MAGDALINE COACHING CENTRE (mc²)
CIVIL ENGINEERING PAPER 1 (JUNE)

1. The stress in a member subjected to a force is
   a) Continued deformation under sustained loading
   b) Load per unit area
   c) The resistance offered by the material per unit area to a force
   d) The strain per unit length
   Ans- c

2. Permanent set is
   a) The force which acts permanently on the body
   b) Irrecoverable deformation in the body
   c) The shape of the member just after completion of construction
   d) Ratio of poisson's ratio to young's modulus
   Ans-b

3. In the case of a partially elastic body that part of the work done by the external forces during deformation is dissipated in the form of heat, which is developed in the body during
   a) Non-elastic deformation
   b) Elastic deformation
   c) 50% of total deformation
   d) Last 25% of deformation
   Ans- a

4. Young's modulus is the ratio of the normal stress to the
   a) Normal strain within elastic limit
   b) Reciprocal of normal strain within elastic limit
   c) Normal strain within proportional limit
   d) Normal strain at yield point
   Ans- c

5. As per elastic theory of design the factor of safety is the ratio of
   a) Working stress to yield stress
   b) Yield stress to working stress
   c) Ultimate strength to yield stress
   d) Ultimate load to load a yield
   Ans- b

6. In a composite bar the load distribution among different materials of which it is made is based on the assumption that all the materials will have
   a) Equal areas
   b) Same young's modulus
   c) Same strain
   d) Same stress
      Ans- c

7. The stress due to temperature change in a member depends on
   a) Length of the member
   b) Area of cross-section
   c) Supporting conditions at the two ends
   d) None of the above
      Ans-c

8. The poisson's ratio is the ratio of
   a) Lateral elongation to linear elongation
   b) Lateral stress to linear stress
   c) Lateral strain to longitudinal strain
   d) Young's modulus to modulus of rigidity
      Ans-a

9. A tie is a member which
   a) Connects two joints
   b) Is subjected to axial tension primarily
   c) Does not suffer any stress irrespective of loading conditions
   d) Suffers two equal and opposite forces at the two ends
      Ans-b

10. A strut is a member which
    a) Connects two joints
    b) Is subjected to shear force predominantly
    c) Is subjected to axial compressive force predominantly
    d) Is subjected to bending moment and shear force along with any axial force
       Ans-c

11. A principal plane is a plane which carries
    a) Maximum shear stress
    b) The given stresses of higher magnitude acting
    c) No shear stress
    d) Plane inclined at 45 degree to x-axis
    Ans-c

12. The residual stress in a member is
    a) The stress due to the loading on the member
    b) The average of initial and final stresses
    c) Deformation stress
    d) Instantaneous stress due to sudden loading
    Ans- c

13. The stress along the contact surface of a rivet and the member is
    a) Bearing stress
    b) Compressive stress
    c) Shearing stress
    d) Axial tensile stress
    Ans- a

14. In a stressed body the maximum normal stress at any point is always
    a) A principal stress
    b) Average of maximum and minimum shear stresses
    c) Sum of the normal stresses acting in two principal directions
    d) None of these
    Ans- a

15. In a stressed body the minimum normal stress at any point is always
    a) Average of two normal stresses acting in the two principal directions
    b) A principal stress
    c) Difference of two normal stresses in the two principal directions plus shear stresses on the planes
    d) None of these
    Ans-b

16. The maximum shear stress will be equal to
    a) One half of the algebraic difference of the maximum and minimum principal stresses at the point
    b) The intensity of shear stress acting on the major principal plane
    c) The shear stress acting on the planes in the direction of the two principal directions
    d) None of these
       Ans-a

17. The ratio of strengths of a rivet in doubts shear to that in a single shear will be
    a) 1
    b) ½
    c) 2
    d) None of these
       Ans- c

18. When a column is resting on a base plate, the stresses along the surfaces of contact are
    a) Compressive stresses
    b) Shear stresses
    c) Tensile stresses
    d) Bearing stresses
       Ans-d

19. If the poisson's ratio of a material is 0.25, then ratio of modulus of rigidity to the young's modulus is
    a) 2
    b) 0.4
    c) 2.5
    d) 4
       Ans-b

20. The actual breaking stress of a ductile material from a tension test will be
    a) Greater than ultimate strength
    b) equal to ultimate strength
    c) equal to nominal breaking stress
    d) Less than the ultimate strength but greater than nominal breaking stress

Ans-a

21. The difference in placing the end of a beam simply over a support and the supporting end through a hinge on rollers is that the roller support
   a) Can offer reaction in the plane of rollers
   b) Can offer moment reaction
   c) Will not allow the end to lift up due to deflection
   d) Will not offer reaction normal to the plane of rollers
   Ans- c

