MAGDALINE COACHING CENTRE (mc^2)
CIVIL ENGINEERING PAPER 2 JUNE

1. Residual soils are formed by
   a) Glaciers
   b) Wind
   c) Water
   d) None of the above
   Ans-d
2. Which of the following types of soil is transported by gravitational forces?
   a) Loess
   b) Talus
   c) Drift
   d) Dune sand
   Ans-b
3. Select the correct statement
   a) Unit weight of dry soil is greater than unit weight of wet soil
   b) For dry soils, dry unit weight is less than unit weight
   c) Unit weight of soil increases due to submergence in water
   d) Unit weight of soil decreases due to submergence water
   Ans-d
4. Voids ratio of a soil mass can
   a) Never be greater than unity
   b) Be zero
   c) Take any value greater than zero
   d) Take values between 0 and 1 only
   Ans-c
5. Relative density of a compacted dense sand is approximately equal to
   a) 0.4
   b) 0.6
   c) 0.95
   d) 1.20
   Ans-c
6. If the sand in-suit is in its densest state ,then the relative density of sand is
   a) Zero
   b) 1
   c) Between 0 and 1
   d) Greater than 1
   Ans-b
7. The hydrometer method of sedimentation analysis differs from the pipette analysis mainly in
   a) The principle of test
   b) The method of taking observations
   c) The method of preparation of soil suspension
   d) All of the above

Ans-b

8. Uniformity coefficient of a soil is
   a) Always less than 1
   b) Always equal to 1
   c) Equal to or less than 1
   d) Equal to or greater than 1

   Ans-d
9. The admixture of coarser particles like sand or silt to clay causes
   a) Decrease in liquid limit and increase in plasticity index
   b) Decrease in liquid limit and no change in plasticity index
   c) Decrease in both liquid limit and plasticity index
   d) Increase in both liquid limit and plasticity index

   Ans-c
10. Select the correct statement
    a) A uniform soil has more strength and stability than a non-uniform soil
    b) A uniform soil has less strength stability than a non-uniform soil
    c) Uniformity coefficient does not affect strength and stability
    d) Uniformity coefficient of a poorly graded soil is more than that of a well graded soil

    Ans-b
11. Which of the following soils has more plasticity index?
    a) Sand
    b) Silt
    c) Clay
    d) Gravel

    Ans-c
12. Inorganic soils with low compressibility are represented by
    a) MH
    b) SL
    c) ML
    d) CH

    Ans-c
13. Dispersed type of soil structure is an arrangement comprising particles having
    a) Face to face or parallel orientation
    b) Edge to edge orientation
    c) Edge to face orientation
    d) All of the above

    Ans-a
14. Effective stress is
    a) The stress at particles contact
    b) A physical parameter that can be measured
    c) Important because it is a function of engineering properties of soil

d) All of the above
Ans-c

15. Rise of water table above the ground surface causes
    a) Equal increases in pore water pressure and total stress
    b) Equal decrease in pore water pressure and total stress
    c) Increase in pore water pressure but decrease in total stress
    d) Decrease in pore water pressure but increase in total stress
    Ans-a
16. Physical properties of a permeant which influence permeability are
    a) Viscosity only
    b) Unit weight only
    c) Both viscosity and unit weight
    d) None of the above
    Ans-c
17. Total number of stress components at a point within a soil mass loaded at its boundary is
    a) 3
    b) 4
    c) 9
    d) 16
    Ans-c
18. Rate of consolidation
    a) Increases with decrease in temperature
    b) Increases with increase in temperature
    c) Is independent of temperature
    d) Is unaffected by permeability of soil
    Ans-b
19. Which of the following clays behaves like dense sand?
    a) Over-consolidated clay with a high over-consolidation ratio
    b) Over-consolidated clay with a low over-consolidation ratio
    c) Normally consolidated clay
    d) Under-consolidated clay
    Ans-a
20. Coefficient of consolidation of a soil is affected by
    a) Compressibility
    b) Permeability
    c) Both compressibility and permeability
    d) None of the above
    Ans-c

21. Time factor for a clay layer is
    a) a dimensional parameter
    b) directly proportional to permeability
    c) inversely proportional to drainage path
    d) independent of thickness of clay layer
    ans-b
22. compressibility of sandy soils is
    a) almost equal to that of clayey soils
    b) much greater than that of clayey soils
    c) much less than that of clayey soils
    d) none of the above
    ans-c
23. The shear strength of a soil is
    a) is directly proportional to the angle of internal friction of the soil
    b) is inversely proportional to the angle of internal friction of the soil
    c) decreases with increase in normal stress
    d) decreases with decrease in normal stress
    ans-d
24. In a consolidated drained test on a normally consolidated clay, the volume of the soil sample during shear
    a) Decreases
    b) Increases
    c) Remains unchanged
    d) First increases and then decreases
    Ans-a
25. Shear strength of a soil is a unique function of
    a) Effective stress only
    b) Total stress only
    c) Both effective stress and total stress
    d) None of the above
    Ans-1
26. Unconfined compressive strength test is
    a) Undrained test
    b) Drained test
    c) Consolidated undrained test
    d) Consolidated drained test
    Ans-a
27. The angle that coulomb's failure envelope makes with the horizontal is called
    a) Cohesion
    b) Angle of internal friction
    c) Angle of repose
    d) None of the above

