Q1. ABC analysis deals with

(a) Analysis of process chart

(b) Flow of material

(c) Ordering schedule of job

(d) Controlling inventory costs

Ans: d

Q2. Process layout is employed for _____.

(a) Batch production

(b) Continuous production

(c) Effective utilization of machine

(d) All of these

Ans: d

Q3. According to Indian Boiler Regulation (IBR) Act 1923, boiler means any closed vessel for generating steam under pressure having capacity exceeding _____.

(a) 22.75 litres

(b) 12.75 litres

(c) 2.75 litres

(d) 1.75 litres

Ans: a

Q4. An inventory that consists of materials actually being worked on or moving between work centres is called _____.

(a) Seasonal inventory

(b) Safety inventory

(c) Transit inventory

(d) Decoupling inventory

Ans: c

Q5. Monel metal is an alloy of

(a) Nickel and chromium

(b) Nickel and copper

(c) Nickel and iron

(d) Copper and chromium

Ans: b

Q6. Which of the following plant layout is more flexible?

(a) Product layout

(b) Process layout

(c) Cellular layout

(d) Fixed layout

Ans: c

Q7. For which of the following sub – groups size, R – chart is most suitable?

(a) Less than 10

(b) More than 10 but less than 20

(c) More than 20 but less than 50

(d) More than 50 but less than 100

Ans:

Q8. Factor of safety is defined as

(a) Working stress/ultimate stress

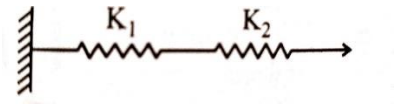
(b) Working stress × ultimate stress

(c) Ultimate stress/working stress

(d) $\frac{1}{2}$ × working stress × ultimate stress

Ans: c

Q9. Equivalent stiffness of the following system will be:



(a) $K_1 + K_2$

(b) $\frac{(K_1+K_2)}{2}$

(c) $\frac{(K_1K_2)}{(K_1+K_2)}$

(d) $\sqrt{K_1 + K_2}$

Ans:c

Q10. Polar moment of inertia of a circular shaft of radius 'r' will be _____.

(a) $\frac{\pi r^4}{2}$

(b) $\frac{\pi r^4}{16}$

(c) $\frac{\pi r^4}{4}$

(d) $\frac{\pi r^4}{32}$

Ans:a

Q11. Which chart is used to represent the number of defectives in the output of any process?

(a) X – bar chart

(b) R – chart

(c) C – chart

(d) p – chart

Ans: d

Q12. The technique of work measurement are

(a) Stop watch time study only

(b) Work sampling only

(c) Analytical estimating only

(d) All of these

Ans:

Q13. Fundamental tool in work study is

(a) Process chart

(b) Graph paper

(c) Stop watch

(d) Planning chart

Ans: c

Q14. Which of the following is not an engineering factor for solving material handling problem?

(a) Nature of materials and products to be handled

(b) Building construction

(c) Production process and equipment

(d) Cost of installation

Ans: d

Q15. Choose the incorrect statement regarding effect of noise on human beings:

(a) Disturbs sleep

(b) Damages hearing

(c) It does not lead to fatigue and the efficiency of a person exposed to noise increases

(d) It is the cause of industrial accidents

Ans: c

Q16. The time delay between placing an order and receipt of delivery is called _____.

(a) Replenishment time

(b) Lead time

(c) Planning time

(d) Review time

Ans: b

Q17. Industrial Legislation Act is not based on which of the following principle?

(a) Productivity

(b) International uniformity & solidarity

(c) Social equality

(d) Social justice

Ans:

Q18. Class C fires occur in _____.

(a) Wood

(b) Cloth

(c) Gasoline

(d) Electric switch

Ans: d

Q19. Helmets or hats are used for protection of _____.

(a) Head

(b) Eye

(c) Hand and arm

(d) Foot and leg

Ans: a

Q20. Which of the following factor comes under economic factors to be considered in material handling problem?

(a) Nature of materials to be handled

(b) Initial cost of equipment

(c) Building construction

(d) Layout of work piece

Ans: b

Q21. Father of time study was _____.

(a) F.W. Taylor

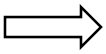
(b) H.L. Gantt

(c) F.B. Gilberth

(d) R.M. Barnes

Ans: a

Q22. The symbol used for transport in work study is _____.

(a) 

(b) 

(c) 

(d) 

Ans:a

Q23. Which of the following is not the function of planning phase of PPC?

(a) Process planning and control

(b) Material control

(c) Scheduling

(d) Expediting

Ans:

Q24. Which of the following cost is not included in total inventory cost?

