Solutions of

MPSC 2019

MAIN EXAMINATION

Assistant Engineer

(Group A & Group B)

C

Paper Code

Civil Engineering

Paper-II

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1. The R.L. of *A* is 98.75 and the R.L. of *B* is 100.75 m. The horizontal distance between *A* and *B* is 10.0 m. If the contour interval is 0.25 m, the distance of 99.00 m contour line from *A* is _____.

(1) 0.25 m (2) 1.25 m
(3) 2.0 m (4) 2.5 m

Ans. (2)

2. A rectangular plot of land of area 0.45 hectare is represented on a map by a similar rectangle of area 5 cm^2. Calculate R.F. of the scale of the map. Draw a scale to read upto a single metre from the map.

(1) 1 : 5000 (2) 1 : 8000
(3) 1 : 9000 (4) 1 : 3000

Ans. (4)

3. The combined correction due to curvature and refraction in (m) for a distance of 2 kilometer is :

(1) 0.224 m (2) 0.1346 m
(3) 0.1570 m (4) 0.1750 m

Ans. (*)

4. When the height of signal is not the same as that of the height of instrument, then a correction applied for measurement is known as :

(1) Curvature correction
(2) Combined correction
(3) Axis signal correction
(4) Refraction correction

Ans. (3)

5. Two points *A* and *B* were fixed on opposite bank of a river. The level was setup near *A* and the staff readings on *A* and *B* were observed as 1.800 m and 1.300 m, respectively. Thereafter, level was setup near *B* and staff readings observed on *B* and *A* were found to be 0.350 m and 0.850 m, respectively. If the R.L. of *A* is 101.500 m, then R.L. of *B* is

(1) 102.0 m (2) 101.0 m
(3) 100.0 m (4) 100.450 m

Ans. (1)

6. In tacheometric surveying :

(a) The intercept of the staff is maximum when the staff is normal to the line of sight.
(b) In the tangential system, the staff is kept normal to the line of sight.
(c) If a tacheometer is fitted with an anallatic lens, its additive constant is non zero.
(d) It is more convenient to hold the staff normal to the line of sight than to hold it vertical.

Select the **incorrect** statement/statements from the above

(1) (a) only
(2) (a) and (b) only
(3) (a), (b) and (c) only
(d) (a), (b), (c) and (d) only

Ans. (4)

7. The areas enclosed by the contours in a lake are as follows :

Contour (m)	270	275	280	285	290
Area (m^2)	50	200	400	600	750

The volume of water between the contours 270 m and 290 m by trapezoidal formula is _____.

(1) 6400 m^3 (2) 8000 m^3
(3) 16000 m^3 (4) 24000 m^3

Ans. (2)

8. If h is the height above datum of the object, H be the flying height above datum and r be the radial distance of the image of the object from principal point, then the relief displacement d is equal to :

(1) $d = \frac{r.h}{H}$ (2) $d = \frac{r.H}{h}$
(3) $d = \frac{H.h}{r}$ (4) $d = \frac{r}{H}$

Ans. (1)

9. In surveying optical square is used to setting out right angles. The horizon glass is placed at an angle of _____ with the horizon sight and index glass is placed at an angle of _____ with the index sight.

(1) 30° and 15° (2) 60° and 45°
(3) 90° and 75° (4) 120° and 105°

Ans. (2)

10. If an upgrade of +1.4% joins another upgrade of +0.4% and rate of change of grade is 0.1% per 20 m chain, then the length of vertical curve is :

(1) 200 m (2) 360 m
(3) 400 m (4) 80 m

Ans. (1)

11. Capitalised value of a property fetching a net annual rent of Rs. 1,000 and highest rate of interest prevailing being 10% will be :

(1) 1,000 (2) 1,00,000
(3) 10,000 (4) 100

Ans. (3)

12. Which of the following methods is also called as out to out and in to in method?

(1) Long wall and short wall method
(2) Centre line method
(3) Plint area method
(4) Cubic content method

Ans. (1)

13. Detailed specification for an item of P.C.C. (1 : 2 : 4) should include following points :

(1) Quantity of material, cost of different materials, work condition.
(2) General specification, materials to be used, quality and proportion, construction method, items to include/ exclude and mode of measurement of payment.
(3) Work conditions at site, BIS requirements, labour requirement and its cost.
(4) Sources of materials, instructions by PWD, labour requirement.