Ans-b

28. The ratio of the undisturbed shear strength to the remoulded shear strength in cohesive soils under undrained conditions
    a) Zero
    b) 1
    c) Greater than 1
    d) Between 0 and 1
    Ans-c
29. Rankine's theory of earth pressure assumes that the back of the wall is
    a) plane and smooth
    b) plane and rough
    c) vertical and smooth
    d) vertical and rough
    ans-c
30. the major principal stress is an element of cohesionless soil within the backfill of a retaining wall is
    a) vertical if the soil is in an active state of plastic equilibrium
    b) vertical if the soil is in an passive state of plastic equilibrium
    c) inclined at 40 to the vertical plane
    d) none of the above
    ans-a
31. On a single lane road with two way traffic, the minimum stopping sight distance is equal to
    a) Stopping distance
    b) Two times the stopping distance
    c) Half the stopping distance
    d) Three times the stopping distance
    Ans-b
32. Stopping sight distance is always
    a) Less than overtaking side distance
    b) Equal to overtaking sight distance
    c) More than overtaking sight distance
    d) None of the above
    Ans-a
33. As per IRC recommendations, the maximum limit of superelevation for mixed traffic in plain terrain is
    a) 1 in 15
    b) 1 in 12.5
    c) 1 in 10
    d) Equal to camber
    Ans-a

34. For a constant value of coefficient of lateral friction, the value of required super-elevation increases with
    a) increase in both speed and radius of curve
    b) decrease in both speed and radius of curve
    c) increase in speed with decrease in radius of curve
    d) decrease in speed and with increase in radius of curve
    ans-c
35. To calculate the minimum value of ruling radius of horizontal curves in plains, the design speed is given by
    a) 8 kmph
    b) 12 kmph
    c) 16 kmph
    d) 20 kmph
    Ans-c
36. The attainment of superelevation rotation of pavement about the inner edge of the pavement
    a) Is preferable in steep terrain
    b) Results in balancing the earthwork
    c) Avoids the drainage problem in flat terrain
    d) Does not change the vertical alignment of road
    Ans-c
37. In case of hill roads, the extra widening is generally provided
    a) Equal of inner and outer sides of the curve
    b) Fully on the inner side of the curve
    c) Fully on outer side of the curve
    d) One-fourth on inner side and three-fourth on outer side of the curve
    Ans-b
38. For design, that length of transition curve should be taken which is
    a) Based on allowable rate of change of centrifugal acceleration
    b) Based of rate of change of superelevation
    c) Higher of (a) and (b)
    d) Smaller of (a) and (b)
    Ans-c
39. The maximum design gradient for vertical profile of a road is
    a) Ruling gradient
    b) Limiting gradient
    c) Exceptional gradient
    d) Minimum gradient
    Ans-a

40. In case of submit curves, the deviation angle will be maximum when
    a) An ascending gradient meets with another ascending gradient
    b) An ascending gradient meets with a descending gradients
    c) A descending gradient meets with another descending gradient
    d) An ascending gradient meets with a level surface
    Ans-b
41. Highway facilities are designed for
    a) Annual average hourly volume
    b) Annual average daily traffic
    c) Thirtieth highest hourly volume
    d) Peak hourly volume of the year
    Ans-c
42. Centre line markings are used
    a) To designate traffic lanes
    b) In roadways meant for two way traffic
    c) To indicate that overtaking is not permitted
    d) To designate proper lateral placement of vehicles before turning to different directions
    Ans-b
43. The particular places where pedestrians are to cross the pavement and propyl marked by the pavement marking known as
    a) Stop lines
    b) Turn markings
    c) Crosswalk lines
    d) Lane lines
    Ans-c
44. When two equally important roads cross roughly at right angles, the suitable shape of central island is
    a) Circular
    b) Elliptical
    c) Tangent
    d) Turbine
    Ans-a
45. The maximum numbers of vehicles beyond which the rotary may not function efficiently is
    A) 500 vehicles per hour
    B) 500 vehicles per day
    C) 5000 vehicles per hour
    D) 5000 vehicles per day
    Ans-c