22. A horizontal beam with both the ends hinged will be statically determinate for this type of loading
   a) Purely vertical loading
   b) Purely inclined loads
   c) Any general loading
   d) Inclined loads with moments
   Ans- a

23. A beam is said to be ,in general ,stable and statically determinate for general loading when the number of reaction components is
   a) Greater than 3
   b) 0
   c) Less than 3
   d) 3
   Ans-c

24. Which of the following end conditions permits the displacement in any direction and also rotation?
   a) Fixed end
   b) Hinged end
   c) Free end
   d) Roller end
   Ans-c

25. What is the maximum number of unknown reaction components that can be determined using only statics
   a) 0
   b) 1

c) 2
d) 3
   Ans-d

26. By increasing the carbon content in steel, the ultimate tensile strength will
   a) Decrease
   b) Not be affected
   c) Increase
   d) Become zero
      Ans-c

27. With the increase in the carbon content, the ductility of the steel will
   a) Increase
   b) Decrease
   c) Not be affected
   d) Difficult to tell
      Ans-b

28. Which of the following materials will have the highest young's modulus?
   a) Brass
   b) Copper
   c) Mild steel
   d) Timber
      Ans-c

29. What is tenacity?
   a) Ultimate strength in tension
   b) Ultimate strength in compression
   c) Ultimate shear strength
   d) Ultimate impact strength
      Ans-a

30. At ordinary temperatures, how is the yield point affected with rate of loading?
   a) Not greatly influenced
   b) Very greatly influenced
   c) Not influenced at all
   d) Difficult to tell

Ans-a

31. Which of the following materials is suitable for transverse test for modulus of rupture?
    a) Mild steel
    b) Timber
    c) Aluminum
    d) Rubber
       Ans-b

32. What is the number of basic elements of a force?
    a) 3
    b) 1
    c) 2
    d) 4
       Ans-d

33. A plane section before twisting will remain plane after twisting if the cross-section is
    a) Rectangular
    b) Circular
    c) Square
    d) Triangular
       Ans-b

34. When a close coiled helical spring is subjected to an axial compressive load the material will be subjected to
    a) Axial compressive stress
    b) Axial tensile stress
    c) Shear stress
    d) Bending stress
       Ans-c

35. The diamond cone indenter is used in
    a) Rockwell hardness test
    b) Brinell hardness test
    c) Vicker's hardness test
    d) Direct shear stress

Ans-a

36. The diamond quadrilateral pyramid indenter is used in
    a) Rockwell hardness test
    b) Brinell hardness test
    c) Vicker's hardness test
    d) Direct shear stress
    Ans-c

37. In Brinell hardness test, the type indentured used is
    a) Hard steel cone
    b) Hard steel ball
    c) Mild steel ball
    d) Diamond cone
    Ans- b

38. Glass will obey hooke's law upto
    a) Yield point
    b) Proof stress
    c) Fracture
    d) 50% of stress at fracture
    Ans-c

39. The effect of the size of the specimen on ultimate strength will be more serious for
    a) Ductile materials
    b) Brittle materials
    c) Hard materials
    d) None of the above
    Ans-b

40. The proportional limit mild steel specimen is taken as the stress corresponding to a permanent set of
    a) 0.2%
    b) O.1%
    c) 0.25%
    d) 0.01%
    Ans-d

41. The statically indeterminate structures can be solved by
    a) Using equations of statics alone
    b) Equations of compatibility alone
    c) Ignoring all deformations and assuming the structure to be rigid
    d) Using the equations of statics are written based on
       Ans-d

42. A plane structure is a structure
    a) The various members of which lie in a plane
    b) The thickness of various members of which will be very small
    c) In which there will not be any bending moment
    d) None of the above
       Ans- a

43. A dam is a
    a) One dimensional structure
    b) Two dimensional structure
    c) Three dimensional structure
    d) None of the above
       Ans- c

44. A beam is a
    a) One dimensional structure
    b) Two dimensional structure
    c) Three dimensional structure
    d) None of the above
       Ans-a

45. A slab is a
    a) One dimensional structure
    b) Two dimensional structure
    c) Three dimensional structure
    d) None of the above
       Ans- b

46. A plane structure when subjected to a force lying outside the plane will be
    a) Stable
    b) Statically determinate

c) Unstable
d) Statically indeterminate
   Ans-c

47. An internally indeterminate structure
    a) Must be externally indeterminate
    b) Must be externally determinate
    c) May be unstable structure based on supports
    d) None of the above
       Ans- c

48. A beam is completely analyzed , when
    a) Support reactions are determined
    b) Shear and moment diagrams and found
    c) The moment of inertia is uniform throughout the length
    d) None of the above
       Ans- b

49. A rigid frame is a structure composed of members which are connected by
    a) Rigid joints
    b) Simple bearing
    c) A single rivet
    d) None of the above
       Ans- a

50. A truss is completely analyzed ,when
    a) The direct stresses in all the members are found
    b) All the external reaction components are determined
    c) The equilibriums satisfied
    d) None of the above
       Ans- The direct stresses in all the members are found

51. In a co-planar parallel force system, the number of unknown forces that can be found by the principles of statics is
    a) 3
    b) 2
    c) 1
    d) 0.

