 129 cm^2
- D) 154 cm^2

241. How much power does it consumes if an electric heater draws a current of 10 amps at 200 volts?

- A) 2000 watts
- B) 2010 watts
- C) 2020 watts
- D) 2030 watts

242. Which is thermosetting plastic?

- A) Celluloid
C) Vinyl polymers

- B) Melamine resins
D) Polystyrenes

- A) 725.5 watts
C) 735.5 watts

- B) 745.5 watts
D) 755.5 watts

243. What is the value in degree centigrade for 20 Degree F?

- A) -6.67 Degree C
C) -6.37 Degree C
- B) -6.57 Degree C
D) -6.47 Degree C

244. Which is elastic material?

- A) Nylon
C) Celluloid
- B) Polystyrenes
D) Polycarbonates

245. What is the compounded annual interest, for a loan amount of Rs.80000/- at 10% per annum for a period of 2 years?

- A) Rs.92400/-
C) Rs.96800/-
- B) Rs.16800/-
D) Rs.94800/-

246. What is the co-efficient of linear expansion of a rod if it is found to be 100 m long at 20 Degree C and 100.14 m long at 100 Degree C?

- A) 1.75×10^{-5} / Degree C
C) 1.75×10^{-6} / Degree C
- B) 1.75×10^{-7} / Degree C
D) 1.75×10^{-4} / Degree C

247. What is called if a body posses only magnitude or size alone?

- A) Scalar quantity
C) Vector quantity
- B) Speed
D) Velocity

248. What is the total wattage in a room if 2 tube lights of 50W rating, 2 fans of 80W rating, 2 numbers of light points of 60W rating, one fan point of 60W rating and one 3 pin socket of 100W rating?

- A) 440 W
C) 340 W
- B) 640 W
D) 540 W

249. What is colour of a metal piece when heated to 250 Degree C while doing the tempering process?

- A) Pale
C) Purple
- B) Brown
D) Blue

250. What is called if a body posses both magnitude and direction of velocity?

- A) Vector quantity
C) Velocity
- B) Scalar quantity
D) Speed

251. What is the boiling point of water in fahrenheit scale?

- A) 112 Degree F
C) 100 Degree F
- B) 212 Degree F
D) 180 Degree F

252. How many watts for 1 horse power in metric system?

253. What is the name of the point at which all the weight of the body concentrated?

- A) Initial point
C) Centre of gravity
- B) Centroid
D) Central point

254. What is the centre of gravity of a rectangular body?

- A) Longer side of rectangle
C) Shorter side of rectangle
- B) At the corners
D) At the point of intersection of its diagonals

255. What is the area of an equilateral triangle of side 450 mm?

- A) 866.82 cm^2
C) 886.82 cm^2
- B) 876.82 cm^2
D) 856.82 cm^2

256. What is the total estimation cost for making the component of 8 drilled hole dia 10 mm and 4 Numbers of M6 taps in the plate, if Rs.8/- per drilled holes and Rs.12 per drill and tap?

- A) Rs.112
C) Rs.100
- B) Rs.110
D) Rs.102

257. What is the ratio between ultimate stress to working stress?

- A) Young's modulus
C) Factor of safety
- B) Bulk modulus
D) Modulus of rigidity

258. What is the difference between the simple and the compound interest amount at 5% per annum for 2 years on a principal of Rs.20000/-?

- A) Rs.55
C) Rs.50
- B) Rs.25
D) Rs.5

259. What is the main factor to be considered while preparing a detailed estimate?

- A) Shape of material
C) Quantity, availability and transportation of materials
- B) Brand of the materials
D) Location of material

260. What are fundamental units?

- A) Length, Mass, Area
C) Length, Pressure, Volume
- B) Length, Mass, Time
D) Length, Mass, Volume

261. What is the name of the region of a circle between any two point on the circumference?

- A) Chord
C) Arc
- B) Sector
D) Segment

262. What is the height of the building if a ladder at 45 Degree touches the building placed 16 m from the base of the building?

- A) 16 m
- B) 15 m
- C) 18 m
- D) 17 m

263. What is the name of the heat treatment process, where the metal is heated and quenched in water or oil?

- A) Tempering
- B) Annealing
- C) Hardening
- D) Normalising and Tempering

264. How much work done in one hour, if a pump can raise 100 liters of water through a height of 200 meters in one minutes?