46. Ordinary rails are made of
    a) Mild steel
    b) Cast iron
    c) Wrought iron
    d) High carbon steel
    Ans-d
47. For developing thinly populated areas, the correct choice of gauge is
    a) Broad gauge
    b) Metre gauge
    c) Narrow gauge
    d) Any of the above
    Ans-c
48. The slipping of driving wheels of locomotives on the rail surface causes
    a) Wheel burns
    b) Hogging of rails
    c) Scabbing of rails
    d) Corrugation of rails
    Ans-a
49. The side slope of embankments for a railway tract is generally taken as
    a) 1:1
    b) 1.5:1
    c) 2:1
    d) 1:2
    Ans-c
50. The total gap on both sides between the inside edges of wheel flanges and gauge faces of the rail is kept as
    a) 10mm
    b) 13mm
    c) 16mm
    d) 19mm
    Ans-d
51. Anticreep bearing plates are provided on
    a) Bridges and approaches
    b) Joints
    c) Both (a) and (b)
    d) None of the above
    Ans-d
52. The type of spike used for fixing chairs of bull headed rails to wooden sleepers is
    a) Dog spike
    b) Rail screw
    c) Elastic spike
    d) Round spike

Ans-d

53. The sleepers resting directly on girder are fastened to the top fiange of girder by
    a) Hook bolts
    b) Dog spikes
    c) Fang bolts
    d) Rail screws

    Ans-a
54. Number of keys used in CST-9 sleeper is
    a) 2
    b) 3
    c) 4
    d) None of the above

    Ans-a
55. Loose jaws of steel trough sleepers are made of
    a) Cast steel
    b) Mild steel
    c) Cast iron
    d) Spring steel

    Ans-d
56. Number of cotters used in CST-9 sleepers
    a) 2
    b) 3
    c) 4
    d) 5

    Ans-c
57. Pandrol clips cannot be used with
    a) Wooden sleepers
    b) Concrete sleepers
    c) CST-9 sleepers
    d) Steel trough sleepers

    Ans-c
58. Cant deficiency occurs when a vehicle travels around a curve at
    a) Equilibrium a curve at
    b) Speeds higher than equilibrium speed
    c) Speeds lower than equilibrium speed
    d) Booked speed

    Ans-b
59. Maximum value of 'throw of switch' for broad gauge track is
    a) 89 mm
    b) 95 mm
    c) 100 mm
    d) 115 mm

Ans- d

60. Number of switches provided on a gauntleted track is
    a) 1
    b) 2
    c) 3
    d) None of the above
    Ans-d
61. Limnology is the science which deals with
    a) Surface streams
    b) Lakes
    c) glaciers
    d) snow and ice
    ans- b

62. hydrometeorology is the science which deals with
    a) water in the atmosphere
    b) water below of the surface of the earth
    c) water in the surface streams
    d) water in oceans
    ans- a
63. Relative humidity of the atmosphere is defined as the ratio of
    a) actual vapour pressure to the vapour pressure 0 degree C
    b) actual vapour pressure to the atmospheric pressure
    c) weight of water to the weight of air
    d) actual vapour pressure to the saturation vapour pressure
    ans- d
64. The ratio of the radiation reflected back to the radiation received by the surface is called its
    a) Troposphere
    b) Mesosphere
    c) Ionosphere
    d) Stratosphere
    Ans-d
65. Langley is the unit which measures
    a) Infiltration
    b) Permissible
    c) Radiation
    d) Albedo
    Ans- c

66. Isobar is a line which joins point of equal
    a) Rainfall depth
    b) Temperature
    c) Humidity
    d) Atmospheric pressure
    Ans- d
67. In anti-cyclones of Northern hemisphere wind blow
    a) Clockwise inward
    b) Anti-clockwise inward
    c) Clockwise outward
    d) Anti-clockwise outward
    Ans-d
68. The instrument used to measure the wind velocity in the atmosphere is
    a) Current meter
    b) Atmometer
    c) pyranometer
    d) anemometer
    ans-d
69. In the following, identity the one which is different from the rest
    a) Rain
    b) Drizzle
    c) Hail
    d) Fog
    Ans- d
70. The albedo of solid surface is in the range
    a) 0.95 to1
    b) 0.5 to 0.75
    c) 0.1 to 0.3
    d) 0.001 to 0.01
    Ans- c
71. The albedo of the water surface is nearer to
    a) 0.5
    b) 0.05
    c) 0.25
    d) 0.75
    Ans-b
72. Which is the odd one in the following
    a) Snow
    b) Sleet
    c) Rain
    d) Hail
    Ans-c

