

1 Which one of the following is a “No fines” concrete?

- A. fibre reinforced concrete
- B. nominal lightweight concrete
- C. nominal heavyweight concrete
- D. ready heavyweight concrete

Answer: A. fibre reinforced concrete

2 As per IRC suggestion, for the calculation of stopping sight distance, the height of eye level of driver and height of the object above the road surface, respectively are

- A. 1.2m & 0.15m
- B. 0.15m & 1.2m
- C. 1.2m & 1.2m
- D. 0.15m & 0.15m

Answer: A. 1.2m & 0.15m

3 The volume of water released by a column of a confined aquifer of unit cross – sectional area under a limit decrease in the piezometric head is known as

- A. Transmissibility
- B. Specific yield
- C. Specific retention

Answer: D.Storativity

4 Which one of the following is/are commonly used evaporimeter?

A.Class A evaporation pan

B.ISI standard pan

C.Colorado sunken pan

D.All of the above

Answer: D.All of the above

5 As per I.S specifications, what should be the angle of inclination θ of the lacing bar with the longitudinal axis of the component member?

A.In between 30 degree to 80 degree

B.In between 45 degree to 90 degree

C.In between 40 degree to 70 degree

D.In between 50 degree to 100 degree

Answer: C.In between 40 degree to 70 degree

6 Which one of the following is/are typical flexible pavement failure?

A.Alligator cracking

B.Consolidation of pavement layers

C.Shear failure

D.All of the above

Answer: D.All of the above

7 Which one of the following is best method to convert the point rainfall values at various station into an average value over a catchment when stations are large in number?

A.Isohyetal method

B.Arithmetic mean method

C.Thiessen polygon method

D.Both Arithmetic mean method and Thiessen polygon method

Answer: A.Isohyetal method

8 Which one of the following road pattern has been adopted in the city roads of Chandigarh?

A.Rectangular or block pattern

B.Radial or star & block pattern

C.Radial or star & circular pattern

D.Hexagonal pattern

Answer: A.Rectangular or block pattern

9 Which one of the following represent the critical combination of stresses for rigid pavement during winter ?

A.(Load stress + warping stress - frictional stress) edge region

B.(Load stress + warping stress + frictional stress) edge region

C.(Load stress + warping stress) corner region

D.None of the above

Answer: B.(Load stress + warping stress + frictional stress) edge region

10 A prismatic bar has a cross- section of 25mm × 50mm & a length of 2 metres. Under an axial tensile force of 90kn, the measured elongation of the bar is 1.5mm. The tensile stress & strain in the bar are respectively ____

A.72 Mpa & 750×10^{-6}

B.720 Mpa & 750×10^{-3}

C.7.2 Mpa & 750×10^{-5}

D.7200 Mpa & 750×10^{-2}

Answer: A.72 Mpa & 750×10^{-6}

11 Loess is a silt deposit by wind. These deposits have

A. Low density and low compressibility

B.High density and low compressibility

C.High density and high compressibility

D.Low density and high compressibility

Answer: D.Low density and high compressibility

12 As per IRC, the recommended value of width of carriageway for two lanes with raised kerbs is ____

A.3.75m

B.7.0m

C.7.5m

D.5.5m

Answer: C.7.5m

13 The two method of determination of hydraulic conductivity of soil, constant head permeability test & falling head permeability test, respectively are suited for

A.Coarse grained soils

B. fine grained soils

C. coarse grained soil & fine grained soil

D. fine grained soil & coarse grained soil

Answer: C. coarse grained soil & fine grained soil

14 The effective length for battened compression member in the design of compression members should be increased by _____ percent.

A.10

B.20

C.30

D.40

Answer: A.10

15 Fill in the blanks regarding viscosity unit:
To convert the unit of viscosity from poise to MKS unit, poise should be divided by _____
and to convert poise into SI unit, the poise should be divided by _____

A.9.81, 10

B.98.1, 100

C.981, 100

D.98.1, 10

Answer: D.98.1, 10

16 Which one of the following is referred to as the interface between two distinct air masses?

A.Front

B.Cyclone

C.Anticyclone

D.None of the above

Answer: A.Front

17 Consider the following statements regarding Sedimentation Tank:
X : Long narrow rectangular tanks with horizontal flow is preferred to the circular tanks with horizontal radial or spiral flows.
Y : A normal sedimentation tank under normal condition may remove as much as 99% of the suspended impurities present in water
Which of the above statement/s is/are INCORRECT?

A. X only

B.Y only

C.Both X & Y

D.Neither X nor Y

Answer: B.Y only

18 The maximum rate of introduction of super elevation in plain & rolling terrain by raising the outer edge of pavement as per recommendation of IRC is given by

A.1 in 150

B.1 in 60

C.1 in 90

D.1 in 100

Answer: A.1 in 150

19 Which one of the following is not an assumption made in Boussinesq's formula for stress distribution in soil due to point load ?