- A) 12×10^5 kg meter
- B) 12×10^6 kg meter
- C) 12×10^7 kg meter
- D) 12×10^4 kg meter

265. What is the compounded amount, if the principal of Rs.30000/- and interest earned at 7% per annum is Rs.4347?

- A) Rs.32347/-
- B) Rs.33347/-
- C) Rs.34347/-
- D) Rs.30347/-

266. What is the length of arc of a sector, whose perimeter is 64.8cm and radius is 12.4 cm?

- A) 40.8 cm
- B) 45 cm
- C) 42 cm
- D) 40 cm

267. How much quantity of heat is required?
 m = 120 litres
 t₁ = 20 Degree C
 t₂ = 85 Degree C
 S = 4.2
 Q = ____ KJ

- A) 32770 KJ
- B) 32750 KJ
- C) 32760 KJ
- D) 32780 KJ

268. Which is thermo plastic material?

- A) Nylon
- B) Butyl rubber
- C) Neoprene
- D) Vinyl polymers

269. What is the formula for kinetic energy?

- A) $(2/3) mv^2$ joule
- B) $(2/3) mv$ joule
- C) $(1/2) mv^2$ joule
- D) $(1/2) mv$ joule

270. What is the formula to find Loss %?

- A) $(\text{Loss} \times 100) / (C.P)$
- B) $(\text{Loss} + 100) / (S.P)$
- C) $(S.P) / (\text{Loss} + 100)$
- D) $(C.P) / (\text{Loss} \times 100)$

271. What is an over estimate?

- A) When an estimate is exceeded to actual estimate
- B) When an estimate perfectly matches the actual estimate
- C) No work started as per estimate
- D) When an estimate is fell short of the actual estimate

272. What is the resistance of an electric iron if the rating of electric iron is 220 V and 500 watts?

- A) 96.8 ohms
- B) 97.8 ohms
- C) 94.8 ohms
- D) 95.8 ohms

273. What does EMF stands for?

- A) Electro Magnetic Force
- B) Electro Motive Force
- C) Electronic Magnetic Force
- D) Electromated Force

274. Which one has the highest thermal conductivity?

- A) Melting ice
- B) Water
- C) Steam
- D) Solid ice

275. What is the value of 'X' if $x - y = 6$ and $x + y = 8$?

- A) 14
- B) 5
- C) 7
- D) 6

276. What is term called for 3 x linear expansion?

- A) Co-efficient of superficial expansion
- B) Co-efficient of linear expansion
- C) Co-efficient of friction
- D) Co-efficient of cubical expansion

