MAGDALINE COACHING CENTRE (mc^2)
CIVIL ENGINEERING PAPER-II

(Words in bold are answers)

1. Which of the following closely represents the shape of the earth?
a. Spheroid
b. Eliproid
c. Oblate spheroid
d. Prolate spheroid

2. Contour interval on a map sheet denotes
a. Vertical distance of contour lines above the datum plane
b. Vertical distance between two successive contour lines
c. Slope distance between two successive contour lines
d. Horizontal distance between two successive contour lines

3. The number of independent conditions required to be satisfied for the adjustment of a braced quadrilateral in triangulation survey is
a. 2
b. 4
c. **6**
d. 8

4. It is required to determine by periodical soundings, the rate at which silting or scouring is taking place in a harbour. Which one of the following methods is best suited for locating the positions of the sounding?
a. Range and time intervals
b. Two angles from the boat
c. Tachometric observations
d. Intersecting ranges

5. The fix of a plane table from three known points is good if
a. the middle station is the nearest
b. the middle station is farther than the other two stations
c. either of the extreme stations is the nearest
d. the middle station is close to the great circle

6. Mean sea level at any place is the average datum of hourly tide heights observed over a period of nearly
a. 5 years
b. 10 years
c. 20 years
c. 50 years

7. The linear error in a 50 m long traverse is 0.01 m. The angular error (in seconds) considering equal precision will be
a. 81
b. 41
c. 01.5
d. zero

8. Which one of the following instruments is used in plane table surveying for the measurements of horizontal and vertical distances directly?
a. Plane alidade
b. Telescopic alidade
c. Tachometer
d. Clinometer

9. The main plate of transit is divided into 1080 equal divisions, 60 divisions of the vernier coincide exactly with 59 divisions of the main plate. The least count (in seconds) of the transit is
a. 5
b. 10
c. 15
d. 20

10. The difference in length between the arc and the subtended chord on the surface of the earth for a distance of 18.2 km is only
a. 10 mm
b. 30 mm
c. 50 mm
d.100 mm

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(Words in bold are answers)

11. The difference between the sum of the angles of a spherical triangle on the earth's surface and the angles of the corresponding plane triangle for every 195.5 km² of area is only
a. 1 second
b. 5 second
c. 10 second
d. 15 second

12. A plain scale is used to read
a. one dimension
b. two dimensions
c. three dimensions
d. all of these

13. A scale which has a common representative fraction, but read in different measures is called a,
a. Plain scale
b. Diagonal scale
c. Shrunk scale
d. Comparative scale

14. If x is the smallest division on the main scale and m are the number of divisions on the vernier, then the least count of the vernier is
a. $x+m$
b. $x - m$
c. $x \times m$
d. x / m

15. An average length of a pace is
a. 60 cm
b. 80 cm
c. 100 cm
d. 120 cm

16. The method of measuring distance by pacing is chiefly used in
a. Reconnaissance surveys
b. Preliminary surveys
c. Location surveys
d. All the above

17. The instruction attached to the wheel of a vehicle in order to measure the distance travelled is called
a. Passometer
b. Pedometer
c. Odometer
d. Speedometer

18. Direct ranging is possible only when the end stations are.
a. close to each other
b. not more than 100 m apart
c. mutually intervisible
d. located at highest point in the sea

19. The error in measured length due to incorrect holding of chain is
a. Compensating error
b. Cumulative error
c. Instrumental error
d. Negative error

20. If a chain is used at a temperature_____the temperature at which it was calibrated, the error in measured length is positive.
a. equal to
b. lower than
c. higher than
d. none of the above

21. The error in measured length due to sag of chain or tape is known as
a. Positive error
b. Negative error
c. Compensating error
d. Instrumental error

22. When the measured length is less than the actual length, the error is known as
a. positive error
b. Negative error
c. Compensating error
d. Instrumental error

23. Cumulative errors that occur in chaining are proportional to
a. L
b. $\sqrt{L}$
c. 1/L
d. $1/\sqrt{L}$

24. Compensating errors that occur in chaining are proportional to

a. L
b. $\sqrt{L}$
c. 1/L
d. $1/\sqrt{L}$

25. A line joining the apex of a triangle to some fixed point on the opposite side is called a
a. check line
b. tie line
c. base line
d. none of these