Ans – b

52. In a general co-planar force system, the number of unknown forces that can be found by the principles of statics is
   a) 1
   b) 2
   c) 3
   d) 0
      Ans-c

53. A rigid prop is one which
   a) permits 50% of free deflection, that would have occurred if the prop were not there
   b) does not permit any displacement perpendicular to the plan of prop
   c) those not offer any reaction
   d) support the entire load and relieves all other support completely
      Ans (b)

54. An elastic prop is one which
   a) Does not offer any reaction
   b) Support the entire load and relieves all other support completely
   c) Develops reaction proportional to the compression in itself
   d) None of the above
      Ans-c

55. A sinking prop is one which
   a) Permits any amount of deflection
   b) Does not permit any deflection at all
   c) IS provided below the level of regular supports and becomes effective after the respective deflection occurs
   d) None of the above
      Ans-c

56. The loading on the conjugate beam will be
   a) Loading on the real beam divided by EI
   b) B.M diagram multiplied by EI
   c) B.M diagram divided by S.F diagram
   d) B.M diagram divided by EI

Ans-d

57. The shear force at a section conjugate beam will be
   a) Shear force multiplied by EI at the section in real beam
   b) Deflection at the section multiplied by EI in real beam
   c) EI time slope at that section n real beam
   d) Slope at the section in real beam
   Ans-d

58. The deflection at a section in the real beam is equal to
   a) The bending moment at that section in the conjugate beam
   b) EI times the bending moment at that section
   c) The shear force at that section in the conjugate beam
   d) The moment of the bending moment diagram of conjugate about the section
   Ans-a

59. For a conjugate beam, the fixed end of a real beam corresponds to
   a) Fixed end
   b) Free end
   c) Hinged end
   d) Hinged end on roller.
   Ans-b

60. The free end of a cantilever corresponds to
   a) Free end of the corresponds conjugate beam
   b) Hinged end of the corresponding conjugate beam
   c) Fixed end of the corresponding conjugate beam
   d) None of the above
   Ans-c

61. A support over which the real beam is continuous will correspond to
   a) An internal hinge in the conjugate beam
   b) A hinged support in the conjugate beam
   c) A fixed support in the conjugate beam
   d) A discontinuity in the conjugate beam
   Ans-a

62. The displacements of joints of a truss can be obtain directly from
    a) Space diagram
    b) Force diagram
    c) Williot Mohr diagram
    d) Funicular polygon
       Ans-c

63. If a basic structure is obtain by removing the roller support of an indeterminate structure the requirement the basic structure has to satisfy is that
    a) The deflection in the direction perpendicular to the supporting surface must be zero
    b) The displacement in the direction of supporting surface must be zero
    c) The displacement in any direction at that point must be zero
    d) None of the above
       Ans-a

64. The basic form of a pin jointed frame is a
    a) Triangle
    b) Rectangle
    c) Trapezium
    d) Parallelogram
       Ans-a

65. In a pin jointed plane frame all the loads are assumed to act
    a) In the plane of the frame
    b) Perpendicular to the plane of the frame
    c) In a plane inclined at 45* to the plane of the frame
    d) None of the above
       Ans-a

66. In a pin jointed plane frame all the loads will be assumed to act at
    a) The centre of the members only
    b) The joints of the member only
    c) Only the top chord joints
    d) None of the above
       Ans-b

67. In a pin jointed frame it is sufficient if the forces in all the members meeting at a jointed are
    a) Co-planer
    b) Co-planar and concurrent
    c) Equal in magnitude
    d) None of the above
       Ans-b

68. In a pin jointed frame the members meeting at a joint must be so arranged that
    a) The axes of all the members are concurrent and coplanar
    b) Not more than to axes met at a point
    c) The axes must be parallel to each other
    d) At least three axes meet at a common point
       Ans-a

69. For analyzing pin jointed frames by the method joints, the number of equations of static equilibrium available is
    a) 3
    b) 1
    c) 0
    d) 2
       Ans-d

70. The ratio of strength of a fixed beam to that of a simply supported beam of same span under u.d.l. throughout with regards to shear is
    a) 3
    b) 2
    c) O.5
    d) 1.0
       Ans-d

71. Gypsum is a
    a) Mechanically formed sedimentary rock
    b) Igneous rock
    c) Chemically precipitated sedimentary rock
    d) Metamorphic rock
    Ans -c

72. Which of the following sedimentary rocks changes quartzite by metamorphic action?
    a) Sand stone
    b) Lime stone
    c) Shale
    d) Gypsum
       Ans- a