Ans. (2)

14. Which value is obtained by dismantling the building?

(1) Book Value (2) Distress Value
(3) Salvage Value (4) Scrap Value

Ans. (4)

15. Generally how much amount is provided in estimate as work charged establishment?

(1) 1 - 2% (2) $1-1\frac{1}{2}\%$
(3) $2-2\frac{1}{2}\%$ (4) 2 - 4%

Ans. (3)

16. Determine the capital sum to be invested to receive annual income of Rs. 1 lakh, if the rate of interest is 5%.

(1) Rs. 50 lakh (2) Rs. 20 lakh
(3) Rs. 100 lakh (4) Rs. 10 lakh

Ans. (2)

17. In the Centre Line Method of calculating quantities, the following rules for each item from foundation is applied. The total centre line length of each item is calculated and for cross walls, deductions are made as follows:

(1) $\frac{1}{2}$ breadth of item at each junction

(2) 1 full breadth of item at each junction

(3) 2 full breadth of item at each junction

(4) no deductions

Ans. (1)

18. In rate analysis procedure, by what % the wet volume of concrete is to be increased for determining dry volume?

(1) 20% (2) 30%

(3) 52% (4) 25%

Ans. (3)

19. The sanction of detailed estimate design calculation, quantities of work, rates and cost of the work by competent authority is called as :

(1) Administrative approval

(2) Technical sanction

(3) Expenditure sanction

(4) Official sanction

Ans. (2)

20. A pile having a square cross-section of 0.5 m sides has length of 10 m. It is embedded in purely cohesive soil having uniform cohesion of 50 kN/sq. m upto 10 m depth. If adhesion factor = 0.5, the ultimate capacity of the pile considering only skin friction component will be :

(1) 500 kN (2) 125 kN

(3) 250 kN (4) 200 kN

Ans. (1)

21. A load of 625 T is imposed on a footing of size 2m × 2m. If it is to be assumed that, stress at depth "d" is spread out at an angle of 2 vertical to 1 horizontal, find out the depth 'd' at which the intensity of stress will be $\left(\frac{1}{9}\right)^{th}$ of the stress at ground level.

Choose correct depth in metres from the following :

(1) 2 m (2) 3 m

(3) 4 m (4) 5 m

Ans. (3)

22. Amount of compaction greatly affects :

(1) Water content and Maximum dry intensity

(2) Saturation of soil

(3) None of the above

(4) All of the above

Ans. (1)

23. An embankment in clayey soil of 5 m height is to be constructed using factor of safety of 2.5. It is to be assumed that stability number is $\frac{1}{45}$ and unit weight of soil is 18 kN/m^3.

Find the minimum cohesive strength (in kN/m^2) which the soil should have.

Choose the correct answer from the following:

(1) 30 (2) 5

(3) 10 (4) 15

Ans. (2)

24. During unconfined compression test a soil sample failed at 150 N. The cross-sectional area of sample at failure was 2000 mm^2, then the shear strength of soil will be :

(1) 75 kN/m^2 (2) 375 kN/m^2

(3) 133 kN/m^2 (4) 37.5 kN/m^2

Ans. (4)

25. Poisson's ratio of a soil sample is 0.4. Using theory of elasticity, the estimated value of the coefficient of lateral earth pressure at rest in the same soil is :

(1) 0.5 (2) 0.7
(3) 0.3 (4) 1.0

Ans. (2)

