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Dated the Kolkata 19TH January, 2026

NOTIFICATION

DISPLAY OF PROVISIONAL ANSWER KEYS TO THE QUESTIONS FOR WRITTEN EXAMINATION FOR RECRUITMENT TO THE POST OF ASSISTANT ENGINEER (CIVIL) (ADVT. NO. 13 OF 2025) UNDER KOLKATA MUNICIPAL CORPORATION HELD ON 18/01/2026 (SUNDAY).
[QUESTION BOOKLET CODE: AECK (Annexed herewith)]

The provisional Answer Keys to the Questions for written examination for recruitment to the post of **Assistant Engineer (Civil)** recruitment examination (Advertisement No. 13 of 2025).

The candidates are requested to visit the website and upload their claims and objections, if any, on the Answer Key-options uploaded as follows, in their opinions. The candidates are required to submit the correct answers, if at variance with the provisional Answer Keys as follows in their opinions, indicating Test / Question Booklet code, Question Booklet number, Roll No. etc., specific for each particular candidate, along with scanned copies of the front page of Question Booklet and the concerned page(s) of the Question Booklet between 21st January,2026 and 25th January, 2026 by accessing the link provided at www.mscwb.org. **No claims for correction of Answer Key will be entertained beyond the specified period as mentioned above.**

The claims and objections will not be entertained through any other medium.

Answer Keys to Booklet Code - AECK

Q No	Answer	Q No	Answer	Q No	Answer	Q No	Answer
1	C	26	C	51	A	76	A
2	C	27	C	52	C	77	D
3	C	28	B	53	C	78	D
4	D	29	D	54	C	79	D
5	D	30	C	55	C	80	C
6	C	31	B	56	C	81	D
7	C	32	B	57	B	82	C
8	A	33	D	58	A	83	A
9	B	34	D	59	A	84	B
10	C	35	B	60	C	85	B
11	B	36	A	61	B	86	A
12	C	37	B	62	C	87	A
13	D	38	B	63	B	88	C
14	D	39	B	64	C	89	A
15	A	40	B	65	B	90	A
16	C	41	D	66	D	91	D
17	B	42	B	67	A	92	C
18	B	43	C	68	D	93	A
19	A	44	D	69	C	94	D
20	D	45	D	70	D	95	D
21	C	46	C	71	C	96	C
22	D	47	C	72	A	97	A
23	A	48	B	73	A	98	C
24	D	49	A	74	A	99	C
25	B	50	A	75	A	100	C

Annexure: As mentioned.

Deputy Secretary, WBMSC

Deputy Secretary
West Bengal Municipal Service Commission
149, A.J.C. Bose Road, Kolkata-700014

1. The fineness modulus of fine aggregate is 2.78 and of coarse aggregate is 7.82 and the desired fineness modulus of mixed aggregate is 6.14. What is the amount of fine aggregate to be mixed with one part of coarse aggregate?

(A) 0.55

(B) 0.45

(C) 0.50

(D) 0.40

2. The number of modular bricks required per cubic meter of brick masonry is

(A) 400

(B) 450

(C) 500

(D) 550

3. In terms of bulk modulus (K) and modulus of rigidity (G), Poisson's ratio can be expressed as

(A) (3K – 4G)/(6K + 4G)

(B) (3K + 4G)/(6K – 4G)

(C) (3K – 2G)/(6K + 2G)

(D) (3K + 2G)/(6K – 2G)

4. A beam of length 10 m carries a UDL of 20 kN/m over its entire length and rests on two simple supports. In order that the maximum BM produced in the beam is the least possible, the supports must be placed from the ends at a distance of
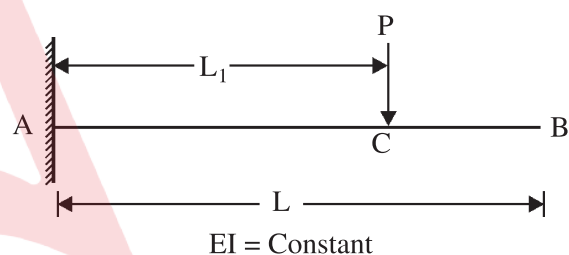
(A) 5.86 m