(a) Ordering cost

(b) Shortage cost

(c) Inventory carrying cost

(d) Inspection cost

Ans: b

Q25. Most of the textile mills are situated at Mumbai and Ahmedabad because textile mills require _____.

(a) Cold climate

(b) Moist climate

(c) Hot climate

(d) Transport facility

Ans: b

Q26. One time Measurement Unit (TMU) in method time measurement system equals

(a) 1 minute

(b) 0.0006 minute

(c) 0.006 minute

(d) 0.01 minute

Ans:

Q27. Material handling in Automobile industry is done by _____.

(a) Trolley

(b) Belt conveyer

(c) Overhead cranes

(d) All of these

Ans: c

Q28. Quality may be expressed as

(a) Performance $\times$ Expectation

(b) Expectation/Performance

(c) Performance/Expectation

(d) None of these

Ans: c

Q29. Which of the following is a control chart by attributes?

(a) $\bar{X}$ - chart

(b) R - chart

(c) CUSUM chart

(d) p – chart

Ans: d

Q30. Which one of the following tool is not used in layout planning?

(a) Operation process charts

(b) Flow process charts

(c) Flow diagrams

(d) Principal charts

Ans: d

Q31. Which one of the following is not a symptom of bad layout?

(a) Excessive amount of work in process

(b) Poor utilization of space

(c) Heavy work piece

(d) Long transportation lines

Ans: a

Q32. Which of the following is/are methods of sales forecasting?

(a) Survey of experts' opinion method only

(b) Sales force composite method only

(c) Market share method only

(d) All of these

Ans: d

Q33. Which of the following material handling device is used for transporting the material in horizontal direction?

(a) Hoists

(b) Elevation

(c) Overhead cranes

(d) Hand and power trucks

Ans: a

Q34. Defective routing may not result in the _____.

(a) Increase in the cost of material handling

(b) Slow down of the rate of production

(c) Prolonged processing time

(d) Improvement in productivity

Ans: d

Q35. Reorder point is expressed as _____.

(a) Maximum Inventory + (Procurement time × Consumption rate)

(b) Minimum Inventory + (Procurement time × Consumption rate)

(c) Minimum Inventory – (Procurement time × Consumption rate)

(d) Procurement time × Consumption rate

Ans:

Q36. Micro motion study involves _____ number of fundamental hand motion.

(a) 20

(b) 16

(c) 12

(d) 8

Ans: b

Q37. Standard time is _____.

(a) Normal time + allowances

(b) Normal time + idle time + allowances

(c) Normal time + idle time

(d) Only normal time for an operation

Ans: a

Q38. Which of the chart deals with material handling and plant location?

(a) Travel chart

(b) Gantt chart

(c) Emerson chart

(d) Bin chart

Ans:

Q39. Gross National Product means

(a) Total earning of all citizens

(b) Total value of goods produced in a country

(c) Total value of gold existing in a country

(d) Total tax paid by all citizens

Ans: b

Q40. MIS stands for

(a) Military Inspection Scheme

(b) Management Intelligence System

(c) Management Information System

(d) Management Information Service

Ans: c

Q41. Percentile idle time for men or machines is found by

(a) Work sampling

(b) Time study

(c) Method study

(d) ABC analysis

Ans:

Q42. The first free trade zone in India was established at _____.

(a) Kochi

(b) Goa

(c) Mumbai

(d) Chennai

Ans:

Q43. Which of the following is not a direct inventory?

(a) Raw material

(b) Purchased parts

(c) Finished goods

(d) Tools

Ans: c

Q44. If large frequent orders are placed, which of the following cost would be high?

(a) Cost of ordering

(b) Cost of delivery

(c) Cost of storage

(d) Cost of inspection

Ans: c

Q45. Economic lot size of an item depends on which of the following?

(a) Possibility of placing repeat order only

(b) Nature of demand only

(c) Availability of discount only

(d) All of these

Ans: d

Q46. Which of the following factors influence plant layout?

(a) Management policy only

(b) Manufacturing process only

(c) Nature of product only

(d) All of these

Ans: d

Q47. Core prints are used for

(a) Fastening two pieces

(b) Directional solidification

(c) Supporting the core

(d) Controlling the shrinkage

Ans: c

Q48. If the power transmitted by a shaft is 10π kW and torque is 15 kN – m, then RPM will be _____.

(a) 10π

(b) 20

(c) 10

(d) 20π

Ans: b

Q49. Modulus of elasticity of steel is about _____.