26. If a concentrated load Q produces a stress of 40 kN/m^2 at a depth of 1 m, then the stress at 2 m depth and same radial distance will be :
(1) 20 kN/m^2 (2) 80 kN/m^2
(3) 40 kN/m^2 (4) 10 kN/m^2

Ans. (4)

27. In a rock core sampling method at site, the total length of drilling was 1.0 m in rocky strata. There were five intact pieces of rocks of lengths 150 mm, 200 mm, 75 mm, 50 mm, and 200 mm were collected. The value of Rock Quality Designation (RQD) for the rock sample is :
(1) 55.0% (2) 67.5%
(3) 62.5% (4) 40.0%

Ans. (1)

28. From the plate load test, the ultimate bearing capacity of plate of size 0.3 m × 0.3 m on sand deposit is observed to be 200 kN/m^2, the ultimate bearing capacity of a footing of size 1.5 m ×1 .5 m will be :
(1) 200 kN/m^2 (2) 1000 kN/m^2
(3) 500 kN/m^2 (4) 2000 kN/m^2

Ans. (2)

29. In a rectangular channel, carrying a certain discharge at a depth Y_o and Froude number F_o, then $\frac{Y_c}{Y_o}$ =

(1) F_o (2) $F_o^{1/2}$
(3) $F_o^{3/2}$ (4) $F_o^{2/3}$

Ans. (4)

30. In a suppressed rectangular weir, the calculated discharge was found to be 3% in excess of the actual discharge. If this discrepancy was due to an error in reading the head, the measured head was :
(1) 3% excess (2) 2% less
(3) 2% excess (4) 1.5% excess

Ans. (3)

31. For a laminar flow through circular pipe, the maximum velocity is equal to _____.
(1) 1.5 times the average velocity
(2) 2.0 times the average velocity
(3) 2.5 times the average velocity
(4) None of the above

Ans. (2)

32. Two reservoirs are connected by two pipes M and N of identical diameter and length, in parallel. If the friction factor of M is 04 times that of N, the ratio of discharge in M to that of N is :
(1) 0.50 (2) 0.25
(3) 2.0 (4) 4.0

Ans. (1)

33. A dimensionless group formed with variables: ρ (mass density), μ (dynamic viscosity), g (gravitational acceleration) and D (characteristic length) is :

(1) $\frac{D^{3/2}}{\rho\mu g}$ (2) $\frac{\mu}{\rho g^{1/2} D^{3/2}}$

(3) $\frac{\mu}{\rho g D^{3/2}}$ (4) $\frac{\mu}{\rho^{1/2} D g^{1/2}}$

Ans. (2)

34. Bernoulli's equation is derived making assumptions that :
(1) The flow is uniform and incompressible.
(2) The flow is non-viscous, uniform and steady.
(3) The flow is steady, non-viscous, incompressible and irrotational.
(4) None of the above

Ans. (3)

35. Model analysis of aeroplanes and projectile moving at supersonic speed is based on _____.
(1) Reynold Number
(2) Froude Number
(3) Mach Number
(4) Euler Number

Ans. (3)

36. A uniform body 3 m long, 2 m wide and 1 m deep floats in water. If the depth of immersion is 0.60 m, then the weight of the body is :
(1) 3.53 kN (2) 33.5 kN
(3) 35.31 kN (4) None of the above

Ans. (3)

37. Coefficient of contraction is the ratio of :
(1) actual velocity of jet at Vena contracta to the theoretical velocity.
(2) loss of head in the orifice to the head of water available at the exit of the orifice.
(3) actual discharge through an orifice to the theoretical discharge.
(4) area of jet at Vena contracta to the area of orifice.

