ACF

Civil Engineering

कोड / Code : **OP11**

पुस्तिका में पृष्ठों की संख्या /
Number of Pages in Booklet : 32

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Civil Engineering
OP
11
विषय कोड | A | बुकलेट सीरीज

पुस्तिका में प्रश्नों की संख्या /
Number of Questions in Booklet : 200

समय / Time : 3 घंटे / Hours   पूर्णांक / Maximum Marks : 100

INSTRUCTIONS	निर्देश
1. Answer all questions.	1. सभी प्रश्नों के उत्तर दीजिए ।
2. All questions carry equal marks.	2. सभी प्रश्नों के अंक समान हैं ।
3. Only one answer is to be given for each question.	3. प्रत्येक प्रश्न का केवल एक ही उत्तर दीजिए।
4. If more than one answers are marked, it would be treated as wrong answer.	4. एक से अधिक उत्तर देने की दशा में प्रश्न के उत्तर को गलत माना जाएगा ।
5. Each question has four alternative responses marked serially as 1, 2, 3, 4. You have to darken only one circle or bubble indicating the correct answer on the Answer Sheet using **BLUE BALL POINT PEN**.	5. प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं, जिन्हें क्रमशः 1, 2, 3, 4 अंकित किया गया है। अभ्यर्थी को सही उत्तर निर्दिष्ट करते हुए उनमें से केवल एक गोले अथवा बबल को उत्तर-पत्रक पर नीले बॉल प्वाइंट पेन से गहरा करना है ।
6. 1/3 part of the mark(s) of each question will be deducted for each wrong answer. (A wrong answer means an incorrect answer or more than one answers for any question. Leaving all the relevant circles or bubbles of any question blank will not be considered as wrong answer.)	6. प्रत्येक गलत उत्तर के लिए प्रश्न अंक का **1/3** भाग काटा जायेगा। गलत उत्तर से तात्पर्य अशुद्ध उत्तर अथवा किसी भी प्रश्न के एक से अधिक उत्तर से है । किसी भी प्रश्न से संबंधित गोले या बबल को खाली छोड़ना गलत उत्तर नहीं माना जायेगा।
7. The candidate should ensure that Series Code of the Question Paper Booklet and Answer Sheet must be same after opening the envelopes. In case they are different, a candidate must obtain another Question Paper of the same series. Candidate himself shall be responsible for ensuring this.	7. प्रश्न-पत्र पुस्तिका एवं उत्तर पत्रक के लिफाफे की सील खोलने पर परीक्षार्थी यह सुनिश्चित कर लें कि उसके प्रश्न-पत्र पुस्तिका पर वही सीरीज अंकित है जो उत्तर पत्रक पर अंकित है। इसमें कोई भिन्नता हो तो वीक्षक से प्रश्न-पत्र की ही सीरीज वाला दूसरा प्रश्न-पत्र का लिफाफा प्राप्त कर लें। ऐसा न करने पर जिम्मेदारी अभ्यर्थी की होगी।
8. Mobile Phone or any other electronic gadget in the examination hall is strictly prohibited. A candidate found with any of such objectionable material with him/her will be strictly dealt as per rules.	8. मोबाईल फोन अथवा इलेक्ट्रॉनिक यंत्र का परीक्षा हॉल में प्रयोग पूर्णतया वर्जित है। यदि किसी अभ्यर्थी के पास ऐसी कोई वर्जित सामग्री मिलती है तो उसके विरुद्ध आयोग द्वारा नियमानुसार कार्यवाही की जायेगी।
9. Please correctly fill your Roll Number in O.M.R. Sheet. 5 marks will be deducted for filling wrong or incomplete Roll Number.	9. कृपया अपना रोल नम्बर-ओ.एम.आर. पत्रक पर सावधानी पूर्वक सही भरें। गलत अथवा अपूर्ण रोल नम्बर भरने पर 5 अंक कुल प्राप्तांकों में से अनिवार्य रूप से काटे जाएंगे।
Warning : If a candidate is found copying or if any unauthorised material is found in his/her possession, F.I.R. would be lodged against him/her in the Police Station and he/she would liable to be prosecuted under Section 3 of the R.P.E. (Prevention of Unfairmeans) Act, 1992. Commission may also debar him/her permanently from all future examinations of the Commission.	चेतावनी : अगर कोई अभ्यर्थी नकल करते पकड़ा जाता है या उसके पास से कोई अनधिकृत सामग्री पाई जाती है, तो उस अभ्यर्थी के विरुद्ध पुलिस में प्राथमिकी दर्ज कराई जायेगी और आर. पी. ई. (अनुचित साधनों की रोकथाम) अधिनियम, 1992 के नियम 3 के तहत कार्यवाही की जायेगी। साथ ही आयोग ऐसे अभ्यर्थी को भविष्य में होने वाली आयोग की समस्त परीक्षाओं से विवर्जित कर सकता है।

1   A survey is conducted with a view to prepare the map of an area to a
    scale of 1:1000. If a scale with least count of 0.1 mm is used for plotting,
    what would be the accuracy in length measurement in the field?
    (1)   0.325 m
    (2)   0.01 m
    (3)   0.1 m
    (4)   1 m

2   Which of the following instruments is generally used for base line
    measurements?
    (1)   Chain
    (2)   Metallic tape
    (3)   Steel tape
    (4)   Invar tape

3   A metallic tape is of
    (1)   Steel
    (2)   Invar
    (3)   Linen
    (4)   Cloth and wires

4   For a well-conditioned triangle, one angle should be less than
    (1)   20°
    (2)   30°
    (3)   45°
    (4)   60°