(a) 20.5 GN/m^2

(b) 205 MN/m^2

(c) 205 GN/m^2

(d) 2.05 GN/m^2

Ans: c

Q50. If cross – sectional area of a bar is doubled and tensile force is increased four times, then normal stress

(a) Will be doubled

(b) Will be four times

(c) Will become half

(d) Will be eight times

Ans: a

Q51. For a given material, the value of Poisson's ratio _____

(a) Increases with increase in force

(b) Remains always constant

(c) Decrease with increase in force

(d) Depends on the weight of body

Ans: b

Q52. Which one of the following is correct relation between effective length and actual length of a column having one end fixed and one end hinged?

(L = effective length; l = actual length of column)

(a) $\mathrm{L} = \frac{\mathrm{l}}{\sqrt{2}}$

(b) $\mathrm{L} = \frac{\mathrm{l}}{2}$

(c) $\mathrm{L} = 2\mathrm{l}$

(d) $\mathrm{L} = \mathrm{l}$

Ans: a

Q53. For a Poisson's ratio 0.4, the ratio of bulk modulus to modulus of rigidity would be

(a) 8/3

(b) 10/3

(c) 14/3

(d) 1.0

Ans: c

Q54. In case of thin cylinder, the ratio of circumferential stress to longitudinal stress would be

(a) 0.3

(b) 2

(c) 3

(d) 0.4

Ans: b

Q55. The unit of strain is _____.

(a) N/m^2

(b) N/m

(c) N – m

(d) It has no unit

Ans: d

Q56. Hooke's law is valid till _____.

(a) Elastic limit

(b) Proportional limit

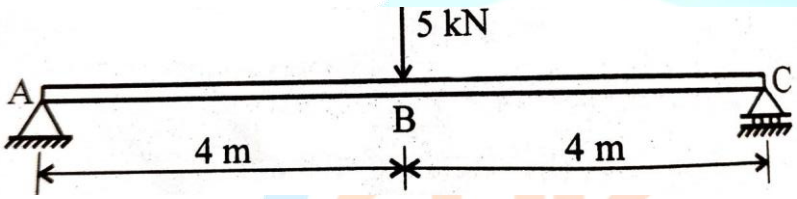
(c) Maximum stress

(d) Fracture stress

Ans: b

Q57. A simply supported beam is shown below:

The reaction force at 'A' and 'C' will be



(a) 4 kN, 4kN

(b) 5kN, 5kN

(c) 2.5 kN, 2.5 kN

(d) 20 kN, 20 kN

Ans: c

Q58. The SI units for shear stress and normal stress are _____ and ____ respectively.

(a) N/m^2, N/m^2

(b) N, N

(c) N, N/m^2

(d) kg/m^2, kg/m^2

Ans: a

Q59. The slenderness ratio for long column is _____.

(a) Less than 32

(b) 50 – 60

(c) 80 – 100

(d) 80 – 100

Ans: d

Q60. The polar moment of inertia of hollow shaft with outer diameter = D and inner diameter = d, is expressed as _____.

(a) $\frac{\pi}{16}(D^3 - d^3)$

(b) $\frac{\pi}{16}(D^4 - d^4)$

(c) $\frac{\pi}{32}(D^4 - d^4)$

(d) $\frac{\pi}{64}(D^4 - d^4)$

Ans: c

Q61. A spring used to absorb shocks and vibrations in heavy vehicle is _____.

(a) Spiral spring

(b) Torsion spring

(c) Leaf spring

(d) Disc spring

Ans:

Q62. Deflection of simply supported beam is maximum where slope of a deflection is _____

(a) Zero

(b) Maximum

(c) Double

(d) None of these

Ans: a

Q63. The locus of the instantaneous center of a moving body is

(a) Straight line

(b) Involute

(c) Centroid

(d) Spiral

Ans:

Q64. The total strain energy stored in a specimen before fracture in tensile testing is called _____.

(a) Resilience

(b) Impact energy

(c) Strain energy

(d) None of these

Ans: a

Q65. The maximum bending moment of a simply supported beam of length $'l'$ and load 'w' acting at mid – point of beam is _____.

(a) $\frac{wl}{4}$

(b) $\frac{wl}{2}$

(c) wl

(d) $\frac{wl^2}{4}$

Ans: a

Q66. The Rankine formula holds good for _____.

(a) Short column only

(b) Long column only

(c) Both short and long columns

(d) Weak column

Ans: c

Q67. The ratio of linear stress to the linear strain is called _____.

(a) Modulus of rigidity

(b) Modulus of elasticity

(c) Bulk modulus

(d) Poisson's ratio

Ans: b

Q68. The coefficient of friction depends upon _____.