Ans. (4)

38. Match the pair :
List I :
(a) Run of river plant
(b) Reservoir plant
(c) Pumped storage plant
(d) Tidal plant
List II :
(i) Large storage
(ii) Water pumped back to the head water tank
(iii) Sea water
(iv) No storage

	(a)	(b)	(c)	(d)
(1)	(iii)	(i)	(iv)	(ii)
(2)	(iv)	(ii)	(iii)	(i)
(3)	(iv)	(i)	(ii)	(iii)
(4)	(iv)	(iii)	(i)	(ii)

Ans. (3)

39. For double acting reciprocating pump, there will be no flow into or from the air valve, when the crank angle is :
(1) 39° 32' and 140° 28'
(2) 39° 32' to 140° 28'
(3) 0° to 39° 32'
(4) 18° 34' to 161° 26'

Ans. (*)

40. Which of the following statement is correct?
(1) Centrifugal pump convert hydraulic energy into mechanical energy.
(2) Reciprocating pumps convert mechanical energy into hydraulic energy by means of centrifugal force.
(3) Centrifugal pumps convert mechanical energy into hydraulic energy by means of centrifugal force.
(4) Reciprocating pumps convert hydraulic energy into mechanical energy.

Ans. (3)

41. The specific speed of a centrifugal pump has the dimensions of :
(1) $L^{3/4}T^{-3/2}$ (2) $M^0L^0T^0$
(3) $M^{-1/2}L^{1/2}T^{-1/4}$ (4) $L^{3/4}T^{-1/2}$

Ans. (1)

42. Kaplan turbine is a propeller turbine in which the vanes fixed on the hub are :
(1) nonadjustable (2) adjustable
(3) fixed (4) none of the above

Ans. (2)

43. The work saved by fitting an air vessel to a double acting reciprocating pump is :
(1) 39.2% (2) 84.8%
(3) 48.8% (4) 92.3%

Ans. (1)

44. In a reciprocating pump without air vessel, the friction head in the delivery pipe is maximum at the crank angle θ = ?

(1) 0° (2) 90°
(3) 135° (4) 180°

Ans. (2)

45. The cylindrical bore diameter of a single acting reciprocating pump is 200 mm and its stroke is 400 mm. The pump runs at 60 rpm. The theoretical discharge for pump in litre per second is :
(1) 0.01256 (2) 12.56
(3) 1.256 (4) 0.1256

Ans. (2)

46. An air vessel in the delivery side of a reciprocating pump:
(1) maintains steady discharge ouput
(2) prevents cavitation in the system.
(3) enables suction head to be increased
(4) enable the pump to run at higher speed

Ans. (1)

47. An instantaneous unit hydrograph is a direct run-off hydrograph:
(1) of 12 cm magnitude due to a rainfall excess of 1-h duration
(2) that occurs instantaneously due to a unit rainfall excess of duration 'D' h
(3) of unit rainfall excess precipitating instantaneously over the catchment
(4) occurring at any instant in a long storm

Ans. (3)

48. Direct run-off is made up of:
(1) Surface fun-off, prompt interflow and channel precipitation.
(2) Surface run-off, infiltration and evapotranspiration.
(3) Overland flow only
(4) rainfall and Evaporation

Ans. (1)

49. The Rainfall Intensity of Light Rain is:
(1) Upto 2.5 mm/Hz
(2) Upto 3.0 mm/Hz
(3) Upto 5.00 mm/Hz
(4) Upto 7.5 mm/Hz

Ans. (1)

50. The design flood commonly adopted in India for spillways of major projects is the:
(1) Standard Project Flood
(2) Flood with a Return Period of 100 years
(3) Probable Maximum Flood
(4) Flood with a Return Period of 10000 years

Ans. (3)

51. The Thiessen polygon is:
(1) a polygon obtained by joining adjoining raingauge station.
(2) a representative area used for weighting the observed station precipitation.
(3) an area used in the construction of depth area curve
(4) the descriptive term for the shape of hydrograph

Ans. (2)

52. In a flow-mass curve study, the demand line drawn from a ridge in the curve did not intersect the mass curve again. This represents that:
(1) the reservoir was not full at the beginning
(2) the storage was not adequate
(3) the demand cannot be met by the inflow as the reservoir will not refill
(4) the reservoir is wasting water by spill

Ans. (3)

