51. Sapwood consists of

a. Innermost annular rings around the pith
b. Portion of timber between heartwood and cambium layer
c. Thin layers below the bark
d. Thin fibre which extends from the pith outwards and holds the annular rings together

52. Ultimate strength of cement is influenced by which one of the following?

(a) Tricalcium silicate
(b) Dicalcium silicate
(c) Tricalcium aluminate
(d) Teracalcium alumino-ferrite

53. The radius splits which are wider on the outside of the log and narrower towards the pith are known as

a. Heart shakes
b. Cupshakes
c. Starshakes
d. Rindgalls

54. Match List I (Composition of raw material used in manufacture of cement) with List II (Component of raw material) and select the correct answer using the code given below the lists:

List – I	List – II
A. 25 %	1. Silica
B. 65 %	2. Calcium oxide
C. 5 %	3. Aluminium oxide
D. 5 %	4. Ferrous and magnesium oxide

Codes:
a. A – 1, B – 2, C – 3, D – 4
b. A – 4, B – 3, C – 2, D – 1
c. A – 1, B – 3, C – 2, D – 4
d. A – 4, B – 2, C – 3, D – 1

55. In which of the following timbers is suitable for making sports goods ?

a. Deodar and shishum
b. Chir and sal
c. Sal and teak
d. Chir and deodar

56. Match List I (Compound) with List II (Proportion) and select the correct answer using the code given below the lists List I

List – I	List – II
A. Tricalcium silicate	1. 25 to 30%
B. Dicalcium silicate	2. 50 to 60%
C. Tricalcium aluminate	3. 6 to 8%
D. Tetra calcium aluminoferrite	4. 8 to 12%

Codes:
a. A – 2, B – 3, C – 4, D – 1
b. A – 4, B – 1, C – 2, D – 3
c. A – 2, B – 1, C – 4, D – 3
d. A – 4, B – 3, C – 2, D – 1

57. 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

58. Fineness of cement is measured in the units of

(a) volume / mass
(b) mass / volume
(c) area / mass
(d) mass / area

59. Plywood has the advantage of

a. Greater tensile strength in longer direction
b. Greater tensile strength in shorter direction
c. Same tensile strength in all directions
d. None of the above

60. The inital setting time of cement depends most on

(A) Tricalcium Aluminate
(B) Tricalcium Silicate
(C) Tricalcium Aluminoferrite
(D) Dicalcium Silicate

61. The moisture content in a well seasoned timber is

a. 4 % to 6 %
b. 10 % to 12 %
c. 15 % to 20 %
d. 100 %

62. Soundness test of cement is carried out to determine its

(A) Alumina Content
(B) Iron Oxide Content
(C) Free Lime Content
(D) Durability Under Sea Water

63. The age of a tree can be known by examining

a. Cambium layer
b. Annular rings
c. Medullary rays
d. Heart wood

64. Consider the foil owing statements: High early strength of cement is obtained as a result of

1. Fine grinding.
2. Decreasing the lime content.
3. Burning at higher temperature.
4. Increasing the quantity of gypsum.

Which of the above statements are correct?
(a) 1 and 2 (b) 1 and 3
(c) 2 and 3 (d) 3 and 4

65. Plywood is made by bonding together thin layers of wood in such a way that the angle between grains of any layer to grains of adjacent layers is

a. 0◦
b. 30 ◦
c. 45 ◦
d. 90 ◦

66. The modulus of elasticity of high tensile steel is

(a) smaller than that of mild steel
(b) equal to that of mild steel
(c) larger than that of mild steel
(d) equal to that of aluminium

67. The practical limit of moisture content achieved in air drying of timber is

a. 5 %
b. 15 %
c. 25 %
d. 35 %

68. Polyvinyl chloride (PVC) is a

(A) Thermosetting Material
(B) Thermoplastic Material
(C) Elasto-plastic Material
(D) Rigid Plastic Material