(a) Area of contact

(b) Shape of surface

(c) Strength of surface

(d) Nature of surface

Ans: d

Q69. Mohr's circle can be used to determine the following stresses induced on an inclined surface

(a) Principal stresses

(b) Normal stresses

(c) Resultant stresses

(d) All options are correct

Ans: c

Q70. Euler's buckling load for a column fixed at both ends is

(a) $\frac{\pi^2 EI}{l^2}$

(b) $\frac{2\pi^2 EI}{l^2}$

(c) $\frac{4\pi^2 EI}{l^2}$

(d) $\frac{3\pi^2 EI}{l^2}$

Ans: c

Q71. Which type of spring is used in suspension of heavy trucks?

(a) Laminated

(b) Closed oil

(c) Helical

(d) Open coil

Ans:

Q72. Which of the following materials is most elastic?

(a) Rubber

(b) Plastic

(c) Brass

(d) Steel

Ans: d

Q73. The planes which have _____ are known as principal planes.

(a) No shear stresses

(b) No tensile stresses

(c) No compressive stresses

(d) Shear and tensile stresses

Ans: a

Q74. A material has a Young's modulus of $1.25 \times 10^5\ N/mm^2$ and a Poisson's ratio of 0.25. Calculate modulus of rigidity.

(a) $1 \times 10^5\ N/mm^2$

(b) $2 \times 10^5\ N/mm^2$

(c) $5 \times 10^4\ N/mm^2$

(d) $1.5 \times 10^5\ N/mm^2$

Ans: c

Q75. If the three coplanar forces acting on a point are in equilibrium, each force is proportional to the sine of the angle between the other two. It is according to the _____.

(a) D' Alembert's principle

(b) Lami's theorem'

(c) Verignon's theorem

(d) Law of triangle of forces

Ans: b

Q76. In a machine, it was found that the effort had to move through a distance of 250 mm to lift the load by 5 mm. Load of 40000 N was raised by an effort of 1000 N by this machine. What will be the efficiency of machine?

(a) 40%

(b) 125%

(c) 80%

(d) 50%

Ans: c

Q77. Four pulleys arranged to form the first order of the pulley of which 03 of them are movable pulleys. If the efficiency of the system is 90%, the effort required to raise a load of 3 kN will be

(a) 374 N

(b) 417 N

(c) 474 N

(d) 517 N

Ans: a

Q78. Which of the following is not an assumption in truss analysis?

(a) Each member of the truss is connected at its end by frictionless pin.

(b) The truss is loaded as well as supported only at this joints.

(c) The forces in the members of truss are axial only.

(d) The forces in the members of truss are circumferential only.

Ans: d

Q79. Which types of gears are used for converting rotary motion into linear motion?

(a) Spur gear

(b) Worm & worm gear

(c) Rack and pinion

(d) Bevel gear

Ans: b

Q80. Two shafts connected through cross belt drive rotate

(a) Parallel and in same direction

(b) Parallel and in opposite direction

(c) Perpendicular and in opposite direction

(d) Perpendicular and in same direction

Ans: b

Q81. The maximum efficiency of a screw jack is _____ where $'\theta'$ is angle of limiting friction.

(a) $\frac{1-\sin\theta}{1+\sin\theta}$

(b) $\frac{1+\sin\theta}{1-\sin\theta}$

(c) $\frac{1-\tan\theta}{1+\tan\theta}$

(d) $\frac{1+\tan\theta}{1-\tan\theta}$

Ans: a

Q82. The Poisson's ratio for steel varies from _____.

(a) 0.25 to 0.35

(b) 0.10 to 0.18

(c) 0.40 to 0.44

(d) 0.50 to 0.59

Ans: a

Q83. An ideal machine is one whose efficiency is _____.

(a) Between 60% and 70%

(b) Between 70% and 80%

(c) Between 80% and 930%

(d) 100%

Ans: d

Q84. In case of screw jack, the condition of maximum efficiency is given by _____.

Where $'\alpha'$ and $'\Phi'$ are helix angle and angle of friction respectively.

(a) $\alpha = 45° + \frac{\phi}{2}$

(b) $\alpha = 45° - \frac{\phi}{2}$

(c) $\alpha = 60° + \frac{\phi}{2}$

(d) $\alpha = 60° + \frac{\phi}{2}$

Ans: b

Q85. A point on a link connecting double slider crank chain traces _____.

(a) A hyperbola

(b) A circle

(c) A parabola

(d) An ellipse

Ans: d

Q86. Crowning of pulleys helps _____

(a) In increasing velocity ratio

(b) In decreasing the slip of belt

(c) In automotive adjustment of belt position so that belt runs properly

(d) In increasing belt & pulley life

Ans: c

Q87. Hartnel Governor is a _____ Type of governor.