53. Evaporation losses from surface of a reservoir can be reduce by sprinkling:
(1) DDT
(2) Acetyl alcohol
(3) Potassium permanganate
(4) None of the above

Ans. (2)

54. A plot between rainfall intensity versus time is called as:
(1) hydrograph (2) mass curve
(3) hyetograph (4) isohyet

Ans. (3)

55. Dalton's law is given as:
(1) $E_L = C[e_s + e_a]$ (2) $E_L = C[e_a - e_s]$
(3) $E_L = C[e_s - e_a]$ (4) $E_L = C[e_s + e_w]$

Ans. (3)

56. Lacey gave V-Q-f relation as:

(1) $V = \left[\frac{Qf^2}{160}\right]^{1/4}$ (2) $V = \left[\frac{Qf^2}{140}\right]^{1/6}$

(3) $V = \left[\frac{fQ^2}{160}\right]^{1/4}$ (4) $V = \left[\frac{fQ}{140}\right]^{1/4}$

Ans. (2)

57. The type of dam requires strong abutments:
(1) Gravity (2) Buttress
(3) Arch (4) All above

Ans. (3)

58. For the upstream face of an earthen dam, the most adverse condition for stability of slope is :
(1) sudden drawdown
(2) steady seepage
(3) during construction
(4) sloughing of slope

Ans. (1)

59. In Bligh Creep theory [L/H] is called as:
(1) Creep length
(2) Hydraulic Gradient
(3) Coefficient of Creep
(4) Percolation Coefficient

Ans. (3)

60. In spillway, when the tail water depth is less than the sequent depth and river bed is composed of stiff rock, which one of the following energy dissipation device is preferred?
(1) Solid roller bucket
(2) Slotted roller bucket
(3) Ski jump bucket
(4) Stilling basin

Ans. (3)

61. The main cause of meandering is:
(1) presence of an excessive bed slope in the river
(2) degradation
(3) the extra turbulence generated by the excess of river sediment during floods
(4) none of the above

Ans. (3)

62. Given that the base period is 100 days and the duty of the canal is 1000 hectares per cumec, the depth of water will be
(1) 0.864 cm (2) 8.64 cm
(3) 86.4 cm (4) 864 cm

Ans. (3)

63. Mean Water Training means:
(1) Training for discharge
(2) Training for depth
(3) Training for sediment
(4) Training for flood

Ans. (3)

64. Which of the following is known as 'feeding bottle technique'?
(1) Drip Irrigation
(2) Sprinkler Irrigation
(3) Furrow Method
(4) None of the above

Ans. (1)

65. In a particular case, the design gradient is 1 in 25. If a horizontal curve of 100 m radius is to be introduce on this gradient, the compensated gradient on this curve is

(1) 0.75% (2) 1.3%
(3) 2.7% (4) 3.25%

Ans. (4)

66. In case of pavement design
Match the List-I (Type of carriageway) with List-II (lane distribution factor):
List-I
(a) Undivided roads with two lane carriageway
(b) Undivided roads with single lane carriageway
(c) Divided carriageway with four lanes each
(d) Undivided roads with four lane carriageway
List-II
(i) 0.75
(ii) 1.0
(iii) 0.45
(iv) 0.40
Answer Options:

	(a)	(b)	(c)	(d)
(1)	(ii)	(i)	(iv)	(iii)
(2)	(i)	(ii)	(iii)	(iv)
(3)	(iii)	(iv)	(i)	(ii)
(4)	(iv)	(iii)	(ii)	(i)

Ans. (2)

67. The free mean speed on a roadway is found to be 70 kmph. Under stopped condition the average spacing between vehicles is 5.0 m. The capacity flow is:
(1) 3500 vehicles/hour/lane
(2) 3700 vehicles/hour/lane
(3) 3200 vehicles/hour/lane
(4) 3000 vehicles/hour/lane

Ans. (1)