277. Simplify: $(17.49 \times 5.2) / (6.5)$

- A) 13.89
- B) 13.99
- C) 13.69
- D) 13.79

278. Which is very good conductor?

- A) Steel
- B) Cast iron
- C) Wrought iron
- D) Copper

279. What is the percentage of copper if the casting weight of copper 42.3 kg and tin weight 2.7 kg?

- A) Cu 98%
- B) Cu 94%
- C) Cu 92%
- D) Cu 96%

280. What is the minimum permissible size of aluminium wire used in estimation?

- A) 1.5 sq.mm
- B) 5 sq.mm
- C) 3.5 sq.mm
- D) 2.5 sq.mm

281. What are the two classifications of system of units?

- A) Metric and International
- B) Fundamental and derived

C) British and Metric	D) Gravitational and non-gravitational
282. Which type of heat transmission takes place through physical contact?	
A) Conduction	B) Reflection
C) Convection	D) Radiation
283. What is the formula for $(a-b)^2$?	
A) $a^2 - 2ab - b^2$	B) $(-a)^2 - 2ab - b^2$
C) $a^2 - 2ab + b^2$	D) $a^2 + 2ab + b^2$
284. What is the resistance? $I = 11.5$ Amps $V = 380$ Volts $R = \underline{\hspace{1cm}}$ Ohms	
A) 33 ohms	B) 43 ohms
C) 13 ohms	D) 23 ohms
285. What is the ratio of power output to power input?	
A) Energy	B) Work
C) Efficiency	D) Acceleration
286. What is the volume of sphere of radius 7 cm?	
A) 1346 cm^3	B) 1463 cm^3
C) 1636 cm^3	D) 1436 cm^3
287. What is the multiplication value of $5a^2 \times b \times 8a^5 \times b^3$?	
A) $40a^4 \times b^7$	B) $40a^2 \times b^3$
C) $40a^3 \times b^2$	D) $40a^7 \times b^4$
288. Which one is the radiation method of heat transmission?	
A) The heat from sun travels through the space	B) Cold water goes to the bottom from top while on heating the water
C) An iron rod is heated with one of its end and heat transmitted to other end	D) On heating gases, heat transmitted to surroundings
289. What is the ore of aluminium?	
A) Hematite	B) Mallatite
C) Lemonite	D) Bauxite
290. Which is the unit electrical power?	
A) Volts	B) Ohms
C) Ampere	D) Watts
291. Which law states that at constant temperature the current passing through a closed circuit is directly	

proportional to the potential difference and inversely proportional to the resistance?	
A) Lenz's law	B) Newton's law
C) Ohm's law	D) Hooke's law
292. What is the area of the semicircle, if the diameter is 14 cm?	
A) 86.93 cm^2	B) 75.06 cm^2
C) 70 cm^2	D) 76.93 cm^2
293. What is the work done in unit time?	
A) Force	B) Acceleration
C) Energy	D) Power
294. Divide $(20/31)/(15/62)$	
A) $2(2/3)$	B) $2(1/3)$
C) $2(3/2)$	D) $2(4/3)$
295. What is the area of a square whose side is 18 cm?	
A) 72 cm^2	B) 324 cm^2
C) 26 cm^2	D) 36 cm^2
296. Which kind of heat transmission takes places by upward flow?	
A) Radiation	B) Convection
C) Reflection	D) Conduction
297. What is called if a body does not change its position with respect to its surroundings?	
A) Velocity	B) Body at rest
C) Body at motion	D) Speed
298. What is the matured amount for the deposit of Rs.5000/- and the simple interest earned for Rs.500/-?	
A) Rs.4500	B) Rs.5500
C) Rs.6500	D) Rs.6000
299. What is the value for specific heat of water	
A) 4	B) 2
C) 3	D) 1
300. What is the area of a (A) semicircle whose dia is 20 cm (d)?	
A) 157.1 cm^2	B) 177.1 cm^2
C) 147.1 cm^2	D) 167.1 cm^2
301. What is the acceleration of a car if the speed of the car has increased from 25 km per hour to 40 km per hour in one minute?	

- A) 0.069 m/sec^2 B) 0.69 m/sec^2
C) 0.59 m/sec^2 D) 0.059 m/sec^2

302. What are the various types of heat treatment processes?

- A) Annealing, Normalising, Hardening and Tempering B) Normalising, Heating, Cooling and Painting
C) Hardening, Soaking, Painting and Packing D) Tempering, Cooling, Packing and Soling

303. What is the area of a sector of a circle of radius 5 cm and its angle is 96 Degree?

- A) 20.39 cm^2 B) 20.98 cm^2
C) 20.93 cm^2 D) 20.89 cm^2

304. Convert 52% into fraction?

- A) $(9/25)$ B) $(11/25)$
C) $(17/25)$ D) $(13/25)$

305. What is the centre of gravity of a rectangular body?

- A) Shorter side of rectangle B) At the point of intersection of its diagonals
C) At the corners D) Longer side of rectangle

306. What is the value of $a^2 + b^2$ if $a + b = 9$ and $ab = 20$?

- A) 121 B) (-41)
C) 41 D) (-121)

307. What is the specific heat of the material if we require 510 calories to raise the temperature of 170 gm of material from 50 Degree C to 80 Degree C?