(a) Spring loaded

(b) Dead weight

(c) Inertia

(d) Pendulum

Ans: a

Q88. Two spur gears have a velocity ratio of 1/3. The driven gear has 72 teeth of 8 mm module and rotates at 300 rpm. The number of teeth of the driver is _____.

(a) 20

(b) 22

(c) 24

(d) 30

Ans: c

Q89. A four bar chain becomes a slider crank chain when its one of the turning pairs is replaced by _____.

(a) Rolling pair

(b) Sliding pair

(c) Screw pair

(d) Spherical pair

Ans: b

Q90. Power of a governor is calculated by which one of the following expression?

(a) Effort $\times$ displacement

(b) Effort/Displacement

(c) Effort × height of governor

(d) Weight of governor × height of the governor

Ans: c

Q91. Static balancing means balancing of _____.

(a) Couples

(b) Masses

(c) Distance

(d) Forces

Ans: d

Q92. The angle of cam turn during which the follower rises, is known as _____.

(a) Angle of ascent

(b) Angle of dwell

(c) Angle of descent

(d) Angle of action

Ans: a

Q93. Two shafts are connected by two pulleys of same radius 'R' by an open belt drive. The distance between the centre of the two pulleys is 'L'. What length of belt will be required to connect them?

(a) $2\ \pi R + 2L$

(b) $\pi R + 2L$

(c) $2\ \pi R + L$

(d) $\pi R + L$

Ans: a

Q94. The motion of a bicycle wheel is _____.

(a) Translatory

(b) Rotary

(c) Rotary and translatory

(d) Curvilinear

Ans: c

Q95. The resultant of two forces 'P' and 'Q' acting at an angle $'\theta'$ between them

(a) $\sqrt{P^2 + Q^2 + PQ\cos\theta}$

(b) $\sqrt{P^2 + Q^2 + 2PQ\cos\theta}$

(c) $\sqrt{P^2 + Q^2 - 2PQ\cos\theta}$

(d) $\sqrt{P^2 + Q^2 - PQ\cos\theta}$

Ans: b

Q96. Hour and minute hands of a clock mechanism are connected by the following gear train _____.

(a) Simple

(b) Compound

(c) Epicyclic

(d) Reverted

Ans: d

Q97. Screw and nut self – locking condition is _____

(a) When efficiency is less than 50%

(b) When efficiency is equal to 50%

(c) When efficiency is more than 50%

(d) When efficiency is equal to that for overhauling

Ans: a

Q98. Which of the following is not the condition for complete balancing of reciprocating parts of engine?

(a) Primary force polygon must be closed

(b) Primary couple polygon must be closed

(c) Secondary force polygon must be closed

(d) Secondary couple polygon must not be closed

Ans: d

Q99. Which lubricant is used for rope brake dynometer?

(a) Grease

(b) Water

(c) No lubricant

(d) Oil

Ans: c

Q100. Isochronous governor has sensitivity of _____.

(a) One

(b) Zero

(c) Five

(d) Infinity

Ans: d

Q101. Velocity ratio of a belt drive due to slip _____.

(a) Decreases

(b) Increases

(c) Remain same

(d) None of these

Ans: a

Q102. For V – belt drive, the included angle of a pulley is _____.

(a) 20° - 30°

(b) 30° - 40°

(c) 40° - 50°

(d) 50° - 60°

Ans: b

Q103. In order to have maximum power transmission, the velocity of belt should be _____

[Note : T = strength of the belt (N), m = mass of the belt (kg/m)]

(a) $\frac{T}{2m}$

(b) $\sqrt{\frac{T}{2m}}$

(c) $\frac{T}{\sqrt{3m}}$

(d) $\sqrt{\frac{T}{3m}}$

Ans: d

Q104. Which drive does not have flexible connector?

(a) Belt

(b) Chain

(c) Rope

(d) Gear

Ans: d

Q105. Which one of the following is not measured by a dynamometer?

(a) Temperature

(b) Torque

(c) Force

(d) Power

Ans: a

Q106. If in a gear train each intermediate shaft carries two wheels as gears, one of which act as driven and other as driver to the different shaft, then the gear train is called _____.

(a) Simple gear train

(b) Compound gear train

(c) Epicyclic gear train

(d) Reverted gear train

Ans: b

Q107. Collar bearing are used with shaft for _____.

(a) Increasing the frictional torque

(b) Increasing the intensity of pressure

(c) Decreasing the frictional torque

(d) Preventing axial movement

Ans: d

Q108. In a simply supported beam with point loads the bending moment is maximum at a section where shear force is _____ after changing its sign.