26. A lined joining some fixed point on the main survey lines is called a
a. check line
b. tie line
c. base line
d. none of these

27. Chain surveying is most suitable when
a. area to be surveyed is small
b. ground is fairly level and open with simple details
c. plans are required on a large scale
d. all of the above

28. The accuracy in laying down the perpendicular offsets and in measuring them depends upon
a. Scale of plotting
b. Length of offset
c. Importance of the subject
d. All of these

29. The limiting length of the offset is _____when its perpendicular direction is set out by an eye.
a. 5 m
b. 10 m
c. 15 m
d. 20 m

30. The specific weight of water in S.I unit is taken as
a. 9.81 KN/m^3
b. 9.81×10^3 N/m^3
c. 9.81×10^{-6} N/mm^3
d. Any one of these

31. The variation in the volume of a liquid with the variation of pressure is called its
a. Surface tension
b. Compressibility
c. Capillarity
d. Viscosity

32. A glass tube of smaller diameter is used while performing an experiment for the capillary rise of water because
a. It is easier to see through the glass tube.
b. Glass tube is cheaper than a metallic tube.
c. It is not possible to conduct this experiment with any other tube.
d. All of the above.

33. With an increase in size of tube, the rise or depression of liquid in the tube due to surface tension will
a. Decrease
b. Increase
c. Remain unchanged
d. Depend upon the characteristics of liquid.

34. The pressure intensity in KN/m^2 (or KPa) at any point in a liquid is
a. w
b. $w\hbar$
c. $w/\hbar$
d. $\hbar/w$

35. The pressure measured with the help of a pressure gauge is called
a. Atmospheric pressure
b. Gauge pressure
c. Absolute pressure
d. Mean pressure

36. The absolute pressure is equal to
a. Gauge pressure + atmospheric pressure
b. Gauge pressure − atmospheric pressure
c. Atmospheric pressure – gauge pressure
d. Gauge pressure – Vacuum pressure

(Words in bold are answers)

37. When the pressure intensity at a point is more than the local atmospheric pressure, then the difference of these two pressures is called
a. Gauge pressure
b. Absolute pressure
c. Positive gauge pressure
d. Vacuum pressure

38. The pressure less than atmospheric pressure is called
a. Suction pressure
b. Vacuum pressure
c. Negative gauge pressure
d. All of these

39. The pressure of a liquid measured with the help of a piezometer tube is
a. Vacuum pressure
b. Gauge pressure
c. Absolute pressure
d. Atmospheric pressure

40. The pressure measured with the help of a piezometer tube is in
a. N/mm²
b. N/m²
c. Head of liquid
d. All of these

41. A piezometer tube is used only for measuring
a. Low pressure
b. High pressure
c. Moderate pressure
d. Vacuum pressure

42. The liquid used in manometers should have
a. low density
b. High density
c. Low surface tension
d. High surface tension

43. A manometer is used to measure
a. Atmospheric pressure
b. Pressure in pipes and channel
c. Pressure in venturimeter
d. Difference of pressure between two points in a pipe

44. Rankine 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

45. The total pressure on an immersed surface inclined at an angle θ with the liquid surface is
a. WA
b. W x
c. WAx
d. $\frac{WAx}{Sin\ \theta}$

46. A vertical wall is subjected to a pressure due to one kind of liquid on one of its sides. The total pressure on the wall acts at a distance____ from the liquid surface
a. H/3
b. H/2
c. 2H/3
d. 3H/4

47. A vertical wall is subjected to a pressure due to one kind of liquid on one of its sides. Which of the following statement is correct?
a. The pressure on the wall at the liquid level is minimum
b. The pressure on the bottom of the wall is maximum
c. The pressure on the wall at the liquid level is zero, and on the bottom of the wall is maximum
d. The pressure on the bottom of the wall is zero

48. When a vertical wall is subjected to pressure due to liquid on both sides, the resultant pressure is the ___ of the two pressures
a. Sum

(Words in bold are answers)

b. Difference
c. Arithmetic mean
d. Geometric mean

49. When a body is immersed wholly or partially in a liquid, it is lifted up by a force equal to the weight of liquid displaced by the body. This statement is called.
a. Pascal's law
b. Archimedes's principle
c. Principle of floatation
d. Bernoulli's theorem

50. The centre of gravity of the volume of the liquid displaced is called
a. Centre of pressure
b. Centre of buoyancy
c. Metacentre
d. None of these

51. The buoyancy depends upon the
a. Weight of the liquid displaced
b. Pressure with which the liquid is displaced
c. Viscosity of the liquid
d. Compressibility of the liquid.