73. The convective precipitation is caused when
    a) Vertical instability of moist air is produced by surface heating
    b) The disturbance on the air front develops into cyclone
    c) The colder air rises into warm air
    d) All of the above
    Ans- a
74. Rain shadow region in India is found
    a) To the west of western ghats
    b) To the west of eastern ghats
    c) To the south of Himalayas
    d) To the east of western ghats
    Ans- d
75. The cyclonic precipitation is caused due to
    a) Disturbance caused on the frontal surface between cold and warm air masses
    b) The thermal convective currents
    c) The orographic cooling when air mass is lifted up a slope
    d) None of the above
    Ans-a
76. The instrument used to measure the humidity of the atmosphere continuously with time is called
    a) Barograph
    b) Thermograph
    c) Hydrograph
    d) Thermo-hydrograph
    Ans-c
77. Which of the following has the maximum water application efficiency
    a) Surface irritation
    b) Lift irritation
    c) Sprinkler irrigation
    d) Furrow irrigation
    Ans- c
78. The field capacity is the moisture content present in the soil
    a) When it is completely saturated
    b) When all the gravity water is removed from it after saturation
    c) When the oven dry sample absorbs moisture from atmosphere
    d) None of the above
    Ans- b
79. The field capacity of an irrigation soil depends on
    a) Both porosity and pore size
    b) Only on porosity
    c) Only on pore size
    d) Porosity and depth of the root zone

Ans- a

80. Available soil moisture is the difference between
    a) Saturation capacity and field capacity
    b) Saturation capacity and permanent wilting point
    c) Field capacity and permanent wilting point
    d) Saturation capacity and temporary wilting point
    Ans-c
81. Soil moisture deficiency is the difference between
    a) Saturation capacity and the existing soil moisture content
    b) Field capacity and the existing soil moisture content
    c) Permanent wilting point and the existing moisture content
    d) Temporary wilting point and the existing moisture content
    Ans- b
82. For an irrigation field lying in a sandy undulating terrain, the most desirable method of applying water is
    a) Basin flooding
    b) Furrow irrigation
    c) Free flooding
    d) Sprinkle irrigation
    Ans- d
83. Water present in the soil which cannot be removed except by heating is called
    a) Gravity water
    b) Capillary water
    c) Hygroscopic water
    d) Free water
    Ans- c
84. A climatic region lacking enough water for agriculture without artificial irrigation is called
    a) Arid zone
    b) Dry zone
    c) Desert zone
    d) None of the above
    Ans-a
85. The capacity factor of a canal is defined as the ratio of
    a) The mean discharge in the canal to the peak discharge
    b) Peak discharge to the ayacut irrigated by the canal
    c) The peak discharge to the ayacut by the canal
    d) The ayacut irrigated to the peak discharge
    ans- a

86. The duty of water at the outlet is also known as
a) Time factor
b) Capacity factor
c) Full supply co-efficient
d) Outlet factor
ans- d

87. TheKharif crop is sown
a) At the end of the south-west monsoon
b) At the end of the north-east monsoon
c) The beginning of south-west monsoon
d) In mid summer
ans- c

88. Which of the following is not a Rabi crop
a) Sugar cane
b) Groundnut
c) Wheat
d) Potato
ans- b

89. Net irrigation requirement of a crop is given as
a) Consumptive use + field losses
b) Consumptive use + conveyance losses
c) Consumptive use + field losses + conveyance losses
d) Consumptive use – effective rainfall
ans-d

90. the most commonly adopted method of irrigation for cereal crops is
a) Furrow
b) Basin flooding
c) Check flooding
d) Sub-surface irrigation
ans- c

91. Newton's law of viscosity states that
a) Shear stress is directly proportional to the velocity
b) Shear stress is directly proportional to velocity gradient
c) Shear stress is directly proportional to shear stream
d) Shear stress is directly proportional to the viscosity
Ans-b

92. The multiplying factor for converting one poise into MKS unit of dynamic viscosity is
a) 9.81
b) 98.1
c) 981
d) 0.981

Ans-b

93. The gases are considered incompressible when match number
    a) Force per unit area
    b) Force per unit length
    c) Force per unit volume
    d) None of the above

    Ans- b
94. Pascal's law states that pressure at a point is equal in all direction
    a) In a liquid at rest
    b) In a fluid at rest
    c) In a laminar flow
    d) In a turbulent flow

    Ans- b
95. The hydrostatic law states that rate of increase of pressure in a vertical direction
    a) Is equal to density of the fluid
    b) Is equal to specific weight of the fluid
    c) Is equal to weight of the fluid
    d) None of the above

    Ans- b
96. Fluid statics deals with the following forces
    a) Viscous and gravity forces
    b) Viscous and gravity forces
    c) Gravity and pressure forces
    d) Surface tension and gravity forces

    Ans- c
97. Gauge pressure at a point is equal to
    a) Absolute pressure plus atmospheric pressure
    b) Absolute pressure minus atmospheric pressure
    c) Vacuum pressure plus absolute pressure
    d) None of the above

    Ans- b
98. The resultant hydrostatic force acts through a point known as
    a) Centre of gravity
    b) Centre of buoyancy
    c) Centre of pressure
    d) None of the above

    Ans- c
99. For submerged curved surface , the vertical component of the hydrostatic force is
    a) Mass of the liquid supported by the curved surface
    b) Weight of the liquid supported by the curved surface
    c) The force of the projected area of the curved surface on vertical plane
    d) None of the above