(B) 4.14 m

(C) 2.93 m

(D) 2.07 m

5. A simply supported beam is loaded as shown in the given figure. The bending moment at E would be
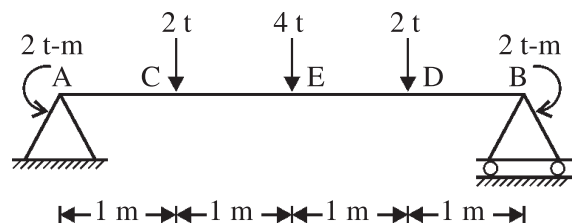
(A) 6 t-m (Sagging)

(B) 4 t-m (Hogging)

(C) 6 t-m (Hogging)

(D) 4 t-m (Sagging)

6. A cantilever carries a load P at C as shown in the given figure. The deflection at B is


EI = Constant

(A) $\dfrac{PL_1^2}{2EI}\left(L-L_1\right)$

(B) $\dfrac{PL_1^2}{3EI}\left(L-L_1\right)$

(C) $\dfrac{PL_1^2}{2EI}\left(L-\dfrac{L_1}{3}\right)$

(D) $\dfrac{PL_1^2}{3EI}\left(L-\dfrac{L_1}{3}\right)$

7. Moments of the same sense are applied to both the ends of a simply supported beam. The ratio of the rotation of the two ends is 2. What is the ratio of the applied moments?

(A) 3/2

(B) 4/3

(C) 5/4

(D) 6/5

8. For the semicircular two-hinged arch shown in the figure below, a moment of 50 t-cm applied at B produces a displacement of 0.5 cm at A. If a concentrated load of 10 t is applied at A, the rotation at B in the arch will be
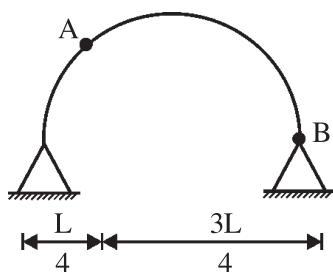
(A) 0.1 rad

(B) 0.001 rad

(C) 0.0001 rad

(D) 0.01 rad

9. The total (both internal and external) degree of static indeterminacy of the plane frame shown in the given figure is
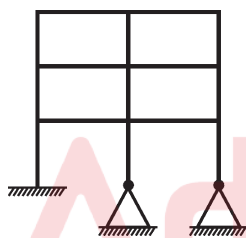
(A) 18

(B) 16

(C) 14

(D) 13

10. If a point load acting at the mid-span of a fixed beam of uniform section produces fixed end moments of 60 kN-m, then the same load spread uniformly over the entire span will produce fixed end moments equal to

(A) 20 kN-m

(B) 30 kN-m

(C) 40 kN-m

(D) 45 kN-m

11. The effective length of the fillet weld is

(A) Total length $-2 \times$ Throat size

(B) Total length $-2 \times$ Weld size

(C) $0.7 \times$ Total length

(D) Total length $-$ (Weld size/$\sqrt{2}$)

12. Given that A_e = effective area of the member and σ_y = yield stress. In order to obtain the ultimate strength of a tension member, as per the plastic design concept, $A_e \sigma_y$ is to be multiplied by

(A) 1.1

(B) 0.95

(C) 0.85

(D) 0.75

13. For an I beam, the shape factor is 1.12. If the allowable stress (with factor of safety in bending as 1.5) is increased by 20% for wind and earthquake loads, the modified load factor is

(A) 1.10

(B) 1.25

(C) 1.35

(D) 1.40

14. The capacity of a single ISA $100 \times 100 \times 10$ mm as tension member connected by one leg only using 6 rivets of 20 mm diameter is (The allowable stress is 150 N/mm^2)

(A) 333 kN

(B) 253 kN

(C) 238 kN

(D) 210 kN

15. A column of height h with a rectangular cross-section of size $a \times 2a$ has a buckling load of P. If the cross-section is changed to $0.5a \times 3a$ and its height changed to $1.5h$, the buckling load of the redesigned column will be

(A) $P/12$

(B) $P/4$

(C) $P/2$

(D) $3P/4$

Please Turn Over

16. In a reinforced concrete section, the stress at the extreme fibre in compression is 5.80 MPa. The depth of neutral axis in the section is 58 mm and the grade of concrete is M25. Assuming linear elastic behaviour of the concrete, the effective curvature of the section (in per mm) is