73. Quartzite is a
    a) Siliceous rock
    b) Argillaceous rock
    c) Calcareous rock
    d) Aqueous rock
       Ans- a

74. Which of the following is a mineral?
    a) Basalt
    b) Granite
    c) Quartz
    d) Syenite
       Ans- c

75. Slate is formed by metamorphic action on
    a) Shale
    b) Lime stone
    c) Sand stone
    d) Granite
       Ans- a

76. Which of the following is a rock?
    a) quartz
    b) mica
    c) gypsum
    d) none of the above
       ans- c

77. A heavy stone is suitable for
   a) Arches
   b) Rubble masonry
   c) Roads
   d) Retaining wall
      Ans- d

78. The stone suitable for rubble masonry should be
   a) Hard
   b) Tough
   c) Heavy
   d) Light
      Ans- a

79. Which of the following metamorphic rocks has the most weather resisting characteristics
   a) Marble
   b) Quartzite
   c) Slate
   d) Lime stone
      Ans-b

80. Which of the following has more fire resisting characteristics?
   a) Marble
   b) Lime stone
   c) Compact sand stone
   d) Granite
      Ans-c

81. Jumper is a tool used for
   a) Testing of stones
   b) Quarrying of stones
   c) Dressing of stones
   d) None of the above
      Ans- b

82. The important test to be conducted on a stone used in docks and harbour is
    a) hardness test
    b) workability test
    c) weight test
    d) toughness test
       ans- c

83. The predominant constituent which is responsible for strength in granite is
    a) Quartz
    b) Felspar
    c) Mica
    d) None of the above
       Ans- a

84. Which of the following stone is best suited for construction of piers and abutments of a railway bridge?
    a) Granite
    b) Sand stone
    c) Lime stone
    d) Quartzite
       Ans- a

85. Crushing strength of a good building stone should be more than
    a) 50 MPa
    b) 100 MPa
    c) 150MPa
    d) 200MPa
       Ans- b

86. Spalling hammer is used for
    a) Driving wooden headed chisels
    b) Rough dressing of stones
    c) Carving of stones
    d) Breaking small projection of stones
       Ans-b

87. Cross cut saw is used for
    a) Cutting soft stones
    b) Cutting hard stones
    c) Cutting large blocks of stones
    d) Dressing stones
        Ans- b

88. Which of the following trees yields hard wood?
    a) Deodar
    b) Chir
    c) shishum
    d) Pine
        Ans- d

89. In which of the following pairs both trees yield soft wood?
    a) Deodar and shishum
    b) Chir and sal
    c) Sal and teak
    d) Chir and deodar
        Ans-d

90. Which of the following timbers is suitable for making sports goods?
    a) Mulberry
    b) Mahogany
    c) Sal
    d) Deodar
        Ans- a

91. The disease of dry rot in timber is caused by
    a) Lack of ventilation
    b) Alternate wet and dry conditions
    c) Complete submergence in water
    d) None of the above
        Ans-a

92. First class timber has an average life of
    a) Less than one year
    b) 1 to 5 years
    c) 5 to 15 years
    d) More than 10 years
    Ans- d

93. Pug mill is used for
    a) Preparation of clay
    b) Moulding of clay
    c) Drying of bricks
    d) Burning of bricks
    Ans-a

94. Number of bricks required for one cubic metre of brick masonry is
    a) 400
    b) 450
    c) 500
    d) 550
    Ans-c

95. Glazing is used to make earthenware
    a) Hard
    b) Soft
    c) Porous
    d) Impervious
    Ans- d

96. Hydraulic lime is obtained by
    a) Burning of lime stone
    b) Burning of kankar
    c) Adding water to quick lime
    d) Calcinations of pure clay
    Ans- b

97. The normal consistency of ordinary Portland cement is about
   a) 10%
   b) 20%
   c) 30%
   d) 40%
      Ans- c

98. Addition of pozzolana to ordinary Portland cement increases
   a) Bleeding
   b) Shrinkage
   c) Permeability
   d) Heat of hydration
      Ans- b

99. For testing compressive strength of cement, the size of cube used is
   a) 50mm
   b) 70.6mm
   c) 100mm
   d) 150mm
      Ans- a

100. The maximum quantity of calcium chloride used as an accelerator in cement in percentage by weight of cement is
   a) 1
   b) 2
   c) 3
   d) 4
      Ans- b

101. Which of the following is a weakness of bar chart?
   a) Interdependences of activities
   b) Project progress
   c) Uncertainties
   d) All of the above
      Ans- d

102.   Which of the following is not a PERT event?
   a) Site investigation started
   b) Sessional work completed
   c) Bus starts from jaipur
   d) Class is being attended
      Ans- d

103.   Expected project duration generally follows
   a) Normal distribution curve
   b) Poissons distribution
   c) Beta- distribution curve
   d) None of the above
      Ans- a

