JKSSB JE

Previous Year Paper
Civil 20 March 2022

Section 1 - Civil

1) The strain energy stored by the body within elastic limit, when loaded externally is called as:

A) Elastic Energy
B) Toughness
C) Resilience
D) Poison's Ratio

2) What will be the speed of vehicle if length of transition curve is 70 m and superelevation is 15 cm assuming rate of superelevation as 2 cm/s?

A) 6.8 m/s
B) 7.5 m/s
C) 9.3 m/s
D) 5.2 m/s

3) The location of neutral axis of a T-beam, will fall in which of the following categories?

(a)Within the flange,
(b) Outside the flange,
(c) Always atthe centre of the web of beam

A) Only a
B) Only b
C) Both a and b
D) Only c

4) What is the dimensional formula for pressure gradient?

A) $ML^{-1}T$
B) $ML^{2}T$
C) $ML^{-2}T^{-2}$
D) $ML^{-1}T^{-2}$

5) Lead Time in materials/inventory management for a company usually refers to the:

A) Time required for only the dumping of material at the client place
B) Time taken to only order certain materials in a company
C) Time elapsed between ordering, receiving and putting the material into use
D) Time taken to create a product in a company

6) A cross drainage work, where canal is taken over by the drainage if the bed level of irrigation canal is higher than the drainage, is called as

A) Aqueduct
B) Aquifer
C) Aquifuge
D) Aquiclude

7) What is (total annual average water consumption of community) / (population × 365)?

A) Percapita water demand
B) Discharge
C) Water quality
D) Amount of water level stored

8) What is the term used for the distance between two rails in a railway track?

A) Track gauge
B) Track base
C) Sleeper gauge
D) Ballast width

9) In chain surveying, the area to be surveyed is divided into a number of small well conditioned triangles. In thisregard, which of the following conditions should satisfy for the triangle to be Well Conditioned?

A) No angle is less than 50° or greater than 100°
B) An angle is less than 20° or greater than 130°
C) An angle is less than 30° or greater than 120°
D) No angle is less than 30° or greater than 120°

10) In a bending beam, the point of contraflexure is a point where:

A) Bending Moment changes its sign
B) Shear Force changes its sign
C) Shear Force remains constant
D) Bending Moment remains constant

11) As per IS:456-2000, the side face reinforcement should be provided along the two faces of a beam, when the depth of the web in a beam exceeds

A) 350 mm
B) 550 mm
C) 650 mm
D) 750 mm

12) If the density of a fluid remains constant throughout the volume, then it implies which type of flow?

A) Compressible flow
B) Incompressible flow
C) Uniform flow
D) Non uniform flow

13) Which method of irrigation is usually suitable for orchard trees?

A) Border strip
B) Sprinkler
C) Basin
D) Furrow

14) Fire demand is one of the factors for estimating the quantity of water required in a certain community. The Kuchling's formula for estimating the fire demand (Q) in litres per minute is given by

(Here P= Population in thousands)

(Symbols and notations carry their usual meaning)

A) $Q = 1136.5 (P/5 + 10)$
B) $Q = 2500 (P/5 + 10)$
C) $Q = 3182 \sqrt{P}$
D) $Q = 5663 \sqrt{P}$

15) Which equation states that during a fluid flo "piezometric head + velocity head = constant" alor streamline?

A) Bernoulli's equation
B) Continuity equation
C) Euler's equation
D) Laplace formula

16) Which of the following refers to a steel bar bolted to th ends of two rails to join them together in a track?

A) Dog Spike
B) Screw Spike
C) Fish Plate
D) Rail Clip

17) What will be the true bearing of a line AB, if its magneti bearing is S 28° 30' E and the declination is 7°30' West?

A) N 36° 00' E
B) S 26° 00' E
C) S 56° 00' E
D) S 36° 00' E

18) With reference to Planning, identify the CORREC statements.

1. Dummy activity maintains the logical interrelationsh between different activities.

2. Dummy activity keeps the numbering system of th network unique.

3. Dummy activity is a resource oriented activity.

A) 1 and 2
B) 2 and 3
C) 1, 2 and 3
D) 1 and 3

19) The section modulus (Z) of a hollow circular section with external diameter as D and internal diameter as d, is given by

A) $Z = \frac{\pi}{30D}[D^5 - d^4]$

B) $Z = \frac{\pi}{32D}[D^4 - d^4]$

C) $Z = \frac{\pi}{16D}[D^4 - d^4]$

D) $Z = \frac{\pi}{32D}[D^2 - d^2]$

20) Find the length of vertical curve connecting two grades + 0.4% and - 0.3%, where the rate of change of grades is 0.1% per 30 m at summit.