68. Match the pair:
(a) Penetration test
(b) Plate bearing test
(c) CBR test
(d) Abrasion test
(i) Hardness property of stones
(ii) Hardness or softness of bitumen
(iii) Penetration test for highway material
(iv) Modulus of subgrade reaction
Answer Options:

	(a)	(b)	(c)	(d)
(1)	(iii)	(iv)	(i)	(ii)
(2)	(ii)	(iv)	(iii)	(i)
(3)	(ii)	(iv)	(i)	(iii)
(4)	(ii)	(iii)	(i)	(iv)

Ans. (2)

69. Which of the following statement is/are correct?
(a) Penetration test on bitumen is carried out at 27°C
(b) Ductility test on bitumen is carried out at 27°C
(c) In softening point test on bitumen, rate of increase of temperature is 2°C per minute
(d) The rate of pulling of standard briquette mould specimen in ductility test is 15 mm per minute
Answer Option:
(1) (a) only (2) (b) only
(3) (c) only (4) (a) and (d) only

Ans. (1)

70. If 'R' is the radius of curvature of a hill road, the maximum grade compensation (in percentage) is equal to:
(1) 65/R (2) 75/R
(3) 85/R (4) 95/R

Ans. (2)

71. As per current Viscosity Graded (VG) bitumen specifications in India (IS 73 : 2006, Third revision) the Absolute Viscosity of bitumen using vacuum capillary tube viscometer is determined at _____ temperature.
(1) 135° (2) 25°
(3) 27° (4) 60°

Ans. (4)

72. The super-elevation is _____.
(1) directly proportional to the velocity of vehicles
(2) inversely proportional to the velocity of vehicles
(3) directly proportional to the width of pavement
(4) inversely proportional to the width of pavement

Ans. (4)

73. Which of the following method is recommended by I.R.C. for design of flexible pavement?
(1) Group index method
(2) Westergaard method
(3) CBR method
(4) None of these

Ans. (3)

74. For IRC Class A loading train, the nose to tail spacing between two successive trains shall not be less than _____.
(1) 12.5 m (2) 15.5 m
(3) 17.5 m (4) 18.5 m

Ans. (4)

75. The effective linear waterway in meters is given by:
(1) $L = 0.75V^2$ (2) $L = C\sqrt{Q}$
(3) $L = 1.811C\sqrt{Q}$ (4) $L = CQ^2$

Ans. (2)

76. As per IRC recommendations the minimum straight length of approaches on either side of the bridge should be _____.
(1) 15 m (2) 20 m
(3) 25 m (4) 30 m

Ans. (1)

77. The effective span for main girder in case of bridges is:
(1) the distance between centres of main girders.
(2) the distance between centres of cross girders.
(3) the distance between centres of road bearings.
(4) the distance between centres of bearing plates.

Ans. (1)

78. If the nature of river is at a moderate bent condition then maximum V depth of scour is taken as:
(1) 1.25 D (2) 1.75 D
(3) 1.5 D (4) 2 D

Ans. (3)

79. In which of the following type of Abutments, wing walls are not provided:
(1) Gravity Abutments
(2) U-Abutments
(3) Tee-Abutments
(4) Abutment Pier

Ans. (3)

80. In case of erection of multiple span truss bridges symmetrical about center line, the erection is started from _____ until the centre is reached.
(1) Left end (2) Both ends
(3) Right end (4) None of the above

Ans. (2)

81. While designing highway bridges, the wind load acting on any exposed moving live load will be assumed to act at a height of _____ above the roadway.
(1) 1.0 m (2) 1.2 m
(3) 1.5 m (4) 1.75 m

Ans. (3)

82. The width of carriageway is expressed in terms of traffic lanes, each lane meaning the

width required to accommodate one train of _____ vehicles.
(1) Class A (2) Class B
(3) Class C (4) Class 70 R

Ans. (1)

83. With reference to tunnelling which of the following factors, are to be considered for deciding the size of the shaft:
(1) System used for hoisting
(2) Size of the muck car
(3) Quantity of muck to be lifted
(4) Eventual use of the shaft