A. soil mass is elastic

B. the soil is weightless

C. soil mass is semi-infinite

D. soil mass is non- isotropic

Answer: D. soil mass is non- isotropic

20 The slow mixing technique which promotes the agglomeration of the stabilized particles is called

A.Coagulation

B.Flocculation

C.Filtration

D. sedimentation

Answer: B.Flocculation

21 Which of the following types of failure occurs when the soil below the toe is relatively weak and soft and the slope is flat?

A.Slope failure

B.Toe failure

C.Base failure

D.Face failure

Answer: C.Base failure

22 Which one of the following is /are type of traffic control signals?

A.Fixed time signal

B.Manually operated signal

C.Traffic actuated signal

D.All of the above

Answer: D.All of the above

23 Which of the following relationship/s is/are TRUE?

X: Earliest Finish Time = Earliest Start Time + Activity duration

Y : Latest Start Time = Latest Finish Time - Activity duration

A.X only

B.Y only

C.Both X & Y

D.Neither X nor Y

Answer: C.Both X & Y

24 Which one of the following instrument(s) is/are used to measure the precipitation value ?
(1) Pluviometer (2) Ombrometer (3) Hyetometer

A.1 and 2

B.1 and 3

C.2 and 3

D.1, 2 and 3

Answer: D.1, 2 and 3

25 If the degree of saturation of soil mass is 0%, then the soil is know as

A.dry

B.partially saturated

C. fully saturated

D. incorrect data

Answer: A.dry

26 which one of the following assumptions are made in Terzaghi's one dimensional consolidation theory ?

A.voids of the soil are completely filled with water

B.both soil & water constituents are incompressible

C.darcy's law is strictly valids

D.all of the above

Answer: D.all of the above

- 27 While designing the fillet weld length for truss members,
- A. centre of gravity of the weld should coincide with the centroid of the section
 - B. centre of gravity of the weld should not coincide with the centroid of the section
 - C. centre of gravity of the weld should be at a distance of $2x$ (size of the weld from centroid of the section).
 - D. centre of gravity of the weld should be at a distance of $3x$ (size of the weld from centroid of the section).

Answer: A. centre of gravity of the weld should coincide with the centroid of the section

- 28 Consider the following statements regarding Grade Residual factor (R):
X: R will be equal to 1(one) if no degeneration has yet occurred in the soil
Y: R will be equal to 0 (zero) if residual strength has developed in the soil
Which of the above statement/s is/are CORRECT?

- A. X only
- B. Y only
- C. Both X & Y
- D. Neither X nor Y

Answer: D. Neither X nor Y

- 29 Which of the following method of Plane table surveying is suitable for establishing new stations at a place in order to locate missing details?

- A. Radiation
- B. Intersection

D.Resection

Answer: D.Resection

30 Which one of the following is minimum shoulder width as recommended by IRC ?

A.2m

B.2.5m

C.3m

D.4m

Answer: B.2.5m

31 The portion of a brick which is so cut that the width of one its end is half that of a full brick, while the width at the other end is equal to the full width is called

A.King closer

B.Queen closer

C.Bevelled closer

D.Mitred closer

Answer: A.King closer

32 What should be the minimum clear spacing of the cable or group of cable in prestressed concrete bridge beam as per IS1343 – 1980?

A.40 mm or 5mm plus maximum size of aggregate (whichever is greater)

B.20 mm

C.30 mm

D. None of the above

Answer: A. 40 mm or 5mm plus maximum size of aggregate (whichever is greater)

33 As per Indian Standard Drinking Water Specifications (IS 10500 : 1991) the desirable limit required of Lead is

A. 0.01 mg/l

B. 0.02 mg/l

C. 0.05 mg/l

D. 0.10 mg/l

Answer: C. 0.05 mg/l

34 As per IS 456:2000 the minimum value of the nominal cover for longitudinal reinforcing bar in a column is:

A. 40mm or diameter of bar whichever is more

B. 30mm or diameter of bar whichever is more

C. 40mm or diameter of bar whichever is less

D. 30mm or diameter of bar whichever is less

Answer: A. 40mm or diameter of bar whichever is more

35 If the width of flat used for lacing of compression member is 60mm, then what should be the nominal diameter of rivets used (in mm)?

A. 16

B. 18

C.20

D.22

Answer: C.20

36 The probability (p) of occurrence of flood at least once over a period of n successive years is given by the formula_____

A. $1-(1-p)^n$

B. $1-p^n$

C. $1-(1+p)^n$

D. $1+(1-p)^n$

Answer: A. $1-(1-p)^n$

37 If the concrete is completely immersed in sea water, then it represents which one of the following environment exposure condition

A. Mild

B. Moderate

C. Severe

D. Very Severe

Answer: C. Severe

38 In which of the following type of bond in Brick work, each course is comprised of alternate headers and stretchers?

A. Stretcher bond

B.Header bond

C.Flemish bond

D. English bond

Answer: C.Flemish bond

39 The Nagpur road plan formulae were prepared assuming

A.Star and Grid pattern

B. Hexagonal pattern

C.Rectangular and block pattern

D.Minimum travel pattern

Answer: A.Star and Grid pattern

40 As per IS 800:2007, the maximum width of the covered building section should preferably be restricted to how much beyond which suitable provisions for the expansion joint may be made?