A) 210 m
B) 250 m
C) 230 m
D) 270 m

21) Which of the following options is defined as the permanent deformation of a material that occurs at high temperatures under constant loading over a long period of time?

A) Creep
B) Toughness
C) Density
D) Corrosion Resistance

22) Which of the following options is usually preferable in a prestressed concrete member?

A) Only high strength concrete
B) Low strength concrete
C) Only high tensile steel
D) Both high strength concrete and high tensile steel

23) For a Theodolite instrument certain Permanent adjustments are done from time to time to avoid any kind of erroneous observations. Which of the following statements is INCORRECT with respect to these adjustments?

A) The axis of the plate level must be perpendicular to the vertical axis
B) The line of collimation must be at right angles to the horizontal axis
C) The axis of telescope level must be parallel to the line of collimation
D) The Horizontal axis must be parallel to the vertical axis

24) Which one of the following options is NOT a condition or property for an ideal fluid?

A) Zero viscosity
B) Incompressible
C) Zero surface tension
D) Compressible

25) What is the term used in chain surveying, for the lateral distance measured perpendicular to the chain line?

A) Oblique offset
B) Perpendicular offset
C) Rear offset
D) Parallel offset

26) What involves the intelligent utilization of floats which can smoothen the demand of resources to the maximum possible extent?

A) Resource allocation
B) Resource smoothing
C) Resource levelling
D) Resource aggregation

27) Find T_e (in s), for an activity with T_0=4 s, T_m=6 s and T_p=12 s.

A) 8.5
B) 7.4
C) 6.67
D) 5.33

28) A vehicle has a wheel base of 5 m. What is the approximate off-tracking with a mean radius of 20 m?

A) 0.5 m
B) 0.7 m
C) 0.6 m
D) 0.8 m

29) The relationship between curvature correction (Cc) and refraction correction (Cr) for levelling works is given as:

A) Cr =1/7 Cc
B) Cr =1/5 Cc
C) Cr =1/2 Cc
D) Cr =1/8 Cc

30) A two dimensional plane truss is known as an 'Unstable Truss' in which of the following conditions?

(m = number of members, j = number of joints and r = number of unknown reactions)

A) m = (3r-j)
B) m > (2j -r)
C) m < (2j -r)
D) m < (4j-r)

31) In long wall - short wall method of a building estimation, if "l" is the center to center length of wall "d" is the breadth of the wall, then length of long wall (out to out) is given by

A) l+d
B) l-d
C) l+2d
D) l-2d

32) Generally, in R.C.C sections for beams, the depth of the neutral axis usually determines the type of section. For an over reinforced section, the actual neutral axis lies:

A) Along the top fibre of the section
B) Above the critical neutral axis
C) Below the critical neutral axis
D) In the same line along the critical neutral axis

33) The Hooke's law states that within the elastic limit of a material

A) strain produced is directly proportional to stress
B) stress produced is inversely proportional to strain
C) stress and strain are equal
D) stress is constant throughout the section of the material

34) A 20 m steel tape was standardised at a temperature of 30°C under a pull of 5 kg. The tape was used in catenary to fix a distance of 20 m between two points at 40°C under a pull of 10 Kg. Young's modulus E=2.1×10⁶ kg/cm², Area = 0.001 cm², W=0.423 g, coefficient of thermal expansion $\alpha=11\times10^{-6}$ /°C. Here to arrive at the total correction (subtractive), the correction for Temperature is calculated using which of the following formulas?

A) $C_t = \frac{5\alpha\,(T_m . T_0)}{L}$

B) $C_t = \alpha\,(T_m + T_0)3L$

C) $C_t = \alpha\,(T_m - T_0)L$

D) $C_t = \alpha\,(3T_m - T_0)L$

35) The spacing of sleepers for a railway track is usually calculated using which of the following formulas?