Ans- b

100. When the fluid is at rest, the shear stress is
   a) Maximum
   b) Zero
   c) Unpredictable
   d) None of the above

   Ans-b

101. The centre of pressure for a plane vertical surface lies at a depth of
   a) Half the height of the immersed surface
   b) One-third the height of the immersed surface
   c) Two-third the height of the immersed surface
   d) None of the above

   Ans-c

102. The inlet length of a venturimeter
   a) Is equal to the outlet length
   b) Is more than the outlet length
   c) Is less than the outlet length
   d) None of the above

   Ans- c

103. Flow of a fluid in a pipe takes place from
   a) Higher level to lower level
   b) Higher pressure to lower pressure
   c) Higher energy to lower energy
   d) None of the above

   Ans-c

104. For a floating body , the buoyant force passes through the
   a) Centre of gravity of the body
   b) Centre of gravity of the submerged part of the body
   c) Metacentre of the body
   d) Centroid of the liquid displaced by the body

   Ans-c

105. A submerged body will be in stable equilibrium if
   a) The centre of buoyancy B is below the centre of gravity G
   b) The centre of buoyancy B coincides with G
   c) The centre of buoyancy B is above the mentacentre M
   d) The centre of buoyancy B is above G

   Ans- d

106. The metacentric height of a floating body is
   a) The distance between metacentre and centre of buoyancy
   b) The distance between the centre of buoyancy and centre of gravity
   c) The distance between mentacentre and centre of gravity
   d) None of the above

Ans-c

107. The point, through which the buoyant force is acting , is called
   a) Centre of pressure
   b) Centre of gravity
   c) Centre of buoyancy
   d) None of the above

   Ans- c

108. The point, through which the weight is acting is called
   a) Centre of pressure
   b) Centre of gravity
   c) Centre of buoyancy
   d) None of the above

   Ans-b

109. For floating body, if the meta-centre is above the centre of the gravity , the equilibrium is called
   a) Stable
   b) Unstable
   c) Neutral
   d) None of the above

   Ans-a

110. For a floating body, if the meta-centre is below the centre of gravity, the equilibrium is called
   a) Stable
   b) Unstable
   c) Neutral
   d) None of the above

   Ans-b

111. For a floating body, if the meta-centre coincides with the centre of gravity, the equilibrium is called
   a) Stable
   b) Unstable
   c) Neutral
   d) None of the above

   Ans- c

112. For a floating body, if centre of buoyancy is above the centre of gravity , the equilibrium is called
   a) Stable
   b) Unstable
   c) Neutral
   d) None of the above

   Ans-d

113. For a submerged body, if the meta-centre is below the centre of gravity , the equilibrium is called
   a) Stable
   b) Unstable
   c) Neutral
   d) None of the above
   Ans- d

114. The necessary condition for the flow to be steady is that
   a) The velocity does not change from place to place
   b) The velocity is constant at a point with respect to time
   c) The velocity changes at a point with respect to time
   d) None of the above
   Ans- b

115. The necessary condition for the flow to be uniform is that
   a) The velocity is constant at a point with respect to time
   b) The velocity is constant in the flow field with respect to space
   c) The velocity changes at a point with respect to time
   d) None of the above
   Ans- b

116. The flow in the pipe is laminar if
   a) Reynold number is equal to 2500
   b) Reynold number is equal to 4000
   c) Reynold number is more than 2500
   d) None of the above
   Ans- d

117. Pitot-tube is used for measurement of
   a) Pressure
   b) Flow
   c) Velocity at a point
   d) Discharge
   Ans- c

118. Irrotational flow means
   a) The fluid does not rotate while moving
   b) The fluid moves in straight lines
   c) The net rotation of fluid-particles about their mass centres is zero
   d) None of the above
   Ans- c

119. Bernoulli's equation is derived making assumptions that
   a) The flow is uniform , steady and incompressible
   b) The flow is non-viscous, uniform and steady
   c) The flow is steady , non-viscous , incompressible and irrotational
   d) None of the above