- A) 1.11 B) 0.01
C) 0.1 D) 1.1

308. What is the cross sectional area of a circular ring of $D = 38 \text{ mm}$ $d = 32 \text{ mm}$?

- A) 320 mm^2 B) 340 mm^2
C) 330 mm^2 D) 350 mm^2

309. What is the formula for bulk modulus?

- A) Tensile stress/Tensile strain B) Shear stress/Shear strain
C) Compressive stress/Compressive strain D) Volumetric stress/Volumetric strain

310. What is the maximum temperature that can be measured by mercury thermometer?

- A) 300 Degree C B) 400 Degree C
C) 200 Degree C D) 100 Degree C

311. What is the other name of low carbon steel?

- A) Low alloy steel B) Mild steel
C) High alloy steel D) High speed steel

312. Which furnace is used to get pig iron from iron ore?

- A) Blast furnace B) Mild steel - Rever battery
C) Electric furnace D) Cupola

313. What is the maturity amount if Rs.20000 is deposited at 5% compound interest per annum for 2 years?

- A) Rs.25000 B) Rs.22000
C) Rs.22500 D) Rs.22050

314. What is the estimation of milling cost of a rectangular block size 100 X 80 X 60 mm, if cost of the milling is Rs.2/sq.cm?

- A) Rs.960/- B) Rs.652/-
C) Rs.752/- D) Rs.572/-

315. What is called if the length of the solid expands when heated?

- A) Area expansion B) Linear expansion
C) Superficial expansion D) Cubical expansion

316. What is the name called biggest chord of the circle?

- A) Arc B) Diameter
C) Radius D) Diagonal

317. What is the selling price, if the profit is 5% for a computer table bought at Rs.1150/- with Rs.50/- as a transport charge?

- A) 1060 B) 1620
C) 1160 D) 1260

318. Which statement is correct according to ohm's law?

- A) $I = R$ B) $I = R/V$
C) $I = V/R$ D) $I = 1/V$

319. Which one is non-metal?

- A) Mercury B) Iron
C) Brass D) Graphite

320. What is the unit for velocity?

- A) Metre/minute B) Metre/second²
C) Metre/second D) Metre/hour

321. What is the unit of acceleration of an object?

- A) Metre/minutes B) Metre/minutes²

- C) Metre/second² D) Metre/second

322. What is the formula for finding volume of a hollow cylinder having outer radius 'R' inner radius 'r' and height 'h'?

- A) $\frac{\pi}{3} (R^2 - r^2) h$ B) $\frac{4}{3} \pi (R^2 - r^2) h$
C) $\frac{2}{3} \pi (R^2 - r^2) h$ D) $\pi (R^2 - r^2) h$

323. Which rubber is used as insulator for power cables and control wires?

- A) Nitrite butadiene B) Silicon
C) Hypalone D) Butyl

324. What percentage of water absorbed by a good building stone?

- A) Less than 5% B) Less than 10%
C) Less than 20% D) Less than 8%

325. What is known for the temperature at which any solid melts into liquid?

- A) Melting point B) Boiling point
C) Latent heat of fusion D) Latent heat of vaporisation

326. What is the weight force of a car has a mass of 800 kg?(Take $g = 9.81 \text{ m/sec}^2$)

- A) 7748 Newton B) 7847 Newton
C) 7848 Newton D) 7487 Newton

327. What is the ratio of shear stress to shear strain?

- A) Yield point B) Bulk modulus
C) Modulus of elasticity D) Modulus of rigidity

328. What is the other term of pocket reference in engineering works?

- A) Hand tool B) Hand book
C) New book D) Good book

329. What is the name of the structure formed, if a steel is heated for about 723 Degree C?

- A) Ferrite B) Austenite
C) Martensite D) Cementite

330. What is the area of the sector, whose diameter is 40 mm and angle is 120 Degree?

- A) 418.66 mm² B) 416.6 mm²
C) 415.5 mm² D) 400.50 mm²

331. What is the tensile stress if a square rod of 10 mm side is tested for a tensile load of 1000 kg?

- A) 1000 kg/mm² B) 10 kg/mm²
C) 100 kg/mm² D) 1 kg/mm²

332. What is the equivalent pascal value for 1 bar?

- A) 109 pascal B) 107 pascal
C) 105 pascal D) 103 pascal

333. What is the square root of 529?

- A) 43 B) 23
C) 12 D) 33

334. Which is the unit of resistance?

- A) Ohm B) Watt
C) Volt D) Ampere

335. Which alloy steel is used to make permanent magnets?

- A) Manganese steel B) Vanadium steel
C) Cobalt steel D) Silicon steel

336. Convert 0.456 decimal fraction into percentage?

- A) 45.6 B) 0.0456
C) 0.456 D) 0.000456

337. How many millimetres are there in 1 inch?

- A) 24.5 mm B) 2.45 mm
C) 25.4 mm D) 2.54 mm

338. Simplify: $(\frac{3}{4}) + (\frac{2}{5}) - (\frac{5}{20})$

- A) $(\frac{13}{10})$ B) $(\frac{12}{10})$
C) $(\frac{9}{10})$ D) $(\frac{3}{10})$