(a) Maximum

(b) Minimum but not zero

(c) Zero

(d) None of these

Ans: c

Q109. The stiffness of a spring is denoted by one of the following:

(a) Load per unit length

(b) Load per unit deflection

(c) Load per unit diameter

(d) Load per unit radius

Ans: b

Q110. For a column, the actual length of column is $'l'$ and the least radius of gyration is 'k', then the slenderness ratio will be _____.

(a) $\frac{k}{l}$

(b) $\frac{l}{k}$

(c) $\frac{k^2}{l}$

(d) $\frac{l}{k^2}$

Ans: b

Q111. If a member of a structure is vertical and both of its ends are fixed rigidly while subjected to an axial compressive load, it is known as _____.

(a) Column

(b) Strut

(c) Buckler

(d) None of these

Ans: a

Q112. Isotropic material have same _____property in all direction.

(a) Elastic

(b) Plastic

(c) Thermal

(d) Loading

Ans: a

Q113. Torsional rigidity of the shaft is defines _____.

(a) Modulus of elasticity $\times$ inertia

(b) Modulus of elasticity /inertia

(c) Modulus of rigidity × polar moment of inertia

(d) Modulus of rigidity / polar moment of inertia

Ans: c

Q114. Cam and follower is an example of _____

(a) Sliding pair

(b) Rolling pair

(c) Lower pair

(d) Higher pair

Ans: d

Q115. The design of thin cylindrical shell is based on _____.

(a) Hoop stress

(b) Longitudinal stress

(c) Volumetric stress

(d) All of these

Ans: d

Q116. The Rankine formula holds good for the following:

(a) Short column only

(b) Long column only

(c) Both short and long columns

(d) Weak column

Ans: c

Q117. Principal plane have

(i) Normal stresses

(ii) Shear stresses

(a) (i) only

(b) (ii) only

(c) Both (i) & (ii)

(d) Neither (i) nor (ii)

Ans: a

Q118. Maximum shear stress by Mohr's circle method, is equal to the _____of Mohr's circle.

(a) Radius

(b) Diameter

(c) $2 \times$ diameter

(d) $4 \times$ diameter

Ans: a

Q119. Two forces P = 6 N and Q = 10 N are acting on a particle and their line of action are inclined to each other at an angle of 45°, the resultant is equal to (approximate)

(a) 12.8

(b) 17.8

(c) 14.8

(d) 15.8

Ans: c

Q120. A load which is acting at a point on a beam is known as _____load.

(a) Uniformly distributed

(b) Concentrated

(c) Uniformly varying

(d) Triangular

Ans: b

Q121. A coil of helical spring with stiffness 'k' is cut into two equal parts. The stiffness of one of the parts will be _____.

(a) Double

(b) One half

(c) One third

(d) One fourth

Ans: a

Q122. Ratio between angle of repose and angle of friction is _____.

(a) < 1

(b) > 1 but <2

(c) >2 but < 3

(d) 1

Ans: d

Q123. In a single threaded screw

(a) The lead of the screw is three times of the pitch

(b) Pitch of the screw is two times of lead

(c) Pitch and lead are equal

(d) Lead of the screw is double the pitch

Ans:

Q124. Which of the following metal has Body Centred Cubic (BCC) structure?

(a) Molybdenum

(b) Copper

(c) Calcium

(d) Magnesium

Ans: a

Q125. Surface area of a hemispherical solid is _____

(a) πr^2

(b) $2\pi r^2$

(c) $3\pi r^2$

(d) $4\pi r^2$

Ans: b

Q126. If the torque applied on a cylindrical shaft of diameter D is T, the maximum shear stress will be _____.

(a) $\frac{8T^2}{\pi D^2}$

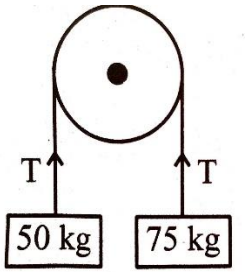
(b) $\frac{16T^2}{\pi D^2}$

(c) $\frac{16T}{\pi D^3}$

(d) $\frac{8T}{\pi D^2}$

Ans: c

Q127. Two loads of 50 kg and 75 kg are hung at the ends of a rope passing through over a smooth pulley as shown in fig. The tension (T) in the string is



(a) 50 kg

(b) 75 kg

(c) 25 kg

(d) 60 kg

Ans: d

Q128. The ratio of maximum stress induced due to suddenly applied load to the stress induced due to gradually applied will be _____.

(a) 2

(b) $\frac{1}{2}$

(c) $\frac{1}{3}$

(d) 3

Ans: a

Q129. Neutral plane of a beam _____.

(a) Is in the middle of beam

(b) Is at centre of gravity of beam

(c) Is at bottom of beam

(d) Is at plane where length of beam remains constant during deformation

Ans: d

Q130. Generally which type of joint is produced by a rivet?