Ans- c

120. The flow rate through a circular pipe is measured by

a) Pitot-tube
b) Venture-meter
c) Orifice-meter
d) None of the above

Ans-d

121. Of the total content of water on globe the available quantity for use is less than

a) 20%

b) 2%

c) 0.1%

d) 0.03

Ans-d

122. Water for domestic consumption should be

a) colourless ,odourless and tasteless

b) Free from dissolved salts

c) Hygienically safe

d) Attractive for looks

Ans-c

123. A hot water or waste water sample may have

a) More bacteria

b) Greater biological activity

c) No bacteria

d) Less odours and tastes

Ans-b

124. True colour of water is due to

a) Suspended solids

b) Colloidal solids

c) Volatile solids

d) Acids in solution

ans-b

125. A source of colour in water is due to

a) Silt

b) Clay

c) Organic debris

d) Inorganic inert matter

ans-c

126. Purest water may have

a) No colour

b) Faint blue green colour

c) Dark blue colour

d) Brownish yellow colour

ans-a

127. Highly coloured waters are

a) Unaesthetic

b) Highly polluted

c) Require elaborate treatment

d) Rich in iron and manganese

ans-a

128. An industry that insists on colour free water is

a) Fertilisers

b) Dairy

c) Tannery

d) Steel

ans-b

129. Coloured waters may affect the following water treatment unit

a) Plain sedimentation

b) Sedimentation aided by coagulation

c) Filtration

d) Chlorination

ans-d

130. If treated water when reaches the consumer is coloured, it is due to

a) Colouring pigments in water

b) Iron and manganese in water

c) Bacteria and algae in water

d) Corrosion of pipe line

ans- b

131. Turbidity is mainly due to

a) Floating solids

b) Suspended solids

c) Colloidal solids

d) Dissolved solids

ans-c

132. Turbidity is the ability of water to

a) Scatter light

b) Retain suspended solids

c) Retain colloidal solids in suspension

d) Detain dissolved solids

ans- a

133. Conductivity directly depends on

a) Total solids

b) Total dissolved solids

c) Ionized dissolved solids

d) Volatile organic solids

ans- c

134. A desirable Ph value for domestic water is

a) 7

b) 6 to 8

c) 5 to 9

d) 7 to 8.5

ans-d

135. Caustic alkalinity is because of

a) Caustic soda

b) Hydroxides

c) Carbonates

d) Bicarbonates

ans-b

136. Conservation system is best suited

a) In slums

b) In densely populated area

c) For people of no moral

d) When man power is cheap

ans-d

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137. A deplorable aspect of conservancy system is

a) Recurring cost is high

b) Vehicles are required to carry night soil

c) Vast areas for disposal are necessary

d) Human elements is involved in collection and transportation in human waste

ans- d

138. Separate system id adopted in

a) Plains with a gentle slope

b) Thickly populous districts

c) Areas where rainfall is distributed throughout the year

d) Steep rocky slopes

ans- d

139. Leaping weir is provided only in

a) Conservancy system

b) Separate system

c) Partly separate system

d) Combined system

ans-c

140. Sullage is

a) Waste water from baths

b) Drainage from roads

c) Industrial liquid waste

d) Waste water from toilets

ans-a

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141. Top space is left free in a sanitary sewer for