Ans. (1, 3)

84. Which section of tunnel is also known as segmental root section tunnel?
(1) D section
(2) Egg shaped section
(3) Circular section
(4) Rectangular section

Ans. (1)

85. Which of the following is not a patented explosive available in the market for tunnelling operations?
(1) PENT (2) RDX
(3) TNT (4) NTT

Ans. (4)

86. Which of the following method of tunnelling is being gradually replaced by compressed air tunnelling method?
(1) Needle beam method
(2) Belgian method
(3) Heading and Bench method
(4) Forepoling method

Ans. (4)

87. Which shape of tunnel is suitable for the purpose of navigation?
(1) Circular shape
(2) D shape
(3) Horse-shoe shape
(4) Rectangular shape

Ans. (2)

88. The procedure of removal of rock protrusions by hammering immediately after the blasting is known as:
(1) Mucking (2) Skimming
(3) Trimming (4) Scaling

Ans. (1)

89. Which one of the following Draft method is time consuming but provides good ventilation?
(1) Top Drift method
(2) Bottom Drift method
(3) Centre Drift method
(4) Side Drift method

Ans. (3)

90. Which one of the following methods of tunnelling is used in hard rocks?
(1) Fore poling method
(2) Needle beam method
(3) Heading and Benching method
(4) Shield tunnelling method

Ans. (3)

91. The tunnelling method that is not suitable in case of soft soil is:
(1) Needle beam method
(2) Full face method
(3) Fore poling method
(4) Liner plate method

Ans. (2)

92. The unit in which both sedimentation and digestion take place simultaneously is the
(1) Detritus tank (2) Imhoff tank
(3) Skimming tank (4) Clarifier

Ans. (2)

93. Carbon monoxide is considered as most poisonous gas in Urban areas because:

(1) It causes loss of sense of smell
(2) It is carcinogenic in nature
(3) It reduces oxygen carrying capacity of blood
(4) It may cause conjunctivitis

Ans. (3)

94. The sag in the dissolved oxygen curve results because of DO is a function of
(1) Both addition and depletion of oxygen from the stream
(2) The rate of addition of oxygen to the solution
(3) The rate of addition of oxygen is linear, but not that of depletion
(4) The rate of organic substances introduced in the process

Ans. (1)

95. The ideal pathogenic indicator used for bacterial analysis of water is exhibited by the organism
(1) Escherichia coli
(2) Entamoeba histolytica
(3) Salmonella typhi
(4) Vibro comma

Ans. (1)

96. In water treatment process, aeration of water is carried out to
(1) Remove hardness and chlorides from water
(2) Add calcium and magnesium to water
(3) Remove gases like carbon dioxide, hydrogen sulfide and to add oxygen to water
(4) Remove oxygen from water and to add carbon dioxide to impart test and odour to water

Ans. (3)

97. Alum is a coagulant is found to be effective between pH range of _____.
(1) 8.0 to 10.0 (2) 8.5 to 10.5
(3) 6.5 to 8.5 (4) 7.0 to 9.0

Ans. (3)

98. If the sewer is to be designed for the non-scouring velocity of 5 m/sec, which among the following material would you recommend?
(1) Cast iron sewer
(2) Glazed brick sewer
(3) Stone ware sewer
(4) Cement concrete sewer

Ans. (2)

99. In an oxidation pond, the sewage is made non-putrescible primarily by
(1) Algae bacteria symbiosis only
(2) Bacterial oxidation only
(3) Chemical oxidation only
(4) Algae photosynthesis and algae bacteria symbiosis

Ans. (4)

100. Select the incorrect pair from the following pairs of treatment unit and impurities removed, in waste water treatment system:
(a) Grit chamber Sand, silt
(b) Aeration tank Suspended impurities
(c) Skimming tank Fat and Grease
(d) Screen Cloth, paper
(1) (b) and (c) (2) (a) and (c)
(3) Only (c) (4) Only (b)

Ans. (4)

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