A.125m

B.150m

C.175m

D.200m

Answer: B.150m

41 In which of the following state, the soil does not have plasticity and it becomes brittle?

A.Solid state

B.Semi-solid state

C.Plastic state

D.Liquid state

Answer: B.Semi-solid state

42 How maximum size of a fillet weld is obtained in the case of weld applied to the round toe of steel section ?

A. $\frac{3}{4}$ of the thickness of the section at the toe

B. $\frac{4}{5}$ of the thickness of the section at the toe

C. $\frac{1}{2}$ of the thickness of the section at the toe

D. $\frac{7}{8}$ of the thickness of the section at the toe

Answer: A. $\frac{3}{4}$ of the thickness of the section at the toe

43 Which one of the following process is used for obtaining petroleum bitumen ?

A. atmospheric vacuum distillation

B. destructive distillation

C. liquifaction

D. none of the above

Answer: A. atmospheric vacuum distillation

44 As per codal provisions, the maximum nominal size of coarse aggregate should not exceed

A. $\frac{1}{3}$ rd of minimum thickness of member

B. 1/4th of minimum thickness of member

C. 1/2th of minimum thickness of member

D. 5/8th of minimum thickness of member

Answer: B. 1/4th of minimum thickness of member

45 As per IRC standards, which one of the following is correct empirical formula for calculation of length of transition curve (L_s) for plain & rolling terrain?

Where, v = design speed (kmph)

R = Radius of curve (m)

A. $2.7 v^2 / R$

B. v^2 / R

C. $1.7 v^2 / R$

D. $0.7 v^2 / R$

Answer: A. $2.7 v^2 / R$

46 In the design of gantry girder as per the guidelines of limit state, what shall be the value of impact allowances of vertical loads in the case of electric overhead cranes?

A. 10% of maximum static wheel loads

B. 15% of maximum static wheel loads

C. 25% of maximum static wheel loads

D. 35% of maximum static wheel loads

Answer: C. 25% of maximum static wheel loads

47 For mean annual flood, the value of return period in Gumbel's method is equal to

A.T = 2.33 years

B.T = 3.33 years

C.T = 4.33 years

D.T = 5.33 years

Answer: A.T = 2.33 years

48 The property of stones to withstand the adverse action of weather is known as _____.

A.Soundness

B.Toughness

C.Hardness

D.None of the above

Answer: A.Soundness

49 In a rigid pavement, let the load stress, warping stress and frictional stresses are 200 MPa, 250 MPa and 10 MPa respectively. The critical combination of stresses at edge region during winter are

A.440 MPa

B.450 MPa

C.460 MPa

D.230 MPa

Answer: C.460 MPa

50 As per IRC, the recommended value of camber for thin bituminous surface varies in between

A.1.7% to 2%

B.2% to 2.5%

C.2.5% to 3%

D.3% to 4%

Answer: B.2% to 2.5%

51 Which one of the following is the range of specific gravity of tars ?

A.0.97 to 1.02

B.1.02 to 1.10

C.1.10 to 1.25

D.1.25 to 1.50

Answer: C.1.10 to 1.25

52 Which of the following type of support restrains complete movement of the beam both in position as well as direction?

A. Free support

B. Pinned support

C.Hinged support

D.Encastre support

Answer: D.Encastre support

53 As per Westergaard's concept , which one of the following is/are type (s) of stress produced due to temperature in a concrete pavement ?

- (i) Warping stress
- (ii) Frictional stress

A.Only (i)

B. Only (ii)

C.Both (i) & (ii)

D.Neither (i) nor (ii)

Answer: C.Both (i) & (ii)

54 When a pressure pipe for water transportation drops beneath a valley, stream or some other depression , it is called

A.A sag

B.A depressed pipe

C.An inverted siphon

D.All of the above

Answer: D.All of the above

55 Which one of the following formula gives the maximum value of grade compensations?
Where, R =Radius of circular curve (m)

A.75/R percent

B.65/R percent

C.55/R percent

D.45/R percent

Answer: A.75/R percent

56 As per IRC suggestions, which one of the following is the range of radius of entry curve in rural area ?

A.20 to 35m

B.15 to 25m

C.10 to 15m

D.35 to 40m

Answer: A.20 to 35m

57 The value of partial safety of factor concrete & steel , respectively as per limit of collapse : flexure are

A.1.5 & 1.115

B.1.5 & 1.15

C.1.115 & 1.5

D.1.15 & 1.5

Answer: B.1.5 & 1.15

58 The strength of compression member with helical reinforcement _____ times the strength of similar member with lateral ties.

A.1.05

B.1.1

C.1.15

D.1.2

Answer: A.1.05

59 Which one of the following post- tensioning systems are based on wedge – action?

A.Freyssinet

B.Gifford – Udall

C.Magnel- Blaton -anchorges

D.All of the above

Answer: D.All of the above

60 Which one of the principle states that except in the region of extreme ends of a bar carrying direct loading , the stress distribution over the cross-section is uniform ?