a) Gases to accumulate

b) Fluctuation to be met

c) Allowing shock loading

d) Maintaining uniform pressure

ans-a

142. For a partly running circular sewer as the depth of flow increases

a) Wetted perimeter increases

b) Velocity of flow increases

c) Velocity of flow decreases

d) Discharge increases

ans-d

143. A sewer that collects sewage from toilets is called

a) Lateral

b) Branch sewer

c) Main sewer

d) Outfall sewer

ans- a

144. A manhole is provided

a) At every 500 m intervals

b) At every corner

c) When flow gets divided

d) When direction or grade changes

ans-d

145. When fall in elevation is greater than 90 cm the manhole provided is called

a) Lamp hole

b) Flight manhole

c) Drop manhole

d) Fall manhole

ans-d

146. When more than 2 sewers join in a manhole

a) Their tops should be at the same level

b) Their centers should be at the same level

c) Their bottoms should be at the same level

d) They can be either way

ans- a

147. A lamp hole is helpful in

a) Eliminating sewer line

b) Cleaning sewer line

c) Repairing

d) Testing sewers

ans-a

148. The best ph range suited for most of bacteria is

a) 1 to 2

b) 5 to 9

c) 7

d) 7 to 10

ans-b

149. Aerobic bacteria

a) Consume oxygen in combined state

b) Prefer darkness to light

c) Prefer movement to stagnation

d) Produce less energy and more end products

ans – c

150. Anaerobes give out

a) More energy

b) Less unmetabolised organics

c) Less odourous products

d) Unstable end products

ans-d

151. An instrument used for ranging is

a) Optical square

b) Line ranger

c) Clinometer

d) Pedometer

ans-b

152. Survey plotting can be done with an accuracy of

a) 0.25mm

b) 0.5 mm

c) 1 mm

d) 1 cm

ans- a

153. A chain may get elongated due to

a) Change in temperature

b) Difference in pull

c) Opening of rings

d) Kinks in links

ans-c

154. A chain is made up of mild steel or galvanized iron wire of diameter

a) 1 mm

b) 4 mm

c) 5 mm

d) 1 cm

ans-c

155. Handles of chains are made up of

a) Mild steel

b) Galvanized iron

c) Brass

d) Copper

ans-c

156. Handles are connected to the link by

a) Flexible joint

b) Rigid joint

c) Ball and socket joint

d) Swivel joint

ans-d

157. Indirect ranging is adopted when the two ends of chain line are

a) Mutually invisible

b) Too distant

c) On a sloping ground

d) Separated by a valley

ans-a

158. A 20 m long chain when tested should not show an error exceeding

a) 2 mm per metre length and 5 mm in the overall length

b) 2 mm per metre length and 8 mm in the overall length

c) 2 mm per metre length and 20 mm in the overall length

d) 2 mm per metre length and 40 mm in the overall length

ans-a

159. Drop arrow is used in

a) Conventional chain survey

b) Measurements along slopes

c) Measurement by method of steeping

d) Measuring with tape

ans-c

160. Pick up the most accurate statement from the following

a) Survey lines in an area should be as many as possible

b) Number of base lines in an area is limited to one

c) Main chain lines should form well conditioned triangles

d) Oblique offsets are inferior to perpendicular offsets

ans-c

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161. Reciprocal ranging is adopted when the following is encountered

a) A dense forest

b) A hillock

c) A river

d) A tall building

ans-b

162. Isogonic lines are the lines having the same

a) Elevation

b) Bearing

c) Declination

d) Dip

ans-c

163. The amount correction due to local attraction at a place

a) Is a constant for all bearings

b) Varies with the bearing

c) Changes from time to time

d) Sometimes addictive and sometimes subtractive

ans-a

164. An instrumental error in compass survey is because of

a) Inaccurate levelling

b) Variation in declination

c) No counter weight provision to counteract dip

d) Local attraction due to bare current carrying conductors

ans-c

165. Radiation plane table survey is the best suited when
a) Distances are long but accessible
b) Distances are short and accessible
c) Distances are long and inaccessible
d) Distances are short but inaccessible
ans-b
166. 'The strength of fix' is poor when
a) The station is within the great triangle
b) The station is outside the great circle
c) The station is within the great circle but outside the great triangle
d) The station is on the great circle
ans-d
167. An advantage of plane tabling is
a) It is a tropical instrument
b) It has many accessories
c) Plotting is done out-door
d) Chances to miss details are less
ans-d
168. A disadvantage of plane table survey is
a) it is heavy' cumbersome and awkward to carry
b) It cannot be used in wet climate
c) Details may not be available while redrawing to a different scale
d) Accessories are likely to be lost
ans-c
169. An example for a level surface is
a) Surface of earth
b) Surface of sea
c) Surface of a reservoir
d) Surface of a still lake
ans-d
170. Level line and horizontal line are
a) The same for longer distances
b) Both straight lines
c) Never the same
d) Same for smaller lengths
ans-d
171. A plump line is
a) A vertical line
b) A line vertical to a parallel line
c) A line perpendicular to level line
d) A line perpendicular to a horizontal line
ans-c
172. An invert is taken when the point is
a) Having high elevation
b) Above the line of sights
c) Below the line of sights
d) Below ground level
ans-b

173. Due to curvature of earth the object
a) Looks higher than it is
b) Looks lower than it is
c) Looks as it is
d) Looks curved
ans-b
174. An instrument used to find slopes of ground is
a) Planimeter
b) Clinometer
c) Box sextant
d) Pantograh
ans- b
175. An instrument that can be used as an optical square
a) Ceylon ghat tracer
b) Box sextant
c) Tangent clinometer
d) Clinometer
ans-b
176. Pick up the odd instrument
a) Abney clinometer
b) Tangent clinometer
c) Ceylon ghat tracer
d) Box sextant
ans-d
177. Pick up the odd instrument
a) Prismatic compass
b) Theodolite
c) Box sextant
d) Dumpy level
ans-d
178. To instrument resembling an alidade is
a) Box sextant
b) ghat tracer
c) Tangent clinometer
d) Abney level
ans-c
179. The horizon glass of the box sextant is
a) Fully silvered
b) Full plane
c) Half silvered and half plane
d) Concave in shape to form sharp image
ans-c
180. The instrument used to reproduce plans to a different scale is called
a) Planimeter
b) Clinometer
c) Ghat tracer
d) Pantograph
ans-d

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181. The velocity component in a 2-D flow for an incompressible fluid are given by the equations
$U=2xy$ $v=a^2+ x^2 + y^2$
The flow
a) Satisfies irrationality condition and the continuity equation
b) Satisfies irrationality condition but not the continuity equation
c) Does not satisfy the irrationality condition but satisfies the continuity equation.
d) Does not satisfy either the irrationality condition or the continuity equation
Ans 2
182. A jet of water issues from a 5 cm diameter nozzle held vertically upwards at a velocity of 20 m/s. If air resistance consumes 10 % of the initial energy of the jet then it will reach a height above the nozzle of
a) 18.35 m
b) 19.14 m
c) 19.92
d) 20 m
Ans 1
183. A penstock is 3000 m long . Pressure wave travels in it with a velocity of 1500 m/s . If the turbine gates are closed uniformly and completely in a period of 4.5 seconds,then it is called
a) rapid closure
b) slow closure
c) sudden closure
d) uniform closure
Ans 2
184. A river model is constructed to a horizontal scale of 1 :1000 and a vertical scale of 1 : 100 . If the model discharge were 0.1 m^3/s then the discharge (m^3/s)in the river would be
a) 0.625
b) 1.6
c) 2.56
d) 4.96
Ans 3
185. A rectangular floating body 20 m long is 5 m wide. The water line is 1.5 m above the bottom. If the centre of gravity is 1.8 m from the bottom, then its metacentric height is
a) 3.3 m
b) 1.65 m
c) 0.34 m
d) 0.30 m
Ans 3
186. Images of two objects on a pair of photograph have a parallax difference of 1.8 mm and an average photograph base of 88.2 mm. The flying height is 4000 m above the average ground level. The difference in the elevation of the two object will be
a) 40 m
b) 60 m
c) 80 m
d) 90 m
Ans3