339. What is the interest earned, if the principal is for Rs.12500/- maturity becomes to a amount of Rs.17500/-?

- A) Rs.5500 B) Rs.30000
C) Rs.5000 D) Rs.25000

340. What is the value of x, if $3(2x - 4) = -4x + 28$?

- A) 6 B) 4
C) 12 D) 8

341. Which among the following is an insulator?

- A) Mica B) Copper
C) Aluminium D) Silver

342. What is the formula for potential energy?

A) $\frac{2}{3}$ mgh joule

B) $\frac{2}{3}$ mgh joule

C) 1785 gram

D) 1975 gram

C) $\frac{1}{2}$ mgh joule

D) mgh joule

343. What is the kinetic energy of a bullet of mass 5gm travels with a speed of 500 m/sec?

A) 625 Joules

B) 635 Joules

C) 630 Joules

D) 620 Joules

344. What are the three consecutive numbers if their sum is 42?

A) 14,15,16

B) 13,14,15

C) 11,12,13

D) 12,13,14

345. How much is 8% of 40 kg?

A) 4.2 kg

B) 3.2 kg

C) 2.2 kg

D) 5.2 kg

346. How many hours will take for a 100 watts bulb to consume 1 kwh energy?
 $W = 1 \text{ Kwh}$
 $P = 100 \text{ Watts}$
 $t = \text{_____Hours}$

A) 12 hours

B) 24 hours

C) 10 hours

D) 18 hours

347. What is the unit of co-efficient of linear expansion?

A) Number / Degree C / cm length

B) Number / Degree C

C) Number / Degree C / meter length

D) Number / Degree C / mm length

348. What is the area of the circle if the radius is 10 cm?

A) 3.14 cm^2

B) 314 cm^2

C) 30.4 cm^2

D) 31.4 cm^2

349. Which metal cannot be forged?

A) Steel

B) Mild steel

C) Cast iron

D) Alloy steel

350. What is the mass in gram, if a force of 15 dynes acting on a mass m producing an acceleration of 2.5 cm/sec^2 ?

A) 9 grams

B) 7 grams

C) 6 grams

D) 8 grams

351. Which specification is other than general specification?

A) Main specification

B) Bulk specification

C) Detailed specification

D) Brief specification

352. What is the weight of the iron ball has volume of 250 cc and density 7.5 gm/cc ?

A) 1875 gram

B) 1750 gram

353. What is the value of $a \times a^2 \times a^3 \times a^4$?

A) a^9

B) a^{10}

C) a^8

D) a^7

354. What is the name of heat treatment process done to relieve strain and stress?

A) Hardening

B) Annealing

C) Normalising

D) Tempering

355. What is the name of a booklet, the rates of various terms are indicated?

A) Price catalogue

B) Price bunch

C) Price bank

D) Price tag

356. Which is the short form of profit and loss statement?

A) P & L

B) PRO & LOS

C) L & P

D) PR & LS

357. What is the specific gravity of the metal, if it weighs 6.5 kgf in air and 3.5 kgf in water?

A) 2.166

B) 1.166

C) 3.166

D) 6.166

358. What is the term, if an article is purchased?

A) Cost price

B) Selling price

C) Margin price

D) Discount price

359. What is the formula for induced emf?

A) $BL \sin \theta$ volts

B) $B^2 L \sin \theta$ volts

C) $BLV \sin \theta$ volts

D) $B^2 V \sin \theta$ volts

360. What is the x value for $x^2 + 62 = 126$?

A) 10

B) 8

C) 4

D) 6

361. What is the unit of strain?

A) Metre

B) Kg/cm^2

C)