52. When a body, floating in a liquid is given a small angular displacement, it starts oscillating about a point known as
a. Centre of pressure
b. Centre of gravity
c. Centre of buoyancy
d. Metacentre

53. The metacentric height is the distance between the
a. Centre of gravity of the floating body and the centre of buoyancy.
b. Centre of gravity of the floating body and the metacentre.
c. Metacentre and centre of buoyancy
d. Original centre of buoyancy and new centre of buoyancy

54. One cubic metre of water weighs
a. 100 litres
b. 250 litres
c. 500 litres
d. 1000 litres

55. One litre of water occupies a volume of
a. 100 cm^3
b. 250 cm^3
c. 500 cm^3
d. 1000 cm^3

56. The imaginary line drawn in the fluid in such a way that the tangent to any point gives the direction of motion at that point, is known as
a. Path line
b. Stream line

c. Streak line
d. Potential line

57. A flow through a long pipe at constant rate is called
a. Steady uniform flow
b. Steady non-uniform flow
c. Unsteady uniform flow
d. Unsteady non-uniform flow

58. A flow through an expanding tube at constant rate is called.
a. Steady uniform flow
b. Steady non-uniform flow
c. Unsteady uniform flow
d. Unsteady non-uniform flow

59. In one dimensional flow, the flow
a. is steady and uniform
b. takes place in straight line
c. takes place in curve
d. takes place in one direction.

60. Bernoulli's equation is applied to
a. Venturimeter
b. Orifice meter
c. Pitot tube
d. All of these.

61. Barometer is used to measure
a. Velocity of liquid
b. Atmospheric pressure
c. Pressure in pipes and channels
d. Difference of pressure between two points in a pipe.

(Words in bold are answers)

62. The length of the divergent cone in a venturimeter is_____that of the convergent cone.
a. Equal to
b. Double
c. Three to four times
d. Five to six times

63. The velocity of the liquid flowing through the divergent portion of a venturimeter
a. Remains constant
b. Increases
c. Decreases
d. Depends upon the mass of liquid

64. The pressure of the liquid flowing through the divergent portion of a venturimeter
a. Remains constant
b. Increases
c. Decreases
d. Depends upon the mass of liquid

65. Which one of these methods of tunnel construction is not suitable in rocks?
a. Full face method
b. Compressed air method
c. Heading and brunching method
d. Drift method

66. Drift method of tunnelling is used to construct tunnels in
a. Soft grounds
b. Rock
c. Self-supporting grounds
d. Broken grounds

67. For WBM roads in localities of heavy rainfall, the recommended value of camber is,
a. 1 in 30
b. 1 in 33
c. 1 in 48
d. 1 in 60

68. Co-efficient of friction is less when the pavement surface is,
a. Rough
b. Dry
c. Smooth and dry
d. Smooth and wet

69. The ruling design on a national Highway in plain terrain as per IRC recommendation is,
a. 60 kmph
b. 80 kmph
c. 100 kmph
d. 120 kmph

70. The maximum design gradient for vertical profile of a road is
a. Ruling gradient
b. Limiting gradient
c. Exceptional gradient
d. Minimum gradient

71. The ideal form of curve for the summit curve is
a. Spiral
b. Parabola
c. Circle
d. Lemniscate.

72. The reaction time for calculation of stopping distance may be assumed as
a. 5 secs
b. 2.5 secs
c. 0.5 secs
d. 10.0 secs