A.Saint Venant's principle

B.Maxwell principle

C.Saint George's principle

D.None of the above

Answer: A.Saint Venant's principle

61 Which one of the following is used as a vulcanizing agent in rubber ?

A.phosphorus

B. sulphur

C. chlorine

D. sodium

Answer: B. sulphur

62 The support condition "Simply supported on the over-hanging side" and "Hinge" in original beam will be converted to which of the following type of support condition of conjugate beam?

A.Fixed end and Hinged respectively

B.Hinged and fixed end respectively

C.Hinged end and Simply supported respectively

D.Simply supported and Fixed end respectively

Answer: C.Hinged end and Simply supported respectively

63 Which one of the following gives the slenderness limit value so as to ensure lateral stability of simply supported beam ?

A. $60 b$ or $(250 b^2 / d)$ whichever is less

B. $60 b$ or $(250 b^2 / d)$ whichever is more

C. $25 b$ or $(100 b^2 / d)$ whichever is less

D. $25 b$ or $(100 b^2 / d)$ whichever is more

Answer: A. $60 b$ or $(250 b^2 / d)$ whichever is less

64 The minimum number ranging rods required for direct and indirect ranging are

A.1 & 2 respectively

B.2 & 3 respectively

C.3 & 4 respectively

D. 4 & 5 respectively

Answer: C.3 & 4 respectively

65 The property of regaining a part of strength after disturbance of remoulded clay sample is known as

A.thixotropy

B. plastic limit

C.liquid limit

D.shrinkage limit

Answer: A.thixotropy

66 Which one of the following constants fall under the category of elastic constant in strength of material?

A.Modulus of elasticity (E)

B.Poisson's ratio (μ)

C.Modulus of rigidity (G)

D.All of the above

Answer: D.All of the above

67 How many minimum number of longitudinal bars have to be provided in a rectangular column?

A.4

B.5

C.6

D.8

Answer: A.4

68 Which of the following type of earth pressure exists in case of deep basement wall?

A. Active earth pressure

B. Passive earth pressure

C. At rest earth pressure

D. Sometimes active , sometimes passive earth pressure

Answer: C. At rest earth pressure

69 If the activity of soil mass is greater than 1.4 , then the soil is classified as

A. inactive

B. normal

C. active

D. none of the above

Answer: C. active

70 The angle between maximum shear strain axis & principle strain axis is equal to _____ degree.

A.0

B.45

C.75

D.90

Answer: B.45

71 If the permissible value of stress in tension on section through throat of butt weld (done in shop) is 150 N/mm^2 then , the permissible stress in tension on same section when the same welding is done in the field is _____ N/mm^2

A.100

B.120

C.150

D.180

Answer: B.120

72 The loss of head (initial) in case of Slow sand filters and Rapid sand filters are approximately

A.10 cm and 30 cm respectively

B.30 cm and 10 cm respectively

C. 1.0 m and 3.0 m respectively

D. 3.0 m and 1.0 m respectively

Answer: A.10 cm and 30 cm respectively

73 Statement 1: the maximum rate at which the ground can absorb water is known as infiltration capacity
Statement 2: the volume of water that the ground can hold is known as field capacity?

- A. Only statement 1 is true
- B. Only statement 2 is true
- C. Both statement 1 & 2 are true
- D. Both statement 1 & 2 are false

Answer: C. Both statement 1 & 2 are true

74 Which one of the following is correct relationship between Young's modulus 'E', modulus of rigidity 'G' & bulk modulus 'K' in an elastic material ?

- A. $E = 3KG / (3K+G)$
- B. $E = 9KG / (9K+G)$
- C. $E = 3KG / (9K+G)$
- D. $E = 9KG / (3K+G)$

Answer: D. $E = 9KG / (3K+G)$

75 To calculate the ultimate pile load capacity by Engineering News Formula, the value of C (empirical factor, allowing reduction in theoretical set, due to energy losses) for Drop hammers and single acting steam hammers are

- A. 2.5 & 0.25 respectively
- B. 0.25 and 2.5 respectively
- C. 2.5 & 6 respectively

D.0.25 & 6 respectively

Answer: A.2.5 & 0.25 respectively

76 As per IS 456:2000 assumptions, the standard deviation (N/sq. mm) value for M20 & M25 grade of concrete is

A.3.5

B.4

C.5

D.6

Answer: B.4

77 Which one of the following factors influences the creep of concrete?

A.Relative humidity

B.Strength of the concrete

C.Age of concrete at loading

D.All of the above

Answer: D.All of the above

78 The flakiness index of aggregate is the percentage by weight of aggregate particle whose least dimension is less than _____ of their mean dimension ?

A.One-fifth

B.Two-fifth

C.Three-fifth

D.Four-fifth

Answer: C.Three-fifth

79 Which one of the following is/are type of speed studies considered under traffic studies ?

- (i) Spot speed study
- (ii) Speed & delay study

A.Only (i)

B. Only (ii)

C.Both (i) & (ii)

D.Neither (i) nor (ii)

Answer: C.Both (i) & (ii)

80 The horizontal distance between two parallel main reinforcing bars shall be

- (i) The diameter of the bar if the diameters are equal
- (ii) Diameter of larger bar if the diameters are unequal
- (iii) 5mm more than the nominal maximum size of coarse aggregate?