A) Spacing of Sleeper = (2 x Width of sleeper) + depth of ballast)
B) Spacing of Sleeper = Width of sleeper / (2 x depth of ballast)
C) Spacing of Sleeper = Width of sleeper + (2 x depth of ballast)
D) Spacing of Sleeper = Width of sleeper - (2 x depth of ballast)

36) The type of layout of water supply distribution system that has only one main from which sub-mains and laterals branch off, and also most suitable for an irregularly grown city is

A) dead-end system
B) grid iron system
C) ring system
D) radial system

37) The sum of the hammer blows required for the second and third 15 cm of penetration in standard penetration test is taken as

A) Seating penetration
B) Submergence
C) Overburden pressure (P)
D) Penetration resistance (N)

38) Identify the CORRECT statement/s regarding Venturimeter device.

a) It works on Bernoulli's principle.
b) Ratio of throat diameter to main pipe diameter in a Venturimeter lies in the range of 0.3 and 0.75.
c) It is usually suitable for Flow rate measurement.

A) a only
B) c only
C) a and c
D) All a, b and c

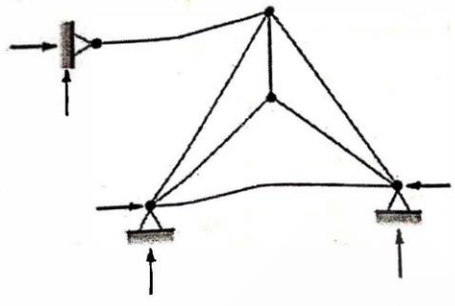
39) Select the CORRECT name of the column among the given options that should have the ratio of effective length to its least lateral dimension more than 12.

A) Long column
B) Pedestal
C) Short column
D) Plastic column

40) The deflection of a Cantilever Beam of length L with a point load W at the free end is given by

A) $(WL^3) / (3 EI)$
B) $(WL^3) / (4 EI)$
C) $(WL^2) / (3 EI)$
D) $(WL^4) / (4 EI)$

41)



Find the degree of static indeterminacy, for a two dimensional truss (or frame) shown in the figure above.

A) 1
B) 2
C) 3
D) 4

42) Select the CORRECT relationship between net irrigation requirement and field irrigation requirement. (Here h_a = water application efficiency)

A) NIR=FIR /h_a
B) NIR=FIR +h_a
C) NIR=FIR - h_a
D) NIR=h_a x FIR

43) Find the delta for the crop if the duty is 300 hectare/cumec and base is 100 days.

A) 300 cm
B) 264 cm
C) 288 cm
D) 315 cm

44) The following are the consistency limits available for the soil, Liquid limit = 35%, Plastic limit=15%, Flow index =11, water content=32%. Find the Plasticity index, Consistency index and Toughness index respectively.

A) 22, 0.16, 2
B) 20, 0.15, 1.8
C) 25, 0.12, 2
D) 20, 0.13, 1.9

45) For a given section, how does the section modulus usually affect the strength of bending (stress)?

A) If section modulus is small, then stress will be more
B) Section modulus is independent of stress
C) Section modulus is inversely proportional to stress
D) Section modulus is always Zero for any given section

46) As per the theory of Simple bending, the value of the Young's Modulus of elasticity is:

A) Greater in tension than in compression
B) The same in tension and compression
C) Greater in compression than in tension
D) Always equal to unity in tension alone

47) What is the maximum daily water demand where 'Q' is Annual average daily demand?

A) 1.2 Q
B) 3.2 Q
C) 2.6 Q
D) 1.8 Q

48) Which of the following options is NOT a function of inspection galleries provided generally in a Dam?

A) To drain the water seeping through the dam body
B) Provides space for drilling and grouting for the foundation
C) Gives access to the interior part of dam for controlling or maintenance purpose
D) Excess amount of water from the dam is treated for disinfection here

49) Identify the CORRECT relationship, between the elastic constants of a material.

a) E = 2G(1+1/m)
b) E= 3K (1-1/m)
c) E= 2K(1-3/m)

where E= Young's Modulus, K= Bulk Modulus,G=Shear Modulus, 1/m= Poisson's Ratio

A) a only
B) c only
C) a and c
D) a and b

50) Identify the formula for Mach number used in Fluid Mechanics.

A) √(Inertia force / Surface tension force)
B) √(Inertia force / Elastic force)
C) √(Inertia force / Pressure force)
D) √(Inertia force / Gravity force)

51) What is the condition for stable equilibrium of a floating body?
(where, M is meta-centre, B is centre of buoyancy and G is centre of gravity)

A) M lies above G
B) M lies below G
C) M and G coincide
D) B lies below G

52) Which among the following does NOT consume any time/resources, in a network analysis of project management?