Newton/metre²

D) No unit

362. Which is same in series connection of resistors in a circuit?

A) Power

B) Current

C) Resistance

D) Voltage

363. Which one is the ratio of stress?

- A) Load and direction B) Load and time
C) Load and diameter D) Load and area

364. At what temperature will Fahrenheit and centigrade thermometers give the same reading?

- A) -41 Degree C B) -38 Degree C
C) -40 Degree C D) -39 Degree C

365. What is the rate of change of displacement of a body?

- A) Speed B) Body at rest
C) Body at motion D) Velocity

366. Which is expanded form of $a^3 - b^3$?

- A) $(a-b)(a^2 + b^2 + ab)$ B) $(a+b)(a^2 - b^2 - ab)$
C) $(a-b)(a^2 - b^2 - ab)$ D) $(a-b)(a^2 - b^2 + ab)$

367. Which metal contains iron as a major content?

- A) Bronze metal B) Zinc
C) Brass metal D) Ferrous metal

368. What is a profit?

- A) Selling price - Cost price B) Selling price + Cost price
C) Cost price - Selling price D) Cost price + Selling price

369. What is the length of arc of the sector whose radius is 15 cm and the intended angle is 30 Degree?

- A) 7.85 cm B) 7.25 cm
C) 6.85 cm D) 6.75 cm

370. What is the melting point of aluminium?

- A) 660 Degree C B) 620 Degree C
C) 670 Degree C D) 680 Degree C

371. What is called for the amount of heat required to raise the temperature of unit mass of a substance through 1 Degree C?

- A) Specific heat B) Sensible heat
C) Mixing of heat D) Latent heat

372. What metals contained in brass alloy?

- A) Copper and tin B) Copper and lead
C) Copper and aluminium D) Copper and zinc

373. What is the ratio of 4 kg to 800 grams?

- A) 04:08 B) 02:04

C) 08:04

D) 05:01

374. What is the value of $(a^5)^7$?

- A) a^{35} B) a^{2^1}
C) a^{22} D) a^{1^2}

375. Find the total surface area of cube whose side is 25 cm.

- A) 3740 cm^2 B) 3745 cm^2
C) 3750 cm^2 D) 3755 cm^2

376. Which is mineral insulator

- A) Porcelain B) Quartz
C) Glass D) Mica

377. How much watt second in 1 watt hour?

- A) 2000 watt sec B) 1000 watt sec
C) 3600 watt sec D) 4000 watt sec

378. What is the area of a right angled triangle having a base 10 cm and height 5 cm?

- A) 30 sq.cm B) 35 sq.cm
C) 25 sq.cm D) 20 sq.cm

379. What is the cost price if the product is sold at Rs. 572 with a profit of Rs. 72?

- A) Rs. 472 B) Rs. 1000
C) Rs. 644 D) Rs. 500

380. What is the tensile strain if a force of 3.2 KN is applied to a bar of original length 2800 mm extends the bar by 0.5 mm?

- A) 0.0001867 B) 0.0001786
C) 0.0001968 D) 0.0001687

381. What describes the detailed specification for the item of work?

- A) Colour B) Maintenance, Stock, Cost
C) Tax, Transport, Overhead expenses D) Quality, Quantity, Workmanship, Method of execution

382. What is the value of $(6^3) / ((-3)^3)$?

- A) 27 B) (-8)
C) (-27) D) 8

383. What is the circumference of a circle whose diameter is 7 cm?

- A) 25 cm B) 44 cm
C) 21 cm D) 22 cm

384. How the 'Principal' is denoted in simple interest calculation?

- A) 'R'
- B) 'P'
- C) 'I'
- D) 'n'

385. Calculate the amount of heat required to raise the temperature of 85.5 gm of sand from 20 Degree C to 35 Degree C specific heat of sand = 0.1.

- A) 126.28 Joules
- B) 125.28 Joules
- C) 128.25 Joules
- D) 128.26 Joules

386. What is the ratio between lateral strain and longitudinal strain?

- A) Poisson's ratio
- B) Bulk modulus
- C) Hooks law
- D) Young's modulus

387. What are the various stages of heat treatment?

- A) Soaking, Quenching and Cooling
- B) Heating, Soaking and Quenching
- C) Quenching, Cooling and Heating
- D) Heating, Cooling and Quenching

388. Which is equal to electric power?

- A) $R^2 I$ watts
- B) RI
- C) $IR A$
- D) $I^2 R$ watts

389. What is the weight of a rectangular block of a cast iron of 250cm X 20cm X 8cm (density of cast iron is 7.8 gm/cm³)?