A.Greater of (i) & (ii)

B.Greater of (ii) & (iii)

C.Greater of (i) & (iii)

D.Greater of (i) , (ii) & (iii)

Answer: D.Greater of (i) , (ii) & (iii)

81 Consider the following statements regarding Dimensional and Model Analysis:
X: For geometric similarity, the ratio of all corresponding linear dimensions of the model and of the prototype should be equal.
Y: Kinematic similarity means the similarity of motion between model and prototype.
Z: Dynamic similarity means the similarity of forces between the model and prototype.
Which of the above statements are TRUE?

A. X & Y only

B. Y & Z only

C. X & Z only

D. X, Y & Z

Answer: D. X, Y & Z

82 The value of design bond stress in limit state method for deformed bars shall be increased by _____ percent of design bond stress for plain bar in tension?

A. 60

B. 25

C. 50

D. 15

Answer: A. 60

83 Consider the following statements regarding Source flow and Sink flow:
X : The flow coming from a point and moving out radially in all directions of a plane at uniform rate is called as Sink Flow
Y : The flow in which fluid moves radially inwards towards a point where it disappears at a constant rate is called as Source flow
Which of the above statement/s is/are INCORRECT?

A. X only

B.Y only

C.Both X & Y

D.Neither X nor Y

Answer: C.Both X & Y

84 In case of under-water concreting, the water – cement rate shall not exceed _____

A.0.4

B.0.5

C.0.55

D.0.6

Answer: D.0.6

85 For unstable equilibrium of a sub-merged body, _____
(B = Centre of buoyancy, M = meta-centre, G = Centre of gravity)

A. M should be above G

B. M should be below G

C.B should be above G

D.B should be below G

Answer: D.B should be below G

86 Consider the following statements regarding design of sewers:
X : Generally the sewer pipes of sizes less than 0.4m dia are designed as running full at maximum discharge
Y : The sewer pipes greater than 0.4m dia are designed as running 2/3rd or 3/4th full at maximum discharge
Which of the above statement/s is/are CORRECT?

A.X only

B.Y only

C.Both X & Y

D. Neither X nor Y

Answer: C.Both X & Y

87 The free mean speed on a roadway is found to be 100 kmph. Under stopped condition the average spacing between vehicles is 10 m. The capacity flow (per lane) will be

A.2500 vehicles/hour

B.5000 vehicles/hour

C.7500 vehilces/hour

D.10000 vehicles/hour

Answer: A.2500 vehicles/hour

88 Which one of the following rain gauge is adopted by the Indian standard (IS: 5235 -1969) as the standard recording type rain gauge ?

A.Symons gauge

B.Tipping bucket type

C.Weighing bucket type

D.Natural siphon type

Answer: D.Natural siphon type

89 Why high strength concrete is required in prestressed concrete ?

- (i) Cross-section size reduces
- (ii) Reduction in shrinkage cracks

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- A.only statement (i) is true
- B.only statement (ii) is true
- C.both statement (i) & (ii) are true
- D. both statement (i) & (ii) are false

Answer: C.both statement (i) & (ii) are true

90 Fill in the blanks regarding Rankin's theory of earth pressure:

Rankine considered a _____ mass of soil bound by a _____ surface and a _____ boundary formed by the vertical back of a smooth wall surface. The soil mass is assumed to be homogeneous, _____ and _____.

- A.Semi-infinite, horizontal, vertical, dry, cohesionless
- B.Infinite, vertical, horizontal, wet, cohesionless
- C.Semi-infinite, vertical, horizontal, wet, cohesive
- D.Infinite, horizontal, vertical, dry, cohesive

Answer: A.Semi-infinite, horizontal, vertical, dry, cohesionless

91 If the allowable compressive stress in continuous single angle struts is σ_{ac} , then what will be the allowable compressive stress in discontinuous single angle strut connected with one rivets ?

A. $0.8 \sigma_{ac}$

B. σ_{ac}

C. $1.2 \sigma_{ac}$

D. $1.4 \sigma_{ac}$

Answer: A. $0.8 \sigma_{ac}$

92 Which one of the following are different situation of sight distance considered in the design?
(i) Stopping or absolute minimum sight distance
(ii) Safe overtaking distance
(iii) Safe sight distance for entering into uncontrolled intersection

A. (i) & (ii) are correct

B. (ii) & (iii) are correct

C. (i) & (iii) are correct

D. All are correct

Answer: D. All are correct

93 The deflection value of beam including the effect of temperature, creep & shrinkage occurring after erection of partitions & the application of finishes should not exceed?

A. (Span/ 350) or 20mm whichever is less

B. (Span/250) or 20mm whichever is less

C. (Span/300) or 25mm whichever is more

D. None of the above

Answer: A.(Span/ 350) or 20mm whichever is less

94 As per IS456:2000, how many types of cement are allowed for intended use ?

A.7

B.8

C.9

D.10

Answer: D.10

95 Fill in the blank

A shear stress in a given direction cannot exist without a balancing shear stress of _____ intensity in a direction at right angles to it.