(a) Fillet

(b) Cotter joint

(c) Lap

(d) All of these

Ans: c

Q131. The maximum distortion energy criterion was proposed by _____.

(a) Tresca

(b) Von Mises

(c) Newton

(d) Timoshinko

Ans: b

Q132. The dimension marked by arrow in the figure is called _____.

(a) Throat thickness

(b) Leg length

(c) Weld face

(d) Base

Ans: a

Q133. Which alloying element is added to copper to form brass?

(a) Tin

(b) Zinc

(c) Aluminium

(d) Sulphur

Ans: b

Q134. For equilibrium of the mass, the height of a Watt governor, running with the speed of 'N' RPM is given by

(a) $\frac{895}{N^2}\ m$

(b) $\frac{895}{N}\ m$

(c) $\frac{895}{N^3}\ m$

(d) $\frac{8950}{N}\ m$

Ans: a

Q135. For all positions of the governor of the sleeve or balls, the governor has the same equilibrium speed. Such governor is known as

(a) Sensitive governor

(b) Isochronous governor

(c) Stable governor

(d) Unstable governor

Ans: b

Q136. The maximum shear stress (τ) is calculated by the formula $\tau = \frac{TR}{J}$. What is J in the formula? Where R is radius and T is torque.

(a) Moment of inertia

(b) Polar moment of inertia

(c) Force

(d) Moment

Ans: b

Q137. Which type of welded joint shown is in the figure?

(a) Fillet

(b) Butt

(c) Vee

(d) Parallel

Ans: a

Q138. During estimation of cost of welding, the cost of welding transformer is a _____.

(a) Fixed cost

(b) Material cost

(c) Variable cost

(d) None of these

Ans: a

Q139. Which of the following property decreases by alloying chromium in steels?

(a) Ductility

(b) Wear resistance

(c) Hardenability

(d) Corrosion resistance

Ans: a

Q140. Which of the following is an electric insulation material?

(a) Mercury

(b) Brass

(c) Silver

(d) Bakelite

Ans: d

Q141. A controlled process during which timber is allowed to dry out prior to being used in construction is known as

(a) Sawing

(b) Preservation

(c) Burning

(d) Seasoning

Ans: d

Q142. Failure due to tearing of the plate between the rivet hole and edge may be avoided if _____. [m = margin, d = diameter of rivet]

(a) m = d

(b) m = 1.5d

(c) m = 0.7d

(d) m = 0.5d

Ans: b

Q143. Which of the following comes under indirect materials for a car manufacturing company?

(a) Steel

(b) Rubber

(c) Stationery material

(d) Glass

Ans: c

Q144. Directional solidification in casting can be improved by using

(a) Chills

(b) Chaplets

(c) Cores

(d) All of these

Ans: a

Q145. The complete transformation of austenite takes place at _____ during cooling from liquid state.

(a) Just below 723°C temperature

(b) Just above 723°C temperature

(c) at 723°C temperature

(d) at 910°C temperature

Ans: d

Q146. The fuel used in blast furnace is

(a) Coke

(b) Coal

(c) Wood

(d) Producer gas

Ans: a

Q147. Which theory is used for brittle materials?

(a) Maximum principal strain theory

(b) Maximum shear strain theory

(c) Maximum shear stress theory

(d) Maximum principal stress theory

Ans: d

Q148. Which one of the following is not an advantage of welded joints over riveted joint?

(a) Assembly is lighter and less costly

(b) Tight and leak proof assembly

(c) Thermal distortion in parts

(d) No stress concentration problem

Ans: c

Q149. Fe – C alloys containing _____ carbon are called steels.

(a) 0 – 0.14%

(b) 0 – 0.41%

(c) 0 – 1.0%

(d) 0 – 1.4%

Ans: d

Q150. Which of the following is an example of non – metallic material?

(a) Zinc

(b) Copper

(c) Asbestos

(d) Iron

Ans: c

Q151. Silicon is an example of _____material.

(a) Conductor

(b) Semiconductor

(c) Insulator

(d) Magnetic

Ans: b

Q152. Which of the following gears are not used to join parallel shafts?

(a) Bevel gears

(b) Helical gears

(c) Spur gears

(d) Spiral gears

Ans: a

Q153. Which one of the following test method is used to obtain material yield strength?

(a) Charpy test

(b) Izod test

(c) Creep test

(d) Tensile test

Ans: d

Q154. Which test method is employed to obtain endurance limit of material?

(a) Tensile test

(b) Compression test

(c) High cycle fatigue test

(d) Low cycle fatigue test

Ans: c

Q155. Which of the following is mechanical property of a material?