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187. The main plate of a transit is divided into 1080 equal divisions. 60 divisions of the Vernier coincide with 59 divisions of the main plate. The least count (in seconds) of the transit is
a) 5
b) 10
d) 15
4) 20
Ans 4
188. A dumpy level is set up with its eye piece vertically over a peg A. The height from the top of Peg A to the centre of the eye piece is 1.540 m and the reading on the peg B is 0.705 m . The level is then set up over peg B. The height of the eye piece above peg B is 1.490 m and the reading on A is 2.195 m . The difference in level between A and B is
a) 2.9 m
b) 3.030 m
c) 0.770 m
d) 0.785
Ans 3

189. Probability of A 10 year flood to occur atleast once in the next 4 year is
a) 25 %
b) 35 %
c) 50 %
d) 65 %
Ans 2
190. If the co-efficient of variation of rainfall values at 4 rain gauge station is 30 % and the permissible error in the estimation of mean rainfall is 10 % ,then the additional number of raingauge required is
a) 3
b) 4
c) 5
d) 9
Ans 3
191. The 6 hour unit hydrograph of a catchment of area 180 km^2 is triangular in shape. If the peak ordinate of this hydrograph is 10 m^3/sec,then the time base is
a) 50 hrs
b) 75 hrs
c) 100 hrs
d) 120 hrs
Ans 3
192. If the load ,warping and frictional stresses in a cement concrete slab is 210 N/mm^2 ,290 and 10 respectively, the critical combination of stresses during summer mid-say is
a) 290 N/mm^2
b) 390 N/mm^2
c) 490 N/mm^2
d) 590 N/mm^2
Ans 3

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193. An ascending gradient of 1 in 100 meets a descending gradient of 1 in 50. The length of the summit curve required to provide overtaking sight distance of 500 m will be
a) 938 m
b)781 m
c) 470 m
d)170 m
Ans 2
194. The following data pertain to a sewage sample
Initial D.ON=10 mg/l
Final D.O =2 mg/l
Dilution to 1 %
The BOD of the given sewage sample is
a) 8 mg/l
b) 10 mg/l
c) 100 mg/l
d) 800 mg/l
Ans 4
195. An industrial wastewater enters a stream having a BOD Concentration of 10 mg/l and a flow of 20 m^3/s. If the flow of wastewater is 1.5 m^3/s and its BOD concentration is 250 mg/l then the BOD Concentration in the stream at a point downstream of the point of confluence of waste water with the stream will be
a) 2.67 mg/l
b) 12.09 mg/l
c) 13 mg/l
d) 26.74 mg/l
Ans 4
196. ONE litre of sewage when allowed to settle for 30 minutes gives a sludge volume of 27 cm^3. If he dry weight of this sludge is 3 grams, then its sludge volume index will be
a) 9
b) 24
c) 30
d) 81
Ans 1
197. If the proportion of soil passing 75 micron sieve is 50 % and the liquid limit and plastic limit are 40 % and 20 % respectively then the group index of the soil is
a) 3.8
b) 6.5
c) 38
d) 65
Ans 2
198. A raft of 6m * 9 m is founded at a depth of 3 m in a cohesive soil having c = 120 KN/m^2.The ultimate net bearing capacity of the soil using Terzaghi theory will be nearly
a) 820 KN/m^2
b) 920 KN/m^2
c) 1036 KN/m^2
d) 1067 KN/m^2
Ans1

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199. In a direct shear test, the shear stress and the normal stress on a dry sand sample at failure are 0.6 kg/cm^2 and 1 kg/cm^2 respectively. The angle of internal friction will be nearly
a) 25 degree
b) 31 degree
c) 37 degree
d) 43 degree
Ans 2
200. The initial and final void ratio of a clay sample in a consolidation test are 1 and 0.5 respectively. If the initial thickness of the sample is 2.4 cm,then its final thickness will be
a) 1.3 cm
b) 1.8 cm
c) 1.9cm
d) 2.2 cm
Ans 2