73. Width of carriage way for a single lane is recommended to be
a. 7.5 m
b. 3.75 m
c. 7.0 m
d. 5.5 m

74. The design value of lateral friction co-efficient on highway is
a. 1.5
b. 0.50
c. 0.35
d. 0.15

75. Camber on highway pavement is provided to take care of
a. Centrifugal force
b. Drainage

c. Sight distance
d. Off-tracking

76. Road alignment is influenced by
a. traffic requirements
b. Stability of hill slopes
c. number of cross-drainage works
d. All the above

77. The absolute minimum radius for a horizontal curve designed for speed of 100 kmph gives the permissible values of super-elevation 0.08 and co-efficient of friction 0.12 will be
a. 394 m
b. 295m
c. 364 m
d. 225 m

78. An Enoscope is used for measuring
a. Running speed
b. Time mean speed
c. Spot speed
d. Overall speed.

79. Assuming a longitudinal co-efficient of friction to be 0.4, the resulting retardation of a vehicle being brought to a stop is nearly
a. 0.98 m/s^2
b. 1.95 m/s^2
c. 2.90 m/s^2
d. 3.93 m/s^2

80. The maximum spacing of contraction joints in rigid pavements is
a. 2.5 m
b. 3.5 m
c. 4.5 m
d. 5.5 m

81. The modulus of sub-grade reaction is evaluated from
a. Plate bearing test
b. CBR test
c. Direct shear test
d. Tri-axial test

82. If the pressure carried by a CBR specimen at 2.5 mm penetration is 3.5 N/mm^2, the CBR of the soil is
a. 10%
b. 35%
c. 50%
d. 70%

83. The result of ring and ball softening point test on asphalt is given in term of
a. Viscosity
b. Time
c. Flow
d. Temperature

84. Which of the following methods of applying water may be used on rolling land?
a. Boarder flooding
b. Check flooding
c. Furrow flooding
d. Free flooding

85. The value of sodium absorption ratio for high sodium water lies between
a. 0 to 10
b. 10 to 18
c. 18 to 26
d. 26 to 34

86. The "outlet discharge factor" is the duty at the head of
a. Main canal
b. Branch canal
c. Watercourse
d. Distributor

87. For supplying water to Rabi crop, kharif crop and sugarcane, the channel is designed for a capacity equal to the greater of the water requirement of
a. Rabi or kharif
b. Rabi and kharif or sugarcane
c. Rabi and sugarcane or kharif and sugarcane
d. Rabi or kharif or sugarcane

88. The amount of irrigation water required to meet the

(Words in bold are answers)

evapotranspiration needs of the crop during its full growth is called
a. Effective rainfall
b. Consumptive use
c. Consumptive irrigation requirement
d. Net irrigation requirement

89. With the increase in the quantity of water supplied, the yield of most crops
a. Increases continuously
b. Decreases continuously
c. Increases upto certain limit and then becomes constant
d. Increases upto certain limit and then decreases

90. The depth of water required to bring the soil moisture content of a given soil upto its field capacity is called
a. Hygroscopic water
b. Equivalent moisture
c. Soil moisture deficiency
d. Pellicular water.

91. Infiltration capacity
a. is a constant factor
b. changes with time
c. changes with location
d. changes with both time and location.

92. If the intensity of rainfall is more than the infiltration capacity of soil, then the infiltration rate will be,
a. Equal to rate of rainfall
b. Equal to infiltration capacity
c. More than rate of rainfall
d. More than infiltration capacity.

93. Which of the following types of rain gauges is used for measuring rain in remote hilly inaccessible areas?
a. Tipping bucket type
b. Weighing type
c. Floating type
d. Simon's rain gauge

94. Under the same condition, which of the following shapes of water surface will give the highest rate of evaporation?
a. Flat water surface
b. Convex water surface
c. Concave water surface
d. Independent of shape of water surface.

95. When surface of transpiration is submerged under water, then potential evapotranspiration is
a. Much more than evapotranspiration
b. Much less than evapotranspiration
c. Equal to evapotranspiration
d. Equal to or less than evapotranspiration

96. Runoff in M.K.S system is
a. Cubic metre/sec
b. Metre/sec
c. Cubic metre
d. Square metre

97. The runoff increases with
a. Increase in intensity of rain
b. Increase in infiltration capacity
c. Increase in permeability of soil
d. All of the above.