A) Activity
B) Slack
C) Dummy activity
D) Concurrent operations

53) What is the value of the ratio between maximum shear stress to average shear stress for a circular section?

A) 4/3
B) 1/8
C) 2/3
D) 5/5

54) What is the approximate modular ratio for M30 grade concrete? (given : σ_{cbc} = permissible compressive stress in concrete in bending = 10 N/mm², as per working stress method of IS 456:2000)

A) 3.9
B) 9.33
C) 5.22
D) 6.1

55) A circular member of area 100 mm² and length 1000 m is exerted by a force 5000 N. Find the change in length of the body if $E = 2\times10^5$ N/mm²?

A) 250 mm
B) 200 mm
C) 100 mm
D) 260 mm

56) What is the width of broad gauge (in mm) as per Indian railways?

A) 1575 mm
B) 1676 mm
C) 1366 mm
D) 1456 mm

57) The radius of the horizontal curve (R), for a design speed of (V) 100 kmph with the maximum values of (superelevation) e = 0.07 and (coefficient of friction) f = 0.15, can be calculated using which of thefollowing equations?

A) $e + f = \frac{V^3}{137\,R}$

B) $e + f = \frac{V^2}{127\,R}$

C) $e + f = \frac{V^2}{12\,R}$

D) $e + f = \frac{V^3}{127\,R}$

58) What is preferred when the width of kerb parking space and the width of kerb are limited?

A) Parallel parking
B) Straight parking
C) 30 degree angle parking
D) 45 degree angle parking

59) Which among the following is defined as the ratio of plasticity index to flow index?

A) Toughness index
B) Shrinkage ratio
C) Shrinkage limit
D) Consistency Index

60) The boundary between the carriage way and the shoulder or islands or footpaths of a pavement is known as

A) Kerb
B) Camber
C) Bus-bay
D) Right of Way

61) Read the following statements and choose the CORRECT option.

(i) The plate load test, is used to determine the bearing capacity and settlement of soil and may be carried out by either using a gravity loading or truss loading method.

(ii) As the width of the bearing plate used in the plate load test is very small compared with the actual foundation, it usually only provides an estimate of the bearing capacity up to a depth of twice the width of the bearing plate.

A) (i) is TRUE and (ii) is TRUE
B) (i) is TRUE and (ii) is FALSE
C) (i) is FALSE and (ii) is TRUE
D) (i) is FALSE and (ii) is FALSE

62) What is the horizontal distance between two successive contours called?

A) Contour interval
B) Horizontal equivalent
C) Contour gradient
D) Contour map

63) The distance between two points measured with 30 m chain was 300 m. It was afterwards found that the chain was 3 cm too long. What will be the true distance of the line between the points (in m)?

A) 299.7 m
B) 303 m
C) 297 m.
D) 300.3 m

64) As per IRC, if V is the speed of the vehicle in km/hr and R is the radius of the curve in meters, then the length of the transition curve for mountainous and steep terrains (hilly track) (for a two lane highway) should not be less than

A) V^2/R
B) $9.81V^2/R$
C) $3.6V^2/R$
D) V/R^2

65) Read the following statements and choose the CORRECT option with respect to the velocity potential function in the Kinematics of a fluid flow.

(i) If the velocity potential exists, the flow should be irrotational.

(ii) If the velocity potential satisfies the Laplace equation, it represents the possible steady incompressible irrotational flow.

A) (i) is TRUE and (ii) is TRUE
B) (i) is TRUE and (ii) is FALSE
C) (i) is FALSE and (ii) is TRUE
D) (i) is FALSE and (ii) is FALSE

66) Which of the following usually helps to enable the trafficability of rail?

A) Tongue rail
B) Lead rail
C) Turnout
D) Dog Spike

67) What flow is indicated by the Reynolds number greater than 4000?

A) Laminar
B) Transition
C) Turbulent
D) Uniform

68) When an individual footing accommodates two or more than two columns, it is usually called as

A) Combined footing
B) Isolated footing
C) Strap footing
D) Pile foundation

69) In hydrostatics, when the fluid is at rest and there is no relative motion between adjacent fluid layers, the velocity gradient will be

A) Unity
B) Maximum
C) Infinity
D) Zero

70) If the principal tensile stresses in a plane are 200 MPa and 50 MPa, what is the magnitude of maximum shear stress?

A) 70 MPa
B) 75 MPa
C) 60 MPa
D) 80 MPa

71) What is the ratio of longer dimension to shorter dimension in a one way slab?