104.   The area under the Beta- distribution curve is divided into two parts
   by
   a) Most likely time
   b) Optimistic time
   c) Pessimistic time
   d) Expected time
      Ans- d

105.   Which of the following does not represent an activity
   a) Site located
   b) Foundation is being dug
   c) The office area is being cleaned
   d) The invitations are being sent
      Ans- a

106.   Earliest finish of an activity is always
   a) Greater than earliest event time of the following node
   b) Less than earliest event time of the following node
   c) Less than or equal to earliest event time of the following note
   d) Greater than or equal to the earliest event time of the following node
      Ans- c

107.   Select the incorrect statement
   a) Earliest start of an activity is the early event time of the node it enters
   b) Latest finish of an activity is the late event time of the node it enters
   c) Latest start of an activity is equal to its latest finish minus its duration
   d) None of the above
      Ans- d

108.   Select the incorrect statement
   a) Start float and finish float are always equal
   b) Total float can be either start float or finish float
   c) Start float and finish float need not be equal
   d) Start float and finish float are the differences between activity times and not event times
      Ans- c

109.   Whenever an activity has zero total float, then
   a) Free float of an activity must be zero but independent float need not be zero
   b) Independent float must be zero but free float need not be zero
   c) Free float and independent float both must be zero
   d) Free float and independent float need not be zero
      Ans- c

110.   Total float for any activity is defined as the difference between
   a) Its latest finish time and earliest start time for its successor activity
   b) Its latest start time and earliest start time
   c) Its latest start time and earliest finish time
   d) Its earliest finish time and earliest start time for its successor activity
      Ans- b

111.   Select the incorrect statement
   a) A critical path always begins at the very first event
   b) A critical path always terminates at the last event
   c) Critical activities control the project duration
   d) Critical activity is the one for which free float is zero
      Ans-d

112.   Critical path
   a) Is always longest
   b) Is always shortest
   c) May be longest
   d) May be shortest
      Ans- a

113.   The independent float effect only
   a) Preceding activities
   b) Succeeding activities
   c) The particular activity involved
   d) None of the above
      Ans- c

114.   The time by which a particular activity can be delayed without
   affecting the preceding and succeeding activities is known as
   a) Total float
   b) Free float
   c) Interfering float
   d) Independent float
      Ans- d

115.   The time with which direct cost does not reduce with the increase in
   the time is known as
   a) Crash time
   b) Normal time
   c) Optimistic time
   d) Standard time
      Ans-b

116.   The time corresponding to minimum total project cost is
   a) Crash time
   b) Normal time
   c) Optimistic time
   d) Between normal time and crash time
      Ans- d

117.   The direct cost of a project with respect to normal time is
   a) Minimum
   b) Maximum
   c) Zero
   d) Infinite
      And- a

118.   The reduction in project time normally result in
   a) Decreasing the direct cost and Increasing indirect cost
   b) Increasing the direct cost and decreasing the indirect cost
   c) Increasing the direct cost and indirect cost both
   d) Decreasing the direct cost and indirect cost
      Ans-b

119.   Economic saving of time results by crashing
   a) Cheapest critical activity
   b) Cheapest non- critical activity
   c) Costliest critical activity
   d) Costliest critical activity
      Ans- a

120.   The process of incorporating changes and rescheduling or replanning is called
   a) Resource levelling
   b) Resource smoothening
   c) Updating
   d) Critical path scheduling
      Ans- c

121.   Slack time refers to
   a) An activity
   b) An event
   c) Both event and activity
   d) None of the above
      Ans- b

122.   The constraints in case of resource smoothening operation would be
   a) Resources
   b) Project duration time
   c) Both resources and project duration time
   d) None of the above
      Ans- b

123.   Crash project duration is obtained by summing the
   a) Normal duration for all the activities
   b) Crash duration for all activities
   c) Crash duration for all the activities along the critical path obtained by taking into account the normal duration for all the activities
   d) Crash duration for all the activities along the critical path obtained by taking into account the crash duration for all the activities
      Ans- d

124.   Slack time in PERT analysis
   a) Can never be greater than zero
   b) Is always zero for critical activities
   c) Can never be less than zero
   d) Is minimum for critical events
      Ans- d

125.   Which of the following earth moving machines has the shortest cycle time
   a) Drag line
   b) Hoe
   c) Clam shell
   d) Dipper shovel
      Ans-d

126.   Which of the following excavators is most suitable for digging under water?
   a) Drag line
   b) Hoe
   c) Clam shell
   d) Dipper shovel
      Ans- a

127.   For which of the following materials, the output of power shovels for a fixed shovel size will be maximum
a) Moist loam
b) Good common earth
c) Well blasted rock
d) Wet sticky clay
Ans- a