98. A current meter is used to measure the
a. Velocity of flow of water
b. Depth of flow water
c. Discharge
d. None of the above

99. If it rains between 2 P.M and 3 P.M and the entire basin area just starts contributing water at 3 P.M to the outlet, then time of concentration will be,
a. 15 minutes
b. 20 minutes
c. 30 minutes
d. 60 minutes

100. The best unit duration of storm for a unit hydrograph is
a. 1 hour
b. One-fourth of basin lag

c. One-half of basin lag
d. Equal to basin

101. The unit hydrograph due to a storm may be obtained by dividing the ordinates of the direct runoff hydrograph by
a. Direct runoff volume
b. Period of storm
c. Total rainfall
d. None of the above

102. The unit hydrograph of a specified duration can be used to evaluate the hydrograph of storm of
a. Same duration only
b. Same and shorter duration
c. Same and longer duration
d. Any duration

103. Hydrograph is used to obtain unit hydrograph of
a. Shorter duration from longer duration
b. Longer duration from shorter duration
c. Both (a) and (b)
d. None of the above

104. Trap efficiency of a reservoir is a function of
a. Capacity/ inflow ratio
b. Capacity/ outflow ratio
c. Outflow / inflow ratio
d. None of the above

105. For flood control reservoir, the effective storage is equal to
a. Useful storage – valley storage
b. Useful storage + surcharge storage
c. Useful storage + surcharge storage + valley storage
d. Useful storage + surcharge storage – valley storage

106. The uplift pressure on the face of a drainage gallery in a dam is taken as
a. Hydrostatic pressure at toe
b. Average of hydrostatic pressure at toe and heel
c. Two-third of hydrostatic pressure at toe plus one-third of hydrostatic pressure at heel.
d. None of the above

107. Horizontal acceleration due to earthquake results in
a. Hydrodynamic pressure
b. Inertia force into the body of the dam
c. Both (a) and (b)
d. None of the above

108. When the reservoir is full, the maximum compressive force in a gravity dam is produced
a. at the toe
b. at the heel
c. within the middle third of base
d. at the centre of the base

109. Presence of tail water in a gravity dam
i. Increase the principle stress
ii. Decrease the principle stress
iii. Increase the shear stress
iv. Decrease the shear stress
The correct answer is
a. (i) and (ii)
b. (i) and (iv)
c. (ii) and (iii)
d. (ii) and (iv)

110. A cantilever sheet pile derives its stability from
a. Lateral resistance of soil
b. Self-weight
c. The deadman
d. The anchor rod.

111. The focus of base parabola for a dam having a horizontal drainage filter is at a distance of
a. B/2 from toe
b. (B-b) from toe
c. b from toe
d. b/2 from toe
Where B is base width

112. By providing a top width for roadway and freeboard in the elementary profile of a gravity dam, the resultant force for full reservoir condition will
a. Shift towards the heel
b. Shift towards the toe

c. Not shift at all
d. None of the above

113. The most suitable material for the central portion in previous core of a zoned embankment type dam is
a. Clay
b. Coarse sand
c. Silty clay
d. Clay mixed with fine sand.

114. In a chute spillway, the flow is usually
a. Uniform
b. Subcritical
c. Critical
d. Super critical

115. Seepage through embankment in an earthen dam is controlled by
a. Drainage filters
b. Relief wells
c. Drain trenches
d. Provisions of downstream berms.

116. The flow of water after spilling over the weir crest in chute spillway and side channel spillway respectively are
a. at right angle and parallel to weir crest
b. Parallel and at right angle to weir crest
c. Parallel to weir crest in both
d. at right angle to weir crest in both.