- A) 410 kg
- B) 372 kg
- C) 312 kg
- D) 525 kg

390. What is the value of $5x^4 / 5x^3$?

- A) 5x
- B) x
- C) $5x^4 / 5x^3$
- D) $5x^2$

391. What is the side of a square whose area is 625 mm²?

- A) 15 mm
- B) 25 mm
- C) 30 mm
- D) 20 mm

392. What is the name of the property of an insulation that should brake down or puncture on application of high voltage?

- A) Di-electric strength
- B) Mechanical strength
- C) Specific resistance
- D) Non absorption

393. What is discount?

A) Selling price is greater than Cost price

B) The reduction given to the selling price of a product

C) Selling price + discount

D) Selling price is less than Cost price

394. What is the centre of gravity of a sphere?

- A) At the radius
- B) On the circumference
- C) At the centre
- D) At the diameter

395. What is the formula to find Profit %?

- A) $((S.P - C.P) / (Profit)) \times 100$
- B) $((Profit) / (C.P)) \times 100$
- C) $((C.P) / (Profit)) \times 100$
- D) $((Profit) / (S.P)) \times 100$

396. What is the power if an emf of one volt causes a current flow of 1ampere?

- A) 1 kilowatt
- B) 1 Kilowatt hour
- C) 1 HP
- D) 1 watt

397. Which is a kind of surface hardening process?

- A) Cementite
- B) Nitriding
- C) Tempering
- D) Ferrite

398. What is the force with which a body is attracted by the earth towards its centre?

- A) Volume
- B) Weight
- C) Density
- D) Mass

399. A motor cycle tyre is sold for Rs 300/- what is the purchase price if 25% profit is added to it.

- A) Rs 240
- B) Rs 200
- C) Rs 260
- D) Rs 220

400. What is the subtracted value of $3x - 4x^2 + 2y^2$ from $4y^2 - 2x + 8x^2$?

- A) $2y^2 - 5x + 12x^2$
- B) $2y^2 + 5x - 12x^2$
- C) $(-2y^2 - 5x + 12x^2)$
- D) $2y^2 - 5x - 12x^2$

401. What is the centre of gravity of a right circular cone from its base?

- A) $h/4$
- B) $h/2$
- C) $h/5$
- D) $h/3$

402. What is the area of a circular surface if the radius is 14 cm?

- A) 614.5 cm²
- B) 612.25 cm²
- C) 612.44 cm²
- D) 615.44 cm²

403. What is the boiling point of aluminium?

- A) 1897 Degree C B) 2519 Degree C
C) 660 Degree C D) 2469 Degree C

404. What percentage of 80 is 20?

- A) 0.8 B) 0.4
C) 0.2 D) 0.25

405. What is the use of engineering drawing?

- A) For colourful appearance B) For estimation of material and execution of work
C) For increasing the cost D) For reducing the cost

406. What is the value of x if $13+x=20$?

- A) 13 B) 8
C) 9 D) 7

407. Which is the unit of current?

- A) Ohm B) Watt
C) Volt D) Ampere

408. What is the efficiency of a simple screw jack having velocity ratio is 314.2 and mechanical advantage is 220?

- A) 0.65 B) 0.6
C) 0.75 D) 0.7

409. Which standard schedule of rates to be considered for estimation?

- A) Standard schedule of rates of the current year B) Standard schedule of rates of the average of last 5 years
C) Standard schedule of rates of the average of the last 10 years D) Standard schedule of rates of the last year

410. Which state of equilibrium's example is, A cone resting on its base?

- A) Stable B) Both A and B
C) Neutral D) Un-stable

411. What is the ratio of change in length to original length?

- A) Linear strain B) Volumetric strain
C) Lateral strain D) Poisson's ratio

412. What is the speed of a train of 80 metre long train passes a railway station platform of 120 metres length in 20 seconds?

- A) 36 km/hour B) 30 km/hour
C) 32 km/hour D) 34 km/hour

413. What cables are used for 132KV lines?

- A) High tension B) Super tension
C) Extra super voltage D) Extra high tension