    (A) 2.0×10^{-6}
    (B) 3.0×10^{-6}
    (C) 4.0×10^{-6}
    (D) 5.0×10^{-6}

17. A pair of six-faced dice is rolled thrice. The probability that the sum of the outcomes in each roll equals 4 in exactly two of the three attempts is (round off to three decimal places)

    (A) 0.021
    (B) 0.019
    (C) 0.017
    (D) 0.015

18. In the Stokes' experiment of falling sphere, it is found that a sphere of 5 mm diameter falls in a liquid with terminal velocity 20 mm/s giving a drag coefficient of 240. The ratio of specific gravities is 2.85. Which one of the following is the kinematic viscosity of the liquid in stokes?

    (A) 3.5
    (B) 10.0
    (C) 225.0
    (D) 1000.0

19. For stream function $\psi = 3x^2 - y^3$, the magnitude of velocity at the point (2,1) is

    (A) 12.37
    (B) 12.00
    (C) 13.00
    (D) 13.50

20. The critical depth of water flowing through a rectangular channel of width 5 m when discharge is 12.5 m^3/s is

    (A) $(2.25)^{1/2}$ m
    (B) $(16)^{1/2}$ m
    (C) $(0.46)^{1/3}$ m
    (D) $(0.64)^{1/3}$ m

21. The trap efficiency of a reservoir increases with an increase in

    (A) inflow into the reservoir.
    (B) ratio of inflow to storage capacity.
    (C) ratio of reservoir capacity to inflow.
    (D) None of the above

22. Two reservoirs at different levels are connected by two parallel pipes of diameter $2d$ and d. The ratio of the flows in the two pipes (larger : smaller) is

    (A) $\sqrt{2}:1$
    (B) $2:1$
    (C) $4:1$
    (D) $4\sqrt{2}:1$

23. If the total hardness and alkalinity of a sample of water are 300 mg/L and 100 mg/L ($CaCO_3$ scale) respectively, then its carbonate and non-carbonate hardness (in units of mg/L) will be respectively

    (A) 100 and 200
    (B) 400 and 300
    (C) 100 and 400
    (D) 400 and zero

24. The following data pertain to a sewage sample:

Initial DO = 10 mg/L

Final DO = 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

25. Which one of the following can fix atmospheric nitrogen?

(A) Green algae

(B) Blue green algae

(C) Red algae

(D) Brown algae

26. In a wet soil mass, air occupies one-sixth of its volume and water occupies one-third of its volume. The void ratio of the soil is

(A) 0.25

(B) 0.50

(C) 1.00

(D) 1.50

27. A sand deposit has a porosity of 0.375 and a specific gravity of 2.6, the critical hydraulic gradient for the sand deposit is

(A) 2.975

(B) 2.225

(C) 1

(D) 0.75

28. A stratified soil deposit has three layers of thicknesses— $z_1 = 4$, $z_2 = 1$, $z_3 = 2$ units and the corresponding permeabilities of $k_1 = 2$, $k_2 = 1$ and $k_3 = 4$ units, respectively. The average permeability perpendicular to the bedding planes will be

(A) 4

(B) 2

(C) 8

(D) 16

29. Two footings, one circular and the other square, are founded on the surface of a purely cohesionless soil. The diameter of the circular footing is the same as that of the side of the square footing. The ratio between the ultimate bearing capacities (circular : square) will be

(A) 1.0

(B) 1.3

(C) 1.33

(D) 0.75

30. What is the volume of a 6 m deep tank having rectangular shaped top 6 m × 4 m and bottom 4 m × 2 m (computed through the use of prismoidal formula?

(A) 96 m^3

(B) 94 m^3

(C) 92 m^3

(D) 90 m^3

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

(A) $W^2L^2/24T^3$

(B) $W^2L/24T^2$

(C) $W^2L^2/24T^2$

(D) $W^2L^3/24T^3$

32. As per IS 800: 2007, the effective length of prismatic compression member with length L, one end restrained (against translation and rotation) and other end free (against translation and rotation) is

(A) L

(B) $2L$

(C) $0.8L$

(D) $0.65L$

Please Turn Over

33. The rocks formed due to solidification of molten magma are called

    (A) Aqueous rocks

    (B) Sedimentary rocks

    (C) Metamorphic rocks

    (D) Igneous rocks

34. A temporary structure built around a construction site to remove water and make the area reasonably dry is known as

    (A) Caisson

    (B) Well foundation

    (C) Raft foundation

    (D) Cofferdam

35. Newton's law of viscocity states that shear stress is directly proportional to

    (A) Velocity

    (B) Velocity gradient

    (C) Viscocity

    (D) Shear strain

36. A septic tank is a

    (A) combination of sedimentation and digestion tanks.