117. Coefficient of discharge of an ogee spillway
a. Depends on depth of approach and upstream slope
b. Depends on downstream apron interference and downstream submergence
c. Remains constant
d. both (a) and (b)

118. In case of non-availability of space due to topography, the most suitable spillway is
a. Straight drop spillway
b. Shaft spillway
c. Chute spillway
d. Ogee spillway

119. Rails is fixed to steel sleepers by
a. Welding
b. Bolts and nuts
c. Riveting
d. Using keys between lugs joints

120. The soil is designated by its
a. Length
b. Weight
c. Cross-section
d. Weight per unit length

121. Largest dimension of a soil is its
a. Height
b. Foot width
c. Head width
d. Anyone of the above

122. Largest percentage of material in the rails is in its
a. Head
b. Web
c. Foot
d. Heat and foot both

123. Ordinary rails are made of
a. Mild steel
b. Cast iron
c. Wrough iron
d. High carbon steel

124. Gauge is the distance between
a. Centre to centre of rails
b. Running faces of rails
c. Outer faces of rails
d. None of the above

125. Wear of rails is maximum in
a. Tangent track
b. Sharp curve
c. Tunnels
d. Coastal area

126. Permissible limit of cant deficiency for broad gauge is
a. 50mm
b.60mm
c.75mm
d.88mm

(Words in bold are answers)

127. Fish plate is in contact with rail at
a. Web of soil
b. Fishing plane
c. Head of soil
d. Fort of soil

128. The total correction percentage for altitude and temperature in calculating the runaway length from basic runway length, normally does not exceed
a.7
b.14
c.28
d.35

129. for the design of runways, if the standard atmospheric temperature at sea level is 15 ° c, then the standard temperature at an altitude of 800m will be
a.7°c
b.9.8°c
c.10.2°c
d. 11°c

130. What does the wind rose Diagram (WRD) for orientation of airport runway give?
a. Direction of wind.
b. Direction and duration of wind.
c. Direction, duration and intensity of wind.
d. None of the above.

131. According to ICAO, all marking on the runways are.
a. Yellow b. White
c. Black d. Red

132. The length of clear zone for non instrument runway of a small aircraft is.
a. 150 m
b. 300 m
c. 600 m
d.750 m

133. A ship is berthed in a chamber and lifted by principles of buoyancy. Such a chamber is called.
a. Dry dock
b. Wet dock
c. Floating dock
d. Refuge dock

134. Which one of the following is a component of a shield for tunnelling?
a. Liner plate
b. Trench jack
c. Stiffener
d. Cutting edge

135. If the average daily water consumption of a city is 24000 cum, the peak hourly demand (of the maximum day) will be
a. 1000 cum/ hr
b. 1500 cum /hr
c. 1800 cum/ hr
d. 2700 cum / hr

136. The distribution mains are designed for
a. Maximum daily demand
b. Maximum hourly demand
c. Average daily demand
d. Maximum hourly demand on maximum day

137. Which is the best sewer material to resist hydrogen sulphide corrosion?
a. Glazed stoneware
b. Glazed Earthenware
c. RCC
d. Brick masonry

138. The Threshold Odour Number (TON) for a water sample of 40 ml, diluted to standard 200 ml mixture in which odour is just barely detectable to the sense of smell is
a. 8
b.5
c.50
d. None of the above

139. In which one of the following tests is the organic matter in the

(Words in bold are answers)

waste water used as food by micro-organism?
a. BOD
b. Most probable Number
c. COD
d. Chlorine Demand

140. Which is the most common cause of acidity in water?
a. Carbon monoxide
b. Nitrogen
c. Hydrogen
d. Carbon-dioxide

141. A rapid test to indicate the intensely of water pollution is.
a. B.O.D
b. Dissolved oxygen
c. M.P.N
d. Total Dissolved solids

142. Methemoglobinemia is caused due to drinking of water having excess of
a. Fluorides
b. Iron
c. Hardness
d. Nitrates

143. The measurement of non-biodegradable organic content is usually carried out in terms of
a. BOD
b. DO
c. TOC
d. COD

144. Biochemical Oxygen Demand (BOD) is quoted at which temperature
a.25°c
b.20°c
c.15°c
d.10°c

145. The most important water quality parameter for domestic use of water is
a. Carbonate hardness
b. Non-carbonate hardness
c. Coliform group of organism
d. Chlorides

146. The detention time for a water sedimentation tank may vary between
a. 1-2 hr
b. 2-4 hr
c. 4-8 hr
d. 16-24 hr

147. Coagulants, used in water treatment, function better when the raw water
a. Acidic
b. Alkaline
c. Neutral
d. None of the above