A) equal or greater than 2
B) equal to 1
C) less than 2
D) less than 1.5

72) On a vertical plane surface submerged in liquid, the distance (d) of the centre of pressure from free surface of liquid is given by which formula among the following options?

(Given: d = Distance of the centre of pressure from free surface of liquid

I_G = Moment of Inertia of area about an axis passing through the C.G of the area and parallel to the free surface of liquid

A = Total area of the surface

h = Distance of C.G of the area from the free surface of liquid

p = Density of liquid)

A) $d = \frac{I_G}{Ah} + \rho$

B) $d = \frac{I_G}{Ah} + h$

C) $d = \frac{I_G}{A} + h$

D) $d = \frac{AI_G}{h} + h$

73) The distance between metacentre and centre of gravity of floating body is called as

A) Metacentric height
B) Buoyancy
C) Centre of pressure
D) Buoyant height

74) Select the CORRECT symbol used in soil mechanics as per standard codal procedures for well graded soil.

A) GM
B) GW
C) GC
D) SP

75) What will be the sensitivity of soil specimen if unconfined compressive strength in undisturbed mode is 280 g and on remoulding the unconfined compressive strength is 66 g?

A) 2.82
B) 5.93
C) 4.24
D) 6.52

76) For a standard 13 m rail, a sleeper density of M+4 would mean how many sleepers per rail length?

A) 9
B) 12
C) 13
D) 17

77) The transverse members of the track placed below the rails to support and fix them in position, are termed as

A) Sleepers
B) Ballast
C) Wagon
D) Bolt

78) The distance between the front bumper of leading vehicle and the front bumper of the following vehicle, is known as

A) Spacing
B) Traffic density
C) Sight distance
D) Traffic volume

79) In construction management, the increase in the direct cost to be spent on an activity in a day, is usually termed as:

A) Cost slope
B) Direct cost
C) Indirect cost
D) Crash cost

80) PERT is a project management technique that is mainly useful for tasks involving uncertainities. What is the full form of PERT?

A) Project Evaluation and Review Technique
B) Programme Evaluation and Review Technique
C) Programme Elevation and Review Technique
D) Programme Evaluation and Revise Technique

81) A revised estimate for a contruction project is usually prepared if the sanctioned estimate value exceeds

A) 1.5%
B) 2%
C) 3.5%
D) 5%

82) What is generally done to remove pathogenic bacteria in drinking water?

A) Sedimentation
B) Disinfection
C) Flocculation
D) Coagulation

83) Identify the CORRECT definition of clear span among the given options.

a) The distance between the two inside surfaces of the span supports for beams

b) The distance between top surface of a column to its centre of gravity

c) The distance between top flange to neutral axis of beams

A) Only a
B) Only b
C) Both a and b
D) Only c

84) What is the relationship between void ratio (e) and porosity (n)?

A) (1-n)= (1+e)
B) n/(1+e) = 0
C) e = (n+1)/n
D) e = n / (1-n)

85) Hazen proposed which of the following equations to determine whether a soil sample is uniformly graded or well graded? (Here C_u = Uniformity Coefficient and D = Diameter of the soil particle)

(Symbols and notations carry their usual meaning)

A) $C_u = D_{80} / D_{10}$
B) $C_u = D_{60} / D_{10}$
C) $C_u = D_{10} / D_{60}$
D) $C_u = D_{10} / D_{80}$

86) In Indian Railways, the standard length of rails recommended for Meter Gauge (MG) is

A) 12 m
B) 22 m
C) 32 m
D) 42 m

87) The net quantity of one bag of cement according to BIS standards is

A) 50 kg
B) 40 kg
C) 30 kg
D) 20 kg

88) Which path of the network analysis usually has zero slack time?

A) Critical path
B) Non critical path
C) Both critical and non-critical paths
D) Dummy Path

89) Which of the following satisfies the Laplace Equation?

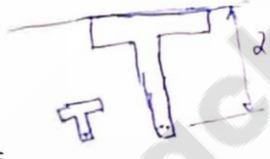
A) Stream function and Velocity Potential Function
B) Only Velocity Potential function
C) Only Stream function
D) Neither Stream function nor Velocity Potential function

90) A 50 cc of water passed through empty dry filter paper whose initial weight is 1.46 g and after oven drying the weight is 1.42 g. What will be the suspended solids?