69. First class brick when immersed in cold water for 24 hours should not absorb water more than

a. 15 %
b. 20 %
c. 22 %
d. 25 %

70. The modulus of elasticity (E) of concrete is given by

a. $E = 1000\ f_{ck}$
b. $E = \sqrt{f_{ck}}$
c. $E = 5700\ \sqrt{f_{ck}}$
d. $E = 10{,}000\ \sqrt{f_{ck}}$

71. For a well-conditioned triangle, no angle should be less than

a. 20^0
b. 30^0
c. 45^0
d. 60^0

72. If L is the length of the chain, W is the weight of the chain and T is the tension, the sag correction for the chain line is

A. $W^2L^2 / 24T^3$
B. $W^2L / 24T^2$
C. $W^2L^2 / 24T^2$
D. $W^2L^3 / 24T^3$

73. The main difference between an optical square and a prism square is

a. Difference in principle of working
b. That optical square is more accurate than prism square
c. That no adjustment is required in a prism square the angle between the reflecting surfaces cannot be changed
d. All of the above

74. In an inclined terrain, if the elevation difference between the' two ends of a line is h and the inclined length of the line is L, the correction for slope is

A. H^2 / L^2
B. $H^2 / 2L^2$
C. $2H^2 / L^2$
D. $H^2 / 2L$

75. Which of the following methods of offsets involves less measurement on the ground ?

a. Method of perpendicular offsets
b. Method of oblique offsets
c. Method of ties
d. All involve equal measurement on the ground

76. The length of a survey line when measured with a chain of 20 m nominal length was found to be 841.5 m. If the chain used is 0.1 m too long, the correct length of the measured line is

(a) 845.7 m
(b) 837.39 m
(c) 843.6 m
(d) 839.4 m

77. The correction for sag is

a. Always additive
b. Always subtractive
c. Always zero
d. Sometimes additive and sometimes subtractive

5. Match List-I (Impurities) with List-II (Effects) and select the correct answer :

List – I	List – II
A. Dissolved sulphates and chlorides of Ca and Mg	1. Hardness & corrosion
B. Dissolved bicarbonates of Ca and Mg	2. Bacterial infection
C. Dissolved fluorides of Na	3. Alkalinity & softness
D. Dissolved organic matter	4. Impairment of dental health

Codes :
a. A – 2, B – 3, C – 4, D – 1
b. A – 1, B – 4, C – 3, D – 2
c. A – 2, B – 4, C – 3, D – 1
d. A – 1, B – 3, C – 4, D – 2

79. Alkalinity in water is expressed as milligrams per litre in terms of equivalent

a. Calcium carbonate
b. Magnesium carbonate
c. Sodium carbonate
d. Calcium hydroxide

80. Match List-I (Water / Waste water parameter) with List-II (Test) and select the correct answer using the codes:

List – I	List – II
A. Potability of water	1. Mohr's method
B. Chloride	2. Orthotolidine method
C. Residual chlorine	3. EDTA. method
D. Hardness of water	4. MF technique

Codes :
a. A – 4, B – 3, C – 2, D – 1
b. A – 2, B – 1, C – 4, D – 3
c. A – 2, B – 3, C – 4, D – 1
d. A – 4, B – 1, C – 2, D – 3

81. Residual chlorine in water is determined by

a. Starch iodide method
b. Orthotolidine method
c. Both (a) and (b)
d. None of the above

82. Match List-I (Type of impuirty) with List-II (Effect) and select the correct answer using the codes:

List – I	List – II
A. Carbonates and bicarbonates of Ca and Mg	1. Permanent hardness
B. Carbonates and bicarbonates of sodium	2. Temporary hardness
C. Sulphates and chlorides of Ca and Mg	3. Alkalinity and softness
D. Oxides of iron and manganese	4. Colour and taste

Codes :
a. A – 1, B – 3, C – 2, D – 4
b. A – 2, B – 4, C – 1, D – 3
c. A – 1, B – 4, C – 2, D – 3
d. A – 2, B – 3, C – 1, D – 4

83. If the total hardness of water is greater than its total alkalinity, the carbonate hardness will be equal to

a. Total alkalinity
b. Total hardness
c. Total hardness – total alkalinity
d. None of the above