A.Equal

B.Lesser

C.Greater

D.May be lesser or greater

Answer: A.Equal

96 Primarily, Indore method and Bangalore method of Composting are

A. Both aerobic in nature

B.Both anaerobic in nature

C. Aerobic and anaerobic in nature respectively

D.Anaerobic and aerobic in nature respectively

Answer: C. Aerobic and anaerobic in nature respectively

97 A sticky, plastic, dark coloured clay is defined as

A.Marl

B.Gumbo

C.Peat

D.Muck

Answer: B.Gumbo

98 As per IS 456:2000, when reaction in the direction of the applied shear introduce compression into the end region of the member, then the location of critical section for shear is _____
Where, d = Effective depth of member

A.At a distance d from the face of the support

B.At a distance $2d$ from the face of the support

C.At a distance $3d$ from the face of the support

D.At a distance $4d$ from the face of the support

Answer: A.At a distance d from the face of the support

99 As per IS 1343-1980, which one of the following statement is correct with reference to type 1/class 1 pre-stressed structures?

A.No tensile stresses are allowed in concrete under service load

B.Limited tensile stresses are allowed but not exceeding the modulus of rupture

C.Visible cracking upto certain limits are permitted under services loads

D.None of the above

Answer: A.No tensile stresses are allowed in concrete under service load

100 As per IS 1343-1980, the minimum 28 days cube compressive strength for pre-tensioned member & post-tensioned member is

A.30 N/sq. mm & 40 N/sq. mm

B.50 N/sq. mm & 40 N/sq. mm

C.40 N/sq. mm & 30 N/sq. mm

D.40 N/sq. mm & 50 N/sq. mm

Answer: C.40 N/sq. mm & 30 N/sq. mm

101 The mild steel reinforcement in either direction in slab shall not be less than _____ percent of the total cross- sectional area

A.0.12

B.0.15

C.0.2

D.0.25

Answer: B.0.15

102 Which one of the following formula is used to calculate the proportion of weaving traffic?
Where, a =left turning traffic moving along left extreme lane
d = Right turning traffic moving along right extreme lane
b = Crossing / weaving traffic turning towards right while entering the rotary.
c = Crossing / weaving traffic turning towards left while leaving the rotary

A. $(b+c) / (a+b+c+d)$

B. $(a+d) / (a+b+c+d)$

C. $(a+b+c+d) / (b+c)$

D. $(a+b+c+d) / (a+d)$

Answer: A. $(b+c) / (a+b+c+d)$

103 Which one of the following correctly represent the specification of "STOP" regulatory sign ?

A. Octagonal shape , red in colour with white border

B. Hexagonal shape red in colour with white border

C. Octagonal shape white in colour with red border

D. Hexagonal shape , white in colour with red border

Answer: A. Octagonal shape , red in colour with white border

104 If the size of water drops lies in the range of 0.5mm to 6mm , then the form of precipitation will be

A. Rain

B. Drizzle

C. Glaze

D. None of the above

Answer: A.Rain

105 For reinforced concrete of M20 grade, the minimum value of cement content (Kg/m^3) & maximum value of free water cement ratio, respectively are

A.300 & 0.55

B.300 & 0.5

C.320 & 0.45

D.340 & 0.45

Answer: A.300 & 0.55

106 Which one of the following case represents the minimum eccentricity value of column?
Where, l = Unsupported length of column (mm)
 B = lateral dimension (mm)

A. $(l/500 + B/30)$ or 20mm whichever is less

B. $(l/500 + B/30)$ or 20mm whichever is more

C. $(l/30 + B/500)$ or 20mm whichever is less

D. $(l/30 + B/500)$ or 20mm whichever is more

Answer: B. $(l/500 + B/30)$ or 20mm whichever is more

107 If the reinforced concrete is exposed directly along the sea coast, then which one of the following is the minimum grade of concrete to be used ?

A.M20

B.M30

C.M40

D.M50

Answer: B.M30

108 Which one of the following equipment is used to measure the pavement unevenness index?

A.Bump Integrator

B.Odometer

C.Network survey vehicles

D.None of the above

Answer: A.Bump Integrator

109 If the degree of shrinkage S_r (%) of soil mass is $> 15\%$, then the quality of soil is

A.good

B. medium good

C.poor

D.very poor

Answer: D.very poor

110 What is effective throat thickness value in case of complete penetration of the butt weld ?

A. thickness of the thinner member jointed

B.thickness of the thicker member jointed

C. $7/8$ of the thickness of thinner member

D. $5/8$ of the thickness of thinner member

Answer: A. thickness of the thinner member jointed

111 As per IRC recommendations, which one of the following is ruling gradient value on plain & rolling terrain?

A.1 in 30

B.1 in 20

C.1 in 16.7

D.1 in 10

Answer: A.1 in 30

112 The line representing the sum of pressure head and datum head with respect to some reference line is called

A.H.G.L.

B.T.E.L.

C. H.G.L. + T.E.L.

D.T.E.L. – H.G.L.

Answer: A.H.G.L.