    (B) sedimentation tank.

    (C) digestion tank.

    (D) aeration tank.

37. Process of killing pathogenic bacteria from water is known as

    (A) Sedimentation

    (B) Disinfection

    (C) Coagulation

    (D) Filtration

38. When a member is subjected to axial tensile load, the maximum normal stress is equal to

    (A) half the maximum shear stress.

    (B) twice the maximum shear stress.

    (C) maximum shear stress.

    (D) zero.

39. The centre to centre distance of adjacent rivet or bolt holes measured in the direction of stress is known as

    (A) Gauge

    (B) Pitch

    (C) Lap

    (D) Edge distance

40. Humidity is measured by

    (A) Hydrometer

    (B) Hygrometer

    (C) Hyetometer

    (D) Anemometer

41. The water stored in reservoir below the minimum pool level is called

    (A) Valley storage

    (B) Surcharge storage

    (C) Bank storage

    (D) Dead storage

42. The rank of the matrix $\begin{bmatrix} 0 & 0 & -3 \\ 9 & 3 & 5 \\ 3 & 1 & 1 \end{bmatrix}$ is

    (A) 0

    (B) 2

    (C) 1

    (D) 3

43. If $f(x) = |x|$, the $f(x)$ is
    (A) discontinuous at $x = 0$.
    (B) continuous only at $x = 0$.
    (C) continuous at all values of x.
    (D) discontinuous at $x = 1$.

44. A shaft of diameter 'd' and length '1' has been loaded axially. The ratio of change in diameter to the original is known as
    (A) Longitudinal strain
    (B) Shear strain
    (C) Volumetric strain
    (D) Lateral strain

45. Mohr's circle for the state of stress defined by $\begin{bmatrix} 30 & 0 \\ 0 & 30 \end{bmatrix}$ MPa is a circle with
    (A) center at (0, 0) and radius 30 MPa.
    (B) center at (0, 0) and radius 60 MPa.
    (C) center at (30, 0) and radius 30 MPa.
    (D) center at (30, 0) and zero radius.

46. The dot product of two vectors is zero. The angle (in degrees) between the two vectors is
    (A) 0
    (B) 30
    (C) 90
    (D) 120

47. The shape of the STOP sign according to IRC: 67 is
    (A) Circular
    (B) Triangular
    (C) Octagonal
    (D) Rectangular

48. The minimum and the maximum eigenvalues of the matrix $\begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$ are -2 and 6, respectively. What is the other eigenvalue?
    (A) 5
    (B) 3
    (C) 1
    (D) -1

49. The bearing of line AB is $200°$ and that of CB is $270°$, the included angle ABC, is
    (A) $70°$
    (B) $80°$
    (C) $90°$
    (D) $20°$

50. Standard EDTA (Ethylene Diamine Tetra Acetic Acid) solution is used to determine the
    (A) Hardness in water.
    (B) Turbidity in water.
    (C) Dissolve oxygen in water.
    (D) Residual chlorine in water.

51. Rise of the groundwater table above the ground surface causes
    (A) equal increase in pore water pressure and total stress.
    (B) equal decrease in pore water pressure and total stress.
    (C) decrease in pore water pressure but increase in stress.
    (D) increase in pore water pressure but decrease in total stress.

Please Turn Over

52. A beam 10 m long simply supported at the ends, carries a point load of 1000 N at the mid span. The bending moment under the load is

(A) 10000 Nm

(B) 5000 Nm

(C) 2500 Nm

(D) 500 Nm

53. In gravity dam, the main overturning force is

(A) self-weight of the dam.

(B) wind pressure.

(C) water pressure.

(D) uplift pressure.