148. Cleaning of slow sand filter is done by
a. Scrapping the top layer
b. Back- washing
c. Any of the above
d. None of the above

149. Back-washing of rapid gravity filters may face rough weather due to
a. Air – binding
b. Mud- balls
c. Negative head
d. Cracking of filters

150. Which of the following chemical compounds can be used for dechlorination of water?
a. Carbon dioxide
b. Bleaching powder
c. Sulphur dioxide
d. Chloramines

151. Which one of the following filters will produce water of higher bacteriological activity?
a. Slow-sand filter
b. Rapid sand filter
c. Pressure filter
d. Dual media filter

(Words in bold are answers)

152. After which of the following treatment units, the turbidity is maximum?
a. Chlorination
b. Primary sedimentation
c. Flocculation basin
d. Secondary sedimentation

153. At break- point chlorination the residual chlorine is
a. zero
b. minimum
c. maximum
d. re-appears

154. Aeration of water is done to remove
a. odour
b. colour
c. hardness
d. turbidity

155. For a grit channel, if the recommended flow velocity is 0.25 m/s and the detention period is 1 minute, the length of the tank is
a. 15 m
b. 32.5 m
c. 25 m
d. 40 m

156. What is the ratio of rate of back-washing to that of filtration in a typical rapid sand filter?
a.2
b.4
c.6
d.10

157. The ratio of minimum hourly flow to the average flow of sewage is
a. 1/3
b. 1/2
c. 2/3
d.3

158. Testing of sewer pipes may involve
a. water test
b. mirror test
c. ball test
d. All these tests

159. The maximum flow occurs in an egg shaped sewer when the ratio of flow depth to vertical diameter is
a.0.33
b.0.50
c.0.95
d.1.00

160. In a separate sewerage system, the most suitable sewer section is
a. Circular
b. Elliptical
c. Egg- shaped
d. Rectangular

161. The specific gravity of sewage is
a. zero
b. slightly less than 1
c. equal to 1
d. slightly greater than 1

162. The pH of fresh sewage is usually
a. less than 7
b. more than 7
c. equal to 7
d. equal to 0

163. pH=3 when compared to pH=5 will be more acidic by
a. 2 times
b. 20 times
c. 100 times
d. None of them

164. Minimum D.O prescribed for a river stream to avoid fish kills is
a. 2ppm
b.8ppm
c.4ppm
d.10ppm

165. Most of bacteria in sewage are
a. anaerobic
b. parasitic
c. saprophytic
d. pathogenic

166. The coagulant used for treating sewage is

(Words in bold are answers)

a. Alum
b. Iron salt
c. Chlorinated copper
d. None of these

167. Dissolved oxygen in stream is
a. same throughout the day
b. minimum at noon
c. maximum at noon
d. maximum at midnight

168. The detention period adopted for grit chambers is of the order of
a. 1 minute
b. 5 minute
c. 2-4 hours
d. 12 hours

169. According to IS classification, the range of silt size particle is
a. 4.76 mm to 2.0 mm
b. 2.00mm to 0.425 mm
c. 0.425mm to 0.075mm
d. 0.075mm to 0.002 mm

170. The correct increasing order of the surface area of the given soils is
a. Silt, sand, colloids, clay
b. sand, silt, colloids, clay
c. sand, silt , clay , colloids
d. clay, silt, sand, colloids

171. A clay sample has a void ratio 0.54 in dry state. The specific gravity of soil solids is 2.7. What is the shrinkage limit of the soil?
a. 8.5%
b 10.0%
c.17.0%
d.20.0%

172. The plasticity index and the percentage of grain size finer than 2 microns of a clay sample are 25 and 15, respectively its activity ratio is
a.2.5
b.1.67
c.1.0
d.0.6

173. The natural void ratio of a sand sample is 0.6 and its density index is 0.6. If its void ratio in the loosest state is 0.9, then the void ratio in the densest state will be
a.0.2
b.0.3
c.0.4
d.0,5

174. Water content of soil can be
a. greater than 100%
b. less than 0%
c. only from 0% to 100%
d. never be greater than100 %