128.   For a given size of bucket, the ideal output of a dragline will be least in
a) Moist loam
b) Sand and gravel
c) Good common earth
d) Wet sticky clay
Ans-d

129.   Which of the following surface will give highest coefficient of traction while using crawler tract tractors?
a) Ice
b) Concrete
c) Loose sand
d) Earth
Ans-d

130.   Which of the following surfaces will give highest rolling resistance for a rubber tyred vehicle?
a) Concrete
b) Loose sand
c) Asphalt
d) Firm earth
Ans- b

131.   Which of the following types of riveted joint is free from bending stresses?
a) Lap joint
b) Butt joint with single cover plate
c) Butt joint with double cover plates
d) None of the above

Ans-c

132.   By providing sufficient edge distance, which of the following failures of riveted joint can be avoided?
a) Tension failure of the plate
b) Shear failure of the rivet
c) Shear failure of the plate
d) Crusing failure of the rivet
Ans- c

133.   Efficiency pitch of a riveted joint, having the minimum pitch as per 9S:800, is
a) 40%
b) 50%
c) 60%
d) 70%
Ans-c

134.   Select the correct statement
a) Material cost of a rivet is higher than that of a bolt.
b) Tensile strength of a bolt is lesser than that of a rivet
c) Bolts are used as a temporary fastenings whereas rivets are used as permanent fastenings
d) Riveting is less noisy than bolting
Ans- c

135.   Bolts are most suitable to carry
a) Shear
b) Bending
c) axial tension
d) Shear and bending
Ans- c

136.   Diameter of a bolt hole is usually taken as
a) Gross diameter of bolt
b) Nominal diameter + 1.5 mm
c) Nominal diameter + 2.0 mm
d) Nom9nal diameter of bolt

Ans-b

137.   When the bolts are subjected to reversal of stresses, the most suitable type of bold is
a) Black bold
b) Ordinary unfished bolt
c) Turned and fitted bolt
d) High strength bolt
   Ans- d

138.   A butt weld is specified by
a) Effective throat thickness
b) Plate thickness
c) Size of weld
d) Penetration thickness
   Ans- a

139.   The actual thickness of butt weld as compared to the thickness of plate is usually
a) More
b) Less
c) Equal
d) None of the above
   Ans-a

140.   The circular column section is generally not used in actual practice because
a) It is uneconomical
b) It cannot carry the load safely
c) It is difficult to connect beams to the round section
d) All of the above
   Ans- c

141.   The slenderness ratio of a column supported throughout its length by a masonry wall is
a) Zero
b) 10
c) 100

d) Infinity

Ans-a

142. According to IS Specification, the effective length of a column effectively held in position at both ends and restrained in direction at one end is taken as
a) 0.67 L
b) 0.8 L
c) L
d) 1.5 L

Ans-b

143. The effective length of a battened strut effectively held in position at both ends but not restrained in direction is taken as
a) 1.8 L
b) L
c) 1.1 L
d) 1.5 L

Ans- c

144. The best arrangement to provide unified behavior in built up steel column by
a) Lacing
b) Battening
c) Tie plates
d) Perforated cover plates

Ans- a

145. Lacing bars in a steel column should be designed to resist
a) Bending moment due to 2.5 % of the column load
b) Shear force due to 2.5% of the column load
c) 2.5% of the column load
d) Both (a) and (b)

Ans-b

146.   The overlap of batten plates with the main members in welded
connections should be more than
a) 3t
b) 4t
c) 6t
d) 8t
     Ans- b

147.   Economical depth of a plate girder corresponds to
a) Minimum weight
b) Minimum depth
c) Maximum weight
d) Minimum thickness of weight
     Ans- a

148.   Shear buckling of web in a plate girder is prevented by using
a) Vertical intermediate stiffener
b) Horizontal stiffener at neutral axis
c) Bearing stiffener
d) None of the above
     Ans –a

149.   Horizontal stiffener in plate girder is provided to safeguard against
a) Shear bucking of web plate
b) Compression bucking of web plate
c) Yielding
d) All of the above
     Ans- b

150.   Minimum thickness of web in a plate girder, when the plate is
accessible and also exposed to weather, is
a) 5mm
b) 6mm
c) 8mm
d) 10mm
     Ans- b

151.   The web crippling due to excessive bearing stress can be avoided by
   a) Increasing the web thickness
   b) Providing suitable stiffeners
   c) Increasing the length of the bearing plate
   d) None of the above
      Ans- c

152.   As per IS: 800, for compression flange, the outstand of flange plates should not exceed
   a) 12t
   b) 16t
   c) 20t
   d) 25t
      Ans- b

153.   The forces acting on the web splice of a plate girders are
   a) Axial forces
   b) Shear and axial forces
   c) Shear and bending forces
   d) Axial and bending forces
      Ans- c