54. The total vertical stress and pore water pressure at a point inside the soil is 100 kPa and 80 kPa respectively. So, effective stress at the point is

(A) 108 kPa

(B) 180 kPa

(C) 20 kPa

(D) 8000 kPa

55. An unconsolidated undrained compressive test on saturated clayey soil was performed at zero confinement pressure. The sample failed at 100 kPa normal stress. The corresponding shear strength parameters as per Mohr's circle of stress would be

(A) Cohesion = 100 kPa, Angle of internal friction = 5 degree

(B) Cohesion = 100 kPa, Angle of internal friction = 0 degree

(C) Cohesion = 50 kPa, Angle of internal friction = 0 degree

(D) Cohesion = 50 kPa, Angle of internal friction = 5 degree

56. If a crop requires about 75 mm of water after every 28 days, and the base period for the crop is 140 days, the value of delta is

(A) 575 mm

(B) 2000 mm

(C) 375 mm

(D) 52.3 mm

57. What is the recommended minimum freeboard in unlined canals in alluvial soil for discharge less than 10 cumecs as per IS 7112: 2002?

(A) 0.75 m

(B) 0.50 m

(C) 1.00 m

(D) 1.50 m

58. Void ratio of soil is the ratio of volume of voids to

(A) volume of solids.

(B) volume of water.

(C) total volume of soil.

(D) unit weight of soil.

59. Rankine's theory of earth pressure assumes that the back of wall is

(A) vertical and smooth.

(B) vertical and rough.

(C) plane and smooth.

(D) plane and rough.

60. Precipitation includes

(A) evaporation of water from water body to atmosphere.

(B) evaporation from plants and leaves.

(C) rain and snowfall.

(D) flooding.

61. A simply supported concrete beam pre-stressed with a force of 2500 kN is designed by load balancing concept for an effective span of 10 m and to carry a total load of 40 kN/m, the central dip of the cable profile should be

(A) 100 mm

(B) 200 mm

(C) 300 mm

(D) 400 mm

62. The main reinforcement of an RC slab consists of 10 mm bars at 10 cm spacing. If it is desired to replace 10 mm bars by 12 mm bars, then the spacing of 12 mm bars should be

(A) 10.45 cm

(B) 12.75 cm

(C) 14.40 cm

(D) 16.20 cm

63. In mix design for M25 concrete, the assumed standard deviation for estimation of target mean strength of concrete mix, as recommended by IS 456: 2000 is (in N/mm^2)

(A) 4.5

(B) 4.0

(C) 5.0

(D) 3.5

64. The minimum eccentricity to be considered for an axially loaded column of size 400 mm × 400 mm with unsupported length of 5 m is

(A) 15.6 mm

(B) 20.5 mm

(C) 23.3 mm

(D) 30.6 mm

65. A reinforced concrete beam is subjected to the following bending moments:

Moment due to dead load = 50 kNm

Moment due to live load = 50 kNm

Moment due to seismic load = 20 kNm

The design bending moment for limit state of collapse is

(A) 180 kNm

(B) 150 kNm

(C) 120 kNm

(D) 144 kNm

66. The maximum superelevation on hill roads should not exceed

(A) 7%

(B) 8%

(C) 9%

(D) 10%

67. During inelastic collision of two particles which one of the following is conserved?

(A) Total linear momentum only

(B) Total kinetic energy only

(C) Both linear momentum and kinetic energy

(D) Neither linear momentum nor kinetic energy

68. A body moves with a speed of 10 m/s in the curved path of 25 m radius of curvature. If the tangential acceleration is 3 m/s^2 then total acceleration for the body will be

(A) 3.3 m/s^2

(B) 4 m/s^2

(C) 4.2 m/s^2

(D) 5 m/s^2

69. Instrument used for measuring area on a contour map is

(A) Areameter

(B) Clinometer

(C) Planimeter

(D) Graphometer

70. When there is a rise in water table below the ground surface, which of the following given statements is true for the effective stress in soils?

(i) The effective stress for the above given condition does not change.

(ii) The effective stress for the above given condition decreases.

(iii) The effective stress for the above given condition increases.

(A) Only (iii) is TRUE.

(B) All (i), (ii) and (iii) are TRUE.

(C) Only (i) is TRUE.

(D) Only (ii) is TRUE.