175. If the volume of voids is equal to the volume of solids in a soil mass, then the values of porosity and void ratio are
a. 1.0 and 0.0
b. 0.5 and 1.0
c. 0.0 and 1.0
d. 1.0 and 0.5

176. If the plasticity index of a soil mass is zero the soil is
a. loess
b. clayey silt
c. silt
d. sand

177. An undisturbed soil sample has a plastic limit of 25%, a natural moisture content of 40% and liquidity index of 50%. It liquid limit in % will be
a. 50
b. 55
c. 60
d. 75

178. Number of phases in soil mass is
a. 3
b. 2
c. 1
d. 4

179. The uniformity co- efficient of soil is given as
a. D_{10}/D_{60}
b. D_{60}/D_{10}
c. D_{30}/ D_{60}
d. $D_{60}/D_{8}y$

MAGDALINE COACHING CENTRE (mc^2)
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(Words in bold are answers)

180. 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

181. Among the clay minerals, the one having the maximum swelling tendency is
a. kaoline
b. Ilite
c. Montmorillonite
d. Halloysite

182. When the compactive effort is increased in a standard compaction test, the optimum moisture content (OMC)
a. Decreases
b. Increases
c. Does not change
d. is unpredictable

183. Clayey soil are best compacted by
a. sheep foot rollers
b. vibratory rollers
c. heavy drum rollers
d. ramming and pneumatic tampering

184. The water level in a lake is 5m above the bed. The saturated unit weight of the Lake bed soil is 20 KN/m³. The unit weight of water is 10 KN/m³. The effective vertical stress at 5 m depth below the lake bed is
a.50 KN/m²
b.75 KN/m²
c.100KN/m²
d. 150 KN/m²

185. Capillary rise is maximum of
a. coarse grained soil
b. fine grained soil
c. well graded soil
d. gap graded soil.

186. To provide safety against piping failure, with a factor of safety of 5, what should be the maximum permissible exit gradient for soil with specific gravity of 2.5 and porosity of 0.35?
a. 0.155
b. 0.167
c. 0.195
d.0.213

187. In a Newmark's influence chart for stress distribution there are 10 concentric circles and 50 radical lines . The influence factor of the chart is
a. 0.0002
b. 0.002
c. 0.o2
d.0.2

188. Newmarks influence chart is used for
a. rectangular loading condition.
b. loaded area of any shape
c. strip loading
d. circular loaded area

189. The value of a compression index for a remoulded sample, whose liquid limit is 50% is
a. 0.028
b.0.28
c.0.36
d. 0.036

190. When the degree of consolidation is 50% the time factor is about
a. 0.2
b. 0.5
c. 1.0
d. 2.0

191. Sand drains are used to
a. reduce the settlement
b. accelerate the consolidation
c. increasing the permeability

d. transfer the load

192. For saturated soil Skempton's B-parameter is
a. nearly zero
b. nearly 0.5
c. nearly 1
d. very high

193. Unconfined compressive strength test is
a. Undrained test
b. Drained test
c. consolidated undrained test
d. consolidated drained test

194. The unconfined compressive strength of a pure clay soil is 100 KN/m². What is the value of cohesion of the soil in KN/m²
a. 200
b.100
c.75
d.50

195. If the shearing stress is zero on two planes, then the angle between the two planes is
a.45°
b.90°
c.135°
d.225°

196. Coulomb's theory of earth pressure is based on
a. the theory of plasticity.
b. the theory of elasticity
c. empirical rules
d. wedge theory

197. If an SPT test gave the average blow count of 32 in fine sand below water table, then what is the corrected value of blow count?
a.22.1
b. 23.5
c. 24.2
d. 24.8

198. The maximum permissible settlement for isolated foundation on plastic clay for R.C column is
a. 75mm
b. 60mm
c. 0mm
d. 25mm

199. The weight of hammer used in standard penetration test is
a. 50 kg
b. 60 kg
c. 63.5 kg
d. 75 kg

200. for a sand leaving an internal friction of 30 °, the ratio of passive to active lateral earth pressure will be
a. 1
b. 3
c. 6
d. **9**