113 Which one of the following gives the effective span of cantilever beam ?

A.Clear span + half the effective depth

B.Clear span + overall depth

C.Clear span + effective depth

D.None of the above

Answer: A. Clear span + half the effective depth

114 Which one of the following is correct definition of mass curve of rainfall ?

A. Plot between accumulated precipitation & time, plotted in chronological order

B. Plot between intensity of rainfall and time

C. Plot between discharge of rainfall and time

D. None of the above

Answer: A. Plot between accumulated precipitation & time, plotted in chronological order

115 When stability of structure as a whole against overturning is considered, the restoring moment shall not be less than

A. $1.2 \times$ maximum overturning moment due to characteristic dead load + $1.4 \times$ maximum overturning moment due to imposed loads

B. $1.4 \times$ maximum overturning moment due to characteristic dead load + $1.2 \times$ maximum overturning moment due to imposed loads

C. $1.2 \times$ maximum overturning moment due to characteristic dead load + $1.2 \times$ maximum overturning moment due to imposed loads

D. $1.4 \times$ maximum overturning moment due to characteristic dead load + $1.4 \times$ maximum overturning moment due to imposed loads

Answer: A. $1.2 \times$ maximum overturning moment due to characteristic dead load + $1.4 \times$ maximum overturning moment due to imposed loads

116 The head light sight distance available at valley curves should be at least how many times of the stopping sight distance?

A. 1

B. 2

C.3

D.4

Answer: A.1

117 In which one of the following cross-section , extreme fibre in compression can reach yields stress, but cannot develop the plastic moment of resistance due to local buckling ?

A.Plastic cross-section

B.Semi-compact cross-section

C.Compact cross-section

D.Slender cross-section

Answer: B.Semi-compact cross-section

118 The recession limb of a hydrograph depends on which one of the following factors?
(i) Basin characteristics
(ii) Storm characteristics

A.Only (i)

B.Only (ii)

C.Both (i) & (ii)

D.Neither (i) nor (ii)

Answer: A.Only (i)

119 As per limit state method of design of plate girders, if $d/t_w \leq 67 \epsilon$, then the plate girder is designed as

A.An ordinary beam

B.Additional longitudinal of stiffeners are provided

C.Additional end bearing stiffeners are provided

D.None of the above

Answer: A.An ordinary beam

120 Fill in the blanks with appropriate words regarding Traffic signals:
A part of the signal cycle allocated to a traffic movement or a combination of traffic movement is called _____ and any of the division of the signal cycle during which signal indications do not change is called the _____.

A.Interval, phase

B.Phase, interval

C.Interval, clearance time

D.Clearance time, interval

Answer: B.Phase, interval

121 Consider the following statements is/are examples of Vortex flow:
X : Flow of water through the runner of a turbine.
Y : Flow of fluid inside the impeller of a centrifugal pump.
Which of the above statement/s is/are CORRECT?

A.X only

B.Y only

C.Both X & Y

D.Neither X nor Y

Answer: C.Both X & Y

122 which one of the following data should be obtained while conducting standard one dimensional consolidation test ?

A.moisture content & weight of the soil sample before commencement of the test & after completion of the test

B.specific gravity of the soils

C.temperature of the rooms where the test is conducted

D.all of the above

Answer: D.all of the above

123 In the design of high strength friction grip bolts, the factor of safety for all loads except wind load is taken as

A.1

B.1.2

C.1.4

D.1.6

Answer: C.1.4

124 Which one of the following is the correct sequence of various stage of engineering surveys ?

A.Map study → reconnaissance → preliminary surveys → final location & detailed surveys

B.Reconnaissance → preliminary surveys → Map study → final location & detailed surveys

C.Final location & detailed surveys → Map study → preliminary surveys → Reconnaissance

D.None of the above

Answer: A.Map study →reconnaissance → preliminary surveys → final location & detailed surveys

125 While calculating the average of strength of three specimen to determine the test result of simple the individual variation should not be more than _____ percent of the average?

A.± 15

B.±20

C.±25

D.±30

Answer: A.± 15

126 Which one of the following represents the anchorage value of a standard U- type hook?

A.16 times the diameter of bar

B.4 times the diameter of bar

C.32 times the diameter of bar

D.8 times the diameter of bar

Answer: A.16 times the diameter of bar

127 Which one of the following factor control the highway alignment?

A.Obligatory points

B.Traffic & Economics

C.Geometric design

D.All of the above

Answer: D.All of the above

128 As per the recommendation of Indian Standard Institution (ISI), which one of the following is average level of illumination on important roads carrying fast traffic?

A.30 lux

B.40 lux

C.50 lux

D.60 lux

Answer: A.30 lux

129 Regarding fire demand, for cities having population of 100,000 , the Kilo litre of water required will be

A.100

B.250

C.500

D.1000

Answer: D.1000

130 Which one of the followings are different type of failure that normally occurs in soil slopes?

(i) Slope failure

(ii) Toe failure

(iii) Base failure

A.(i) & (ii) are correct

B. (i) & (iii) are correct

C. (ii) & (iii) are correct

D.(i), (ii) & (iii) are correct

Answer: D.(i), (ii) & (iii) are correct

131 Which of the following is the shortest possible time in which an activity can be completed under ideal conditions?

A.Optimistic time estimate

B.Pessimistic time estimate

C.Most likely time estimate

D. Expected time

Answer: A.Optimistic time estimate

132 The land filling operation is essentially a biological method of waste treatment sine the waste is stabilised by _____ bacterial process

A.Aerobic

B.Anaerobic

C.Aerobic as well as anaerobic

D.Neither aerobic nor anaerobic

Answer: C.Aerobic as well as anaerobic

133 The vertical member of a frame which is employed to sub-divide a window or a door vertically is called

A. Panel

B.Mullion

C.Transom

D. Reveal

Answer: B.Mullion

134 In the design of horizontal alignment of highways, which one of the following is correct formula for calculation of impact factors ?