Please Turn Over

71. A flow net has 6 flow channels and 30 equipotential drops. The shape factor is
- (A) 180
- (B) 5
- (C) 1/5
- (D) 6

72. Coefficient of permeability of soil varies approximately as
- (A) D_{10}^2
- (B) $D_{10}^{\frac{3}{4}}$
- (C) $D_{10}^{\frac{3}{3}}$
- (D) D_{10}^3

73. A value of toughness index less than unity indicates that the soil is friable at the _____.
- (A) plastic limit
- (B) liquidity limit
- (C) composite limit
- (D) elastic limit

74. For a flowing fluid, a dimensionless combination of velocity (V), length scale (l), and acceleration due to gravity (g) would be
- (A) V^2/gl
- (B) Vg/l
- (C) gl^2/V
- (D) l/V^2g

75. To derive the total flood hydrograph at a catchment outlet from an isolated storm, the order in which the following methods are applied, from the first method to the last method, is:
- P. Obtaining the hyetograph
- Q. Addition of baseflow
- R. Estimation of initial and infiltration losses
- S. Application of unit hydrograph
- (A) PRSQ
- (B) PQRS
- (C) RPSQ
- (D) PSQR

76. All the vehicles that come during a particular peak hour come during a 10-minute period within this hour. The 15-minute peak hour factor for this peak hour is
- (A) 0.25
- (B) 0.167
- (C) 0.75
- (D) 1.0

77. If the quadrantal bearing of a line is N30°W, then the whole circle bearing of the line is
- (A) 120°
- (B) 210°
- (C) 300°
- (D) 330°

78. A tracer takes 100 days to travel from Well-1 to Well-2 which are 100 m apart. The elevation of water surface in Well-2 is 3 m below that in Well-1. Assuming porosity equal to 15%, the coefficient of permeability (expressed in m/day) is
- (A) 0.30
- (B) 0.45
- (C) 1.00
- (D) 5.00

79. According to IS classification system, the soil can be classified into
- (A) 15 groups
- (B) 7 groups
- (C) 3 groups
- (D) 18 groups

80. What are the fixed end moments for the fixed beam subjected to a uniformly distributed load of 30 kN/m as shown in the figure


L = 6 m
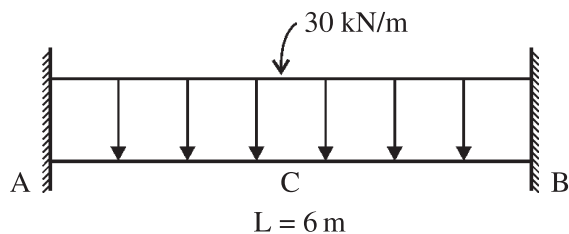
(A) $M_{AB} = M_{BA} = 60$ kNm (Hogging)

(B) $M_{AB} = M_{BA} = 60$ kNm (Sagging)

(C) $M_{AB} = M_{BA} = 90$ kNm (Hogging)

(D) $M_{AB} = M_{BA} = 90$ kNm (Sagging)

81. A three-hinged parabolic arch of span 20 m and rise 4 m carries a concentrated load of 150 kN at 4 m from the left support 'A'. Calculate the vertical reaction and the horizontal thrust, respectively at support 'A'.

(A) V = 40 kN, H = 80 kN

(B) V = 75 kN, H = 120 kN

(C) V = 80 kN, H = 50 kN

(D) V = 120 kN, H = 75 kN

82. In the pin-jointed truss shown in the figure, the static degree of indeterminancy is
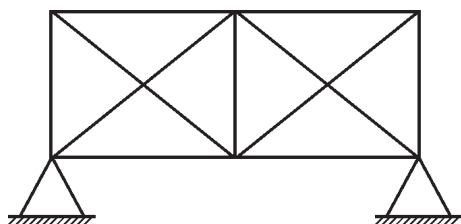
(A) 2

(B) 1

(C) 3

(D) 4

83. In column analogy method, the area of an analogous column for a fixed beam of span L and flexural rigidity EI is taken as

(A) L/EI

(B) $L/2EI$

(C) $L/4EI$

(D) $L/8EI$

84. A single rolling load of 40 kN rolls from left end along a simply supported girder of span 20 m. The absolute maximum positive and negative shear force, respectively are

(A) 14 kN and – 26 kN

(B) 40 kN and – 40 kN

(C) 26 kN and – 14 kN

(D) 20 kN and – 20 kN

85. A 25 ml sample was diluted to 250 ml with odourless distilled water so that the odour of the sample is no longer perceivable. What is the threshold odour number?