84. After which of the following water treatment units, the turbidity is maximum?

(a) Chlorination
(b) Primary sedimentation
(c) Flocculation basin
(d) Secondary sedimentation

85. The length of rectangular sedimentation tank should not be more than

a. B
b. 2B
c. 4B
d. 8B

86. Which one of the following treatments is economically effective in the control of guinea worm disease?

a. Chlorination
b. Filtration
c. Ozonation
d. Sedimentation

87. For a given discharge, the efficiency of sedimentation tank can be increased by

a. Increasing the depth of tank
b. Decreasing the depth of tank
c. Increasing the surface area of tank
d. Decreasing the surface area of tank

88. Match List-I (Type of soil) with List-II (Mode of transportation and deposition) and select the correct answer using the codes given below the lists:

List – I	List – II
A. Lacustrine soils	1. Transportation by wind
B. Alluvial soils	2. Transportation by running water
C. Aeolian soils	3. Deposited at the bottom of lakes
D. Marine soils	4. Deposited in sea water

Codes :
a. A – 1, B – 2, C – 3, D – 4
b. A – 3, B – 2, C – 1, D – 4
c. A – 3, B – 2, C – 4, D – 1
d. A – 1, B – 3, C – 2, D – 4

89. Relative density of a compacted dense sand is approximately equal to

a. 0.4
b. 0.6
c. 0.95
d. 1.20

90. Match List-I with List-II and select the correct answer

List – I	List – II
A. Loess	1. Deposited from suspension in running water
B. Peat	2. Deposits of marine origin
C. Alluvial soil	3. Deposits by wind
D. Marl	4. Organic soil

Codes :
a. A – 3, B – 4, C – 2, D – 1
b. A – 4, B – 3, C – 1, D – 2
c. A – 4, B – 3, C – 2, D – 1
d. A – 3, B – 4, C – 1, D – 2

91. Which of the following methods is most accurate for the determination of the water content of soil

a. Oven drying method
b. Sand bath method
c. Calcium carbide method
d. Pycnometer method

92. Acidic soils are reclaimed by

(a) leaching of the soil
(b) using limestone as a soil amendment
(c) using gypsum as a soil amendment
(d) provision of drainage

93. For proper field control which of the following methods is best suited for quick determination of water content of a soil mass

a. Oven drying method
b. Sand bath method
c. Alcohol method
d. Calcium carbide method

94. The collapsible soil is associated with

(a) Dune sands
(b) Laterite soils
(c) Loess
(d) Black cotton soils

95. stoke's law is valid only if the size of particle is

a. Less than 0.0002 mm
b. Greater than 0.2 mm
c. Between 0.2 mm and 0.0002 mm
d. All of the above

96. Which of the criteria given below are used for the design of valley vertical curves on roads?

1. Rider comfort.
2. Headlight sight distance
3. Drainage

Select the correct answer using the codes given below:
(a) 1, 2 and 3
(b) 1 and 3
(c) 2 and 3
(d) 1 and 2

97. Reaction time of a driver

a. Increase with increase in speed
b. Decrease with increase in speed
c. Is same for all speed
d. None of the above

98. Which one of the following expressions gives intermediate sight distance as per LR.C. standards? (SSD : stopping sight distance ; OSD : overtaking sight distance)

a. 2 SSD
b. (SSD + OSD)/ 2
c. (OSD - SSD)/2
d. 2 OSD

99. If b is the wheel track of a vehicle and h is the height of centre of gravity above road surface, then to avoid overturning and lateral skidding on a horizontal curve, the centrifugal ratio should always be

a. Less than b/2h and grater than coefficent of lateral friction
b. Less than b/2h and also less than coeddicent of lateral fricton
c. Grater than b/2h and less than coefficient of lateral friction
d. Grater than b/2h and also grater than coefficient of lateral friction

100. Total reaction time of a driver does not depend upon

(a) Perception time
(b) Brake reaction time
(c) Condition of mind of the driver
(d) Speed of vehicle