154.   Minimum spacing of vertical stiffeners is limited to
   a) d/4
   b) d/3
   c) d/2
   d) 2d/3
      Ans- b

155.   Rivets connecting flange angels to cover plates in a plate girders are subjected to
   a) Horizontal shear only
   b) Vertical shear only
   c) Both (a) and(b)
   d) None of the above
      Ans- a

156.   The range of economical spacing of trusses varies from
   a) L/3 to L/5
   b) L/4 to 2L/5
   c) L/3to 3L/2
   d) 2L/5 to 3L/5 where L is span
      Ans- a

157.   The maximum permissible span of asbestos cement sheets is
   a) 650 mm
   b) 810 mm
   c) 1250 mm
   d) 1680 mm
      Ans- d

158.   To minimize the total cost of a roof truss, the ratio of the cost of truss
   to the cost of purlins shall be
   a) 1
   b) 2
   c) 3
   d) 4
      Ans- b

159.   Generally the purlins are placed at the panel points so as to avoid
   a) Axial force in rafter
   b) Shear force in rafter
   c) Deflection of rafter
   d) Bending moment in rafter
      Ans- d

160.   The external wind pressure acting on a roof depends on
   a) Degree of permeability of roof
   b) Slope of roof
   c) Both (a) and (b)
   d) None of the above
   Ans- b

161.   In singly reinforced beams, steel reinforcement is provided in
  a) Tensile zone
  b) Compressive zone
  c) Both tensile and compressive zones
  d) Neutral zone
     Ans- a

162.   In a simply supported reinforce concrete beam, the reinforcement is placed
  a) Below the neutral axis
  b) Above the neutral axis
  c) At the neutral axis
  d) Any one of these
     Ans-a

163.   Analysis of reinforced concrete can be done by
  a) Straight line theory
  b) Elastic theory
  c) Ultimate load theory
  d) All of these
     Ans- d

164.   In a singly reinforced concrete beam, if the load is very small
  a) Only concrete will resist tension
  b) Only steel bars will resist tension
  c) Both concrete and steel will resist tension
  d) Both concrete and steel will resist compression
     Ans- c

165.   In a singly reinforced concrete beam, as the load increases
  a) Only concrete will resist tension
  b) Only steel bar will resist tension
  c) Both concrete and steel will resist tension
  d) Both concrete and steel will resist compression
     Ans-b

166.   When a beam is loaded with transverse loads ,the bending moment
   a) Remains constant at every section
   b) Varies from section to section
   c) Develops shear stresses in a beam
   d) None of these
      Ans-c

167.   The maximum permissible shear stress given in IS: 456-1978 is based
   on
   a) Diagonal tension failure
   b) Diagonal compression failure
   c) Flexural tension failure
   d) Uniaxial compression
      Ans- a

168.   The chances of diagonal tension cracks in R.C.C. member reduce when
   a) Only shear force act
   b) Flexural and shear force act
   c) Axial tension and shear force act simultaneously
   d) Axial compression and shear force act simultaneously
      Ans-b

169.   The diagonal tension in concrete can be resisted by providing
   a) Diagonal tension reinforcement
   b) Shear reinforcement
   c) Inclined tension reinforcement
   d) All of these
      Ans-a

170.   Shear reinforcement is provided in the form of
   a) Vertical bars
   b) Inclined bars
   c) Combination of vertical and inclined bars
   d) All of these
      Ans-a

171.   The centre to centre spacing of vertical stirrups, in a rectangular beam, is
a) Increased towards the centre of the span of the beam
b) Decreased towards the centre of the span of the beam
c) Increased at the ends
d) None of these
    Ans-a

172.   The spacing of vertical stirrups in a rectangular beam is
a) Maximum near the supports
b) Minimum near the supports
c) Maximum near the centre
d) Minimum near the centre
    Ans- b

173.   A stirrups consists of _____ diameter mild steel bars bent round the tensile reinforcement
a) 1to 5 mm
b) 5 to 12 mm
c) 12 to 18 mm
d) None of these
    Ans- b

174.   The torsion resisting capacity of a given reinforced concrete section
a) Decreases with decrease in stirrup spacing
b) Decreases with increase in longitudinal bars
c) Does not depend upon stirrup and longitudinal steels
d) Increases with increase in stirrup and longitudinal steels
    Ans- d

175.   The bond between steel and concrete is mainly due to
a) Pure adhesive resistance
b) Frictional resistance
c) Mechanical resistance
d) All of these
    Ans- d

176.   Pure adhesive resistance in a reinforced concrete structure is provided by
a) Shrinkage of the concrete
b) Deformed bars
c) Relatively weak adhesive on of the chemical gum produced by concrete during setting
d) All of the above
   Ans- c

177.   When a reinforced concrete structure is loaded , the resistance first broken is
a) Pure adhesive resistance
b) Frictional resistance
c) Mechanical resistance
d) None of these
   Ans-a