(A) 11

(B) 10

(C) 25

(D) 05

86. The ratio of average velocity to maximum velocity for steady laminar flow in circular pipe is

(A) 0.50

(B) 0.67

(C) 1.25

(D) 1.50

87. Air binding phenomenon in rapid sand filter occurs due to

(A) excessive negative head.

(B) mud ball formation.

(C) low temperature.

(D) All of the above

Please Turn Over

88. The line of action of the buoyant force acts through the

(A) centre of the volume of the floating body.

(B) centre of gravity of any submerged body.

(C) centroid of the displaced volume of the fluid.

(D) centroid of the volume of fluid vertically above the body.

89. A steel rod of 20 mm diameter is used as a tie member in the roof bracing system and may be subjected to possible reversal of stress due to wind load. What is the maximum permissible length of the member?

(A) 1750 mm

(B) 2000 mm

(C) 3000 mm

(D) 2500 mm

90. A water treatment plant has a flow rate of $0.6\,m^3/s$. The settling basin at the plant has effective settling volume dimensions of length 20 m, depth 3 m, and width 6 m. What percentage of the particles having a settling velocity of 0.004 m/sec is removed?

(A) 80%

(B) 92%

(C) 75%

(D) 100%

91. Natural undamped frequency is 20 rad/s, Damping ratio is 50%, Damped frequency is _____.

(A) 20 rad/s

(B) 10 rad/s

(C) 5 rad/s

(D) 17.3 rad/s

92. When a cantilever beam is loaded with uniformly distributed load, the bending moment diagram will be a

(A) horizontal straight line.

(B) inclined straight line.

(C) parabolic curve.

(D) None of the above

93. Maximum energy that a given component can absorb without undergoing any permanent deformation up to the elastic limit is known as

(A) Proof resilience

(B) Resilience

(C) Hardness

(D) Toughness

94. Blue baby disease found in infants is due to excessive _____ in drinking water.

(A) colour

(B) sulphates

(C) carbonates

(D) nitrates

95. The maximum bending moment in the following beam is
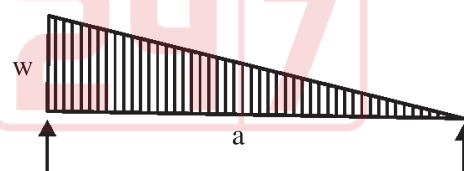
(A) $wa^2/27$ at $a/\sqrt{3}$ from left support.

(B) $wa^2/27$ at $a/\sqrt{3}$ from right support.

(C) $wa^2/9\sqrt{3}$ at $a/\sqrt{3}$ from left support.

(D) $wa^2/9\sqrt{3}$ at $a/\sqrt{3}$ from right support.

96. The Moment of Inertia of a square section of side a about its diagonal is

(A) $a^4/8$

(B) $a^4/10$

(C) $a^4/12$

(D) $a^4/16$

97. As per IS 456 -2000, Modulus of rupture is expressed as (f_{ck} = characteristic strength of concrete, MPa)

(A) $0.7\sqrt{f_{ck}}$ MPa

(B) $5700\sqrt{f_{ck}}$ MPa

(C) $0.25\sqrt{f_{ck}}$ MPa

(D) $0.16\sqrt{f_{ck}}$ MPa

98. If the depth of neutral axis in a beam is more than the critical neutral axis, then the beam is called.

(A) Balanced beam

(B) Under-reinforced beam

(C) Over-reinforced beam

(D) None of the above

99. According to the Lacey's regime equations for hydraulic structures in alluvial channel the Regime Velocity is expressed as

(A) $V = 0.47 \, (Q/f)^{1/3}$

(B) $V = 5/2 * Q^2/f$

(C) $V = (Qf^2/140)^{1/6}$

(D) $V = (Qf^2)^{1/6} \times 140$

100. The time for a clay layer to achieve 90% consolidation is 20 years. The time required to achieve 90% consolidation for a clay layer of half the thickness is

(A) 15 years

(B) 10 years

(C) 5 years

(D) 7.5 years

14

Space for Rough Work

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