(a) Stress

(b) Strain

(c) Yield strength

(d) Shear stress

Ans: c

Q156. Which of the following is a type of line imperfection?

(a) Vacancies

(b) Frankel defect

(c) Edge dislocation

(d) Substitutional impurity

Ans: c

Q157. The tetragon has _____

(a) 04 faces

(b) 12 edges

(c) 6 corner

(d) 8 edges

Ans: b

Q158. Which of the metal has the highest melting point among Copper, Aluminium, Lead and Zinc?

(a) Copper

(b) Aluminium

(c) Lead

(d) Zinc

Ans: a

Q159. Which imperfection is called zero dimensional imperfection?

(a) Volume imperfection

(b) Point imperfection

(c) Line imperfection

(d) Surface imperfection

Ans: b

Q160. Pure iron melts at _____.

(a) 1300℃

(b) 1455℃

(c) 1535℃

(d) 1600℃

Ans: c

Q161. The T – T – T curve has shape like _____.

(a) C

(b) S

(c) T

(d) O

Ans: a

Q162. The process that occurs at elevated temperatures is/are

(a) Only recovery

(b) Only recrystallization

(c) Both recovery and recrystallization

(d) None of these

Ans: c

Q163. Normalizing is used to _____.

(a) Decrease the ductility

(b) Increase the grain size

(c) Decrease the grain size

(d) Increase the hardness

Ans: c

Q164. The property of a material by virtue of which it resists fracture because of high impact loads is called _____.

(a) Endurance

(b) Strength

(c) Elasticity

(d) Toughness

Ans: d

Q165. Ferrite is also known as

(a) $\alpha - iron$

(b) $\beta - iron$

(c) $\gamma - iron$

(d) $\delta - iron$

Ans: a

Q166. Teflon is a _____.

(a) Thermosetting polymer

(b) Thermoplastic polymer

(c) Inorganic compound

(d) Phenolic

Ans: a

Q167. Which one of the following theories of failure is also known as Saint Venant theory?

(a) Maximum principal stress theory

(b) Maximum principal strain theory

(c) Maximum shear stress theory

(d) Maximum strain energy theory

Ans: b

Q168. In case threads on a bolt are left hand, threads on nut will be _____

(a) Right hand with same pitch

(b) Left hand with same pitch

(c) Could be left or right hand

(d) Left hand with fine pitch

Ans: a

Q169. The _____ joint is used to connect piston rod and the cross head of steam engine.

(a) Cotter

(b) Knuckle

(c) Bolted

(d) Universal

Ans: a

Q170. Diameter of washer is usually taken

(a) Less than nut size

(b) Equal to the nut size

(c) Bigger than the nut size

(d) Any size irrespective of nut size

Ans:

Q171. On applying external load on a machine part made of metal, which of the following take place?

(a) First plastic deformation

(b) First elastic deformation

(c) Both type of deformation happens simultaneously

(d) Deformation does not take place

Ans: c

Q172. Which of the following is non – crystalline (Amorphous)?

(a) Common salt

(b) Glass

(c) Diamond

(d) Silver

Ans: b

Q173. Stainless steel is a type of _____ steel.

(a) Carbon

(b) Alloy

(c) Tool

(d) Wrought

Ans: b

Q174. A solid cube has an edge length as 'A'. The ratio of volume and the surface area will be _____.

(a) 2A

(b) A/6

(c) A/2

(d) A/4

Ans: b

Q175. If 'D' is the diameter of a sphere, then volumetric strain is equal to _____.(where ∈ is stain)

(a) 1.5∈

(b) 2∈

(c) 3∈

(d) 4∈

Ans: c

Q176. Dimensional unit of stress is _____.

(a) MLT^{-2}

(b) $\mathrm{ML}^{-1}\mathrm{T}^{-1}$

(c) $\mathrm{ML}^{-2}\mathrm{T}^{-2}$

(d) $\mathrm{ML}^{-1}\mathrm{T}^{-2}$

Ans: d

Q177. In case of rubber, stress _____with stain.

(a) Increases

(b) Remain constant

(c) Increases and then decreases

(d) Decreases and then increases

Ans:

Q178. Resilience of a material is significant when the material is subjected to _____.

(a) Shock loading

(b) Thermal stresses

(c) Wear and tear

(d) Fatigue

Ans:a

Q179. Rivets are usually specified by _____.

(a) Length of rivet

(b) Diameter of head

(c) Thickness of plates to be riveted

(d) Nominal diameter

Ans: d

Q180. Transverse fillet welded joints are designed for _____.

(a) Compressive strength

(b) Tensile strength

(c) Shear strength

(d) Bending strength

Ans: c