A) 500 mg/l
B) 400 mg/l
C) 800 mg/l
D) 600 mg/l

91) Read the following statements and choose the CORRECT option.
(i) The effective depth of a T-Beam is the distance between the top of the flange and the centre of the tensile reinforcement.

(ii)For designing purposes, the overall depth of a simply supported T-Beam is usually assumed as 1/12 to 1/15 of the span.



A) (i) is TRUE and (ii) is TRUE
B) (i) is TRUE and (ii) is FALSE
C) (i) is FALSE and (ii) is TRUE
D) (i) is FALSE and (ii) is FALSE

92) For the design of cross drainage works, the waterway of the drain is determined using Lacey's equation given by: (Here: P is the wetted perimeter in meters and Q is the total discharge in cumecs.)

(Symbols and notations carry their usual meaning)

A) $P = 4.75Q^2$
B) $P = 1.5\sqrt{Q}$
C) $P = 1.5Q^2$
D) $P = 4.75\sqrt{Q}$

93) In which of the following conditions does the wetting of surface usually occur?

A) Adhesion < cohesion
B) Adhesion > cohesion
C) Adhesion = cohesion
D) Adhesive force = √(cohesive force)

94) An earthen dam is constructed on impermeable foundation, The coefficient of permeabilities of soil in horizontal and vertical direction are 5.2×10^{-9} m/s and 1.2×10^{-9} m/s. The water level on the reservoir side is 10 m from the base of the dam and number of flow channels is 4. The quantity of seepage per unit length in m^3/s can be found using which of the following formulas?

A) $Q = \mathrm{H}.\frac{N_f}{kN_d}$

B) $Q = \mathrm{k}.3\mathrm{H}.\frac{N_d}{N_{df}}$

C) $Q = \mathrm{k}.\mathrm{H}.\frac{N_f}{N_d}$

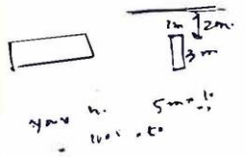
D) $Q = \mathrm{k}.\frac{N_f}{HN_d}$

95) Which of the following statements is INCORRECT with respect to the calculation of LST (Latest Start Time) for the activities involved in a network diagram?

A) At the end event LST is equal to Zero
B) The calculation of LST starts from end event
C) The computations are done through backward pass method
D) The computations of LST usually proceeds right to left

96) A rectangular plane surface that lies in a vertical plane in water is 2 m wide and 3 m deep. Find the Total pressure if the upper edge is horizontal and 2 m below the free water surface.

A) 106.01 kN
B) 406.01 kN
C) 206.01 kN
D) 306.01 kN



97) What are the indicators used for measuring acidity in general?

A) Methyl orange and phenolphthalein
B) Potash alum and baking soda
C) Ammonium sulphate and sulphuric acid
D) Magnesium dioxide and nitrous oxide

98) Which of the following is an event oriented statistical tool used in project management?

A) PERT
B) CPM
C) RAM
D) ROM

99) If the moment of resistance obtained from the compressive force is equal to moment of resistance obtained from the tensile force, then the R.C.C beam section will be a

A) Balanced Section
B) Prestressed Section
C) Under Reinforced Section
D) Over Reinforced Section

100) Find the relationship between degree of mixing and degree of turbulence in coagulation process.

A) Degree of mixing is equal to degree of turbulence
B) Degree of mixing is directly proportional to degree of turbulence
C) Degree of mixing is inversely proportional to degree of turbulence
D) Degree of mixing is not proportional to degree of turbulence

101) According to IS:456-2000, in a R.C.C slab the diameter of reinforcing bars should NOT exceed

A) one half of the total thickness of the slab
B) one fourth of the total thickness of the slab
C) one eighth of the total thickness of the slab
D) one sixteenth of the total thickness of the slab

102) What is the term used in railway engineering for the layout of two crossovers that are superimposed enabling movements from either direction?

A) Scissors Crossover
B) Turnout
C) Point Crossover
D) Switches

103) The Moment of Inertia of a rectangular section having width b and depth d, about a line passing through the base is

A) $bd^3 / 24$
B) $bd^3 / 3$
C) $bd^3 / 8$
D) $bd^3 / 5$

104) The height of the eye level of the driver from the road surface as per IRC recommendations is taken as

A) 5.5 m
B) 3.2 m
C) 1.2 m
D) 0.2 m

105) Which among the following, is the longest sequence of activities that must be finished on time in order for the entire project to be complete?