178.   When hooks are formed in deformed bars, the internal radius of the bend should be at least _times the diameter of the bar.
a) Two
b) Three
c) Four
d) Six
   Ans-b

179.   In, the above question, the length of straight bar beyond the end of the curve should be at least
a) Two times the diameter of bar
b) Three times the diameter of bar
c) Four times the diameter of bar
d) Five times the diameter of bar
   Ans-c

180.   The maximum spacing of vertical reinforcement in R.C.C. wall should
not exceed_____ the thickness of wall.
a) Equal to
b) 1.5 times
c) 2 times
d) 3 times
        Ans- d

181.   A doubly reinforced beam is considered less economical than a singly
reinforced beam because
a) Shear reinforcement is more
b) Compressive steel is under –stressed
c) Tensile steel required is more than that for balanced section
d) Concrete is not stressed to its full value
        Ans-a

182.   If the area of tensile steel reinforcement is double, the moment of
resistance of the beam increase only by about
a) 12%
b) 22%
c) 32%
d) 42%
        Ans-b

183.   The concrete below the neutral axis
a) Resists the bending moment
b) Embeds the tensile steel
c) Both (a) and (b)
d) None of these
        Ans- b

184.   The section of the beam having greater width at the top in comparison
to the width below neutral axis is known as
a) Critical section
b) T- section
c) L- section
d) None of these
        Ans- b

185.   The breadth of the flange of a T-beam is taken as
   a) One-third of the effective span of the T-beam
   b) Twelve times the depth of slab plus breadth of rib
   c) Centre to centre distance between the adjacent beams
   d) Minimum value of (a) , (b) or (c)
       Ans-d

186.   In a T-beam, the breadth of the rib is equal to the
   a) Total thickness of the slab , including cover
   b) Width of the portion of the beam in the compression zone
   c) Width of the portion of the beam in the tensile zone
   d) None of the above
       Ans- c

187.   The breadth of rib in a T-beam should at least be equal to _____the
   depth of rib
   a) One-half
   b) One-third
   c) One-fourth
   d) One-sixth
       Ans-b

188.   In a reinforced concrete T-beam (in which the flange is in
   compression), the position of neutral axis will
   a) Be within the flange
   b) Be within the web
   c) Depend on the thickness of flange in relation to total depth and
       percentage of reinforcement
   d) At the junction of flange and web
   Ans-c

189.   The width of the flange of the L-beam is taken as
   a) One-sixth of the effective span of L-beam
   b) Breadth of rib plus one-half of the clear distance between the rib
   c) Breadth of rib plus four times the thickness of the slab
   d) Minimum value of (a),(b) or (c)
       Ans-d

190. When an inclined or horizontal member is carrying mainly axial loads, it is termed as a
    a) Strut
    b) Column
    c) Tie
    d) All of these
       Ans- a

191. While designing a reinforced concrete pole as a column, it is considered as
    a) fixed at both ends
    b) Hinged at both ends
    c) Fixed at one end and hinged at the other end
    d) None of the above
       Ans-c

192. According to IS : 456-1978 , the deflection of reinforced concrete slab or beam, for the purpose of design ,is limited to_ of span
    a) 0.2%
    b) 0.25%
    c) 0.4%
    d) 0.45%
       Ans-c

193. A reinforced concrete slab is 75 mm thick. The maximum size of reinforcement bar that can be used is
    a) 6mm diameter
    b) 8 mm diameter
    c) 10 mm diameter
    d) 12 mm diameter
       Ans-b

194. The shrinkage in a concrete slab
    a) Causes shear cracks
    b) Causes tension cracks
    c) Causes compression cracks
    d) Does not cause any cracking
       Ans-b

195. The pitch of bars of main reinforcement in solid slab should not exceed _ the effective depth of slab or 60 cm whichever is smaller
    a) Double
    b) Three times
    c) Five times
    d) Six times
       Ans- b

196. The diameter of bars used for distribution reinforcement in slabs, may vary from
    a) 2 to 4 mm
    b) 4 to 6 mm
    c) 6 to 8 mm
    d) 8 to 12 mm
       Ans-c

197. For a slab spanning in two directions, the ratio of span to the depth of slap should not exceed
    a) 10
    b) 20
    c) 35
    d) 50
       Ans- c

198. The drops are provided in flat slabs to resist
    a) Torsion
    b) Bending moment
    c) Thrust
    d) Shear
       Ans-d

199. The diameter of the column head should be taken as the diameter measured below the underside of the slab at a distance of
    a) 20 mm
    b) 40 mm
    c) 60 mm
    d) 80 mm
       Ans- b

200.   In four-way system of arranging the reinforcement , the reinforcement is provided in
a) Column strips
b) Diagonal strips
c) Either (a) or(b)
d) Both (a) and (b)
    Ans -d