A.Centrifugal force / weight of vehicles

B.Weight of vehicles/ centrifugal force

C.Centrifugal force \times weight of vehicle

D.None of the above

Answer: A.Centrifugal force / weight of vehicles

135

Consider the following statements:

X : Bromine salts are harmful

Y : Beryllium is extremely toxic to all life.

Which of the above statement/s is/are CORRECT?

A.X only

B.Y only

C.Both X & Y

D.Neither X nor Y

Answer: B.Y only

136 Which one of the following formula is correct for calculation of toughness index of soil mass?

A. Plasticity index / Flow index

B. Plasticity index \times flow index

C. Plasticity index – flow index

D. Flow index / plasticity index

Answer: A. Plasticity index / Flow index

137 Which one of the following capacity represents the maximum number of passenger cars that pass a given point on a lane or roadway during one hour under the most nearly ideal roadway & traffic condition?

A. Basic capacity

B. Possible capacity

C. Practical capacity

D. None of the above

Answer: A. Basic capacity

138 As per the recommendation of Indian standard, the density of rain gauge station in plain area is

A. 1 station per 520 sq. km.

B. 1 station per 260 - 390 sq. km.

C. 1 station per 130 sq. km.

D. None of the above

Answer: A. 1 station per 520 sq. km.

139 As per IS 1343-1980, the values of creep coefficient at 7 days of loading , 28 days of loading & 1 year of loading respectively are

A.1.1, 1.6 & 2.2

B.2.2 , 1.1 & 1.6

C.1.6, 2.2 & 1.1

D.2.2, 1.6 & 1.1

Answer: D.2.2, 1.6 & 1.1

140 Which of the following method/s is/are used for determination of coefficient of consolidation of soil mass ?

(i) casagrande logarithm of time fitting method

(ii) taylor square root of time filling method

A.only (i)

B.only (ii)

C.both (i) & (ii)

D.neither (i) nor (ii)

Answer: C.both (i) & (ii)

141 The value of Possion's ratio in the formula of calculation of radius of relative stiffness for design of rigid pavement is taken as

A.0.15

B.1.5

C.0.1

Answer: A.0.15

142 Which of the following is the excess of available time over the activity time, when all jobs start as early as possible?

A.Total float

B.Free float

C.Independent float

D.Interfering float

Answer: B.Free float

143 What will be the elastic modulus of the material if Poisson's ratio of material is 0.5 ?

A.Five times its shear modulus

B.Equal to its shear modulus

C.Three times its shear modulus

D.Nine times its shear modulus

Answer: C.Three times its shear modulus

144 The penetration test of bitumen determines the hardness or softness by measuring the depth in _____ to which a standard loaded needle will penetrate vertically.

A.One - tenth of a millimeter

B.One - fifth of a millimeter

C.One - ninth of a millimeter

D.None of the above

Answer: A.One - tenth of a millimeter

145 Consider the following statements regarding coffer dams:
X : Cellular coffer dams are relatively more water-tight as compared to the braced coffer dams.
Y: As compared to embankment type, the cellular coffer dam is smaller and occupies less area.
Which of the above statement/s is/are INCORRECT?

A.X only

B.Y only

C.Both X & Y

D.Neither X nor Y

Answer: D.Neither X nor Y

146 In the designation of concrete mix, what is the significance of letter "M"?

A.M refers of the mix

B.M refers of the material

C.M refers of the mini

D.None of the above

Answer: A.M refers of the mix

147 Which one of the following method (s) is/are used to develop unit hydrograph of duration nD from unit hydrograph of duration D (n is an integer)
(i) Method of superposition
(ii) The S – curve

A.Only (i)

B.Only (ii)

C.Both (i) & (ii)

D.Neither (i) nor (ii)

Answer: C.Both (i) & (ii)

148 The radius of 3 degree curve in case of railways is

A.573 m

B.860 m

C. 1719 m

D.2292 m

Answer: A.573 m

149 In which one of the following year, Government of India brought into effect Motor Vehicles Act ?

A.1929

B.1934

C.1939

D.1950

Answer: C.1939

150

In which one of the following conditions, slipping of vehicle takes place ?

A.Wheel revolves more than the corresponding longitudinal of movement along the roads

B.Wheel revolves less than the corresponding longitudinal of movement along the roads

C.Wheel revolves equal to the corresponding longitudinal movement along the roads

D.None of the above

Answer: A.Wheel revolves more than the corresponding longitudinal of movement along the roads