A) Dummy Path
B) Event
C) Critical Path
D) Non Critical Path

106) A neutral solution with pH value as 7, will have hydrogen ion concentration (in moles per litre), equal to

A) 10^{-5}
B) 10^{-7}
C) 10^{-6}
D) 10^{-9}

107) Which irrigation projects should usually have cultivable command area of more than 10,000 ha out of which 2000 ha utilises surface water resources?

A) Major
B) Medium
C) Minor
D) Ground

108) The tension or flexure cracks in a R.C.C beam usually develop in which of the following ways?

A) In circular patterns
B) In a vertical direction
C) In a horizontal straight line for half the length of the beam
D) Initially in a horizontal straight line and then inclined towards the top of the beam

109) There are few sight distances considered in the geometric design of pavements for safety purposes to avoid any accidents. In this regard, the equation

$$vt + \frac{v^2}{2gf}$$

refers to which of the following options?

Given Data: v is the design speed in m / sec^2, t is the reaction time in sec, g is the acceleration due to gravity andf is the coefficient of friction.)

(Symbols and notations carry their usual meaning)

A) Intermediate Sight Distance
B) Overtaking Sight Distance
C) Stopping Sight Distance
D) Head light Sight Distance

110) As per IS:456-2000, a simply supported beam shall be considered as a deep beam if the ratio of its effective span to overall depth is less than

A) 1.5
B) 2
C) 2.5
D) 3

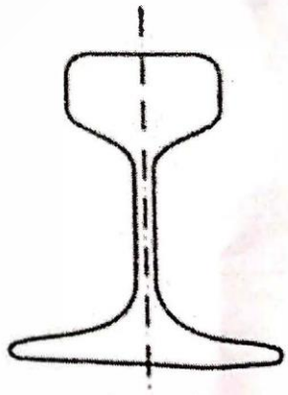
111) Which of the following refers to the number of vehicles passing at some given point in highway in a given time interval?

A) Traffic flow
B) Density
C) Traffic concentration
D) Speed flow

112) Which of the following shapes of camber is usually preferred for cement concrete pavements?

A) Straight line camber
B) Parabolic camber
C) Elliptic camber
D) Combination of straight and parabolic

113)



The above given image indicates what type of rail section among the following options?

A) Double Headed Rail Section
B) Flat Footed Rail Section
C) Bull- Headed Rail Section
D) Strong- Headed Rail Section

114) What is defined as the ratio of weight of water to weight of solids in a given mass of soil (in percentage)?

A) Water content
B) Void ratio
C) Specific gravity
D) Density

115) The efficiency of a sedimentation tank (in percentage) is calculated using which of the following formulas?

A) (Settling velocity x Overflow velocity) x 100
B) (Settling velocity / Overflow velocity) x 100
C) (Settling velocity - Overflow velocity) x 100
D) (Settling velocity + Overflow velocity) x 100

116) What is the amount of time that a task can be delayed without affecting the subsequent tasks?

A) Part Float
B) Node Point
C) Free Float
D) Total float

117) What is the slope of borders in border irrigation method?

A) 0.05-2%
B) 4-5%
C) 5-10%
D) 15-20%

118) What are the small diameter pipes filled with outlets in drip irrigation methods called?

A) Emitters
B) Conveyors
C) Sprinklers
D) Barrage

119) Generally in R.C.C sections the development length of bars is given by which of the following expressions as per IS standards?

(Here: σ_s = Stress in the bar at the section considered at design load, Φ = Nominal diameter of the bar, τ_{bd} = Design bond stress , L_d = Development length of bars)

A) $L_d = \frac{\Phi \sigma_s}{2\tau_{bd}}$
B) $L_d = \frac{\Phi \sigma_s}{4\tau_{bd}}$
C) $L_d = \frac{\tau_{bd}\sigma_s}{5\Phi}$
D) $L_d = \frac{\tau_{bd}\sigma_s}{7\Phi}$

120) In the design of canals, the ratio of rate of change of discharge in the outlet to the rate of change of water level in the distributary channel is termed as:

A) Drowning ratio
B) Efficiency
C) Setting
D) Sensitivity

Annexure "A"					
Post Name - Jr Engineer Civil					
Set_No	Quest_No	Answer Key	Set_No	Quest_No	Answer Key
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Annexure "B"					
Post Name - Assistant Law officer, Legal Assistant, Junior Legal Assistant, and Reader,					
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