5   The position of a point can be fixed more accurately by
    (1)   Cross staff
    (2)   Optical square
    (3)   Oblique offsets
    (4)   Perpendicular offsets

6   Cross staff is an instrument used for
    (1)   Measuring approximate horizontal angles
    (2)   Setting out right angles
    (3)   Measuring bearings of the line
    (4)   None of the above

7   If the quadrantal bearing of a line is N 25° W, the whole circle bearing
     of the line is
     (1) S 25° E
     (2) 205°
     (3) 335°
     (4) 295°

8   The following sights are taken on a "turning point"
     (1) Fore sight only
     (2) Back sight only
     (3) Fore sight and back sight
     (4) Fore sight and intermediate sight

9   Dumpy level is most suitable when
     (1) The instrument is to be shifted frequently
     (2) Fly levelling is being done over long distance
     (3) Many readings are to be taken from a single setting of the instrument
     (4) All of the above

10   The line joining the points having the same elevation
     (1) Contour surface
     (2) Contour line
     (3) Contour interval
     (4) Contour gradient

11   The main principle of surveying is to work from
     (1) The part to whole
     (2) The whole to part
     (3) Higher to lower level
     (4) Lower to higher level

12   In plain surveying
     (1) The curvature of the earth is taken into consideration
     (2) The curvature of the earth is not taken into consideration
     (3) The survey extends over small areas
     (4) The survey extend over large areas

13   The curvature and refraction corrections in the levelling are .... to
     the observed   reading.
     (1) Both additive
     (2) Both subtractive
     (3) Subtractive and additive respectively
     (4) Additive and subtractive respectively

14   Sampling is the process of determining the quality of
      (1)   Small part from a large group
      (2)   Large group from a small part
      (3)   Small group at random
      (4)   Small group from a small part

15   In big construction projects, the percentage cost of construction equipment in terms of the total project cost is about
      (1)   15-30%
      (2)   10-20%
      (3)   5-10%
      (4)   45-50%

16   One of the main disadvantages of the bar chart for construction management is
      (1)   The time schedule is not shown properly
      (2)   Progress of the work cannot be monitored
      (3)   The financial aspect is not shown
      (4)   Does not show the interdependencies of the activity

17   The security deposit is
      (1)   Refunded as soon as the construction is over
      (2)   Not refunded
      (3)   Refunded in the middle of the contract
      (4)   Refunded after maintenance period

18   Fly ash is residue generated from
      (1)   Chemical Industries
      (2)   Hydel power plants
      (3)   Nuclear power plants
      (4)   Thermal power plants

19   Maximum pitch in any staircase is
      (1) 25^0
      (2) 35^0
      (3) 40^0
      (4) 45^0

20   The advantage of concrete pile over a timber pile is
      (1)   No decay due to termites
      (2)   No restriction on length
      (3)   Higher bearing capacity
      (4)   All the above

21 Which of the following is the purest form of iron?
(1) Cast iron
(2) Wrought iron
(3) Mild iron
(4) High carbon iron

22 Critical path method (CPM) network is
(1) Activity oriented
(2) Event oriented
(3) Both activity as well as event oriented
(4) None of these

23 The longitudinal shearing stresses acting on the surface between the steel and concrete are called
(1) Bond stresses
(2) Tensile stresses
(3) Compressive stresses
(4) None of these

24 The live load on flat roof (in dwellings) where access is provided is generally taken to be............... N/m^2
(1) 1500
(2) 200
(3) 150
(4) 2000

25 The minimum longitudinal reinforcement in a column is provided as a percentage of gross–sectional area of the column. This percentage is
(1) 0.6
(2) 0.8
(3) 1.0
(4) None of these

26 The diameter of lateral ties in a column is taken as
(1) 1/4 diameter of the largest longitudinal bar
(2) 6mm
(3) Greater of (1) and (2)
(4) None of these

27 The maximum permissible slenderness ratio of tension members liable to reversal of stress due to action of wind and earthquake is
(1) 300
(2) 350
(3) 400
(4) 425

28 In a slab, the minimum mild steel reinforcement provided, is
   (1) 0.12% of its gross sectional area
   (2) 0.15% of its gross sectional area
   (3) 0.10% of its gross sectional area
   (4) None of the above

29 The effective length of a compression members which is effectively held in position at both ends but not restrained in direction is
   (1) L
   (2) 0.85 L
   (3) 1.2 L
   (4) 1.5 L

30 The maximum deflection for a steel beam as per IS code should not exceed
   (1) 1/150 of span
   (2) 1/250 of span
   (3) 1/325 of span
   (4) 1/350 of span

31 In reinforced concrete pedestal is defined as compression member whose effective length does not exceed its lateral dimension by
   (1) 12 times
   (2) 3 times
   (3) 16 times
   (4) 8 times

32 Modulus of rupture of concrete is a measure of........
   (1) Flexural tensile strength
   (2) Direct tensile strength
   (3) Compressive strength
   (4) Spilt tensile strength

33 Individual variation between test strength of sample should not be more than.....
   (1) ± 5% of the average
   (2) ± 10% of the average
   (3) ± 15% of the average
   (4) ± 20% of the average

34 If nominal shear stress τ_v exceeds the design shear strength of concrete τ_c, the nomial shear reinforcement as per IS : 456- 2000 shall be provided for a shear stress equal to
   (1) τ_v
   (2) τ_c
   (3) $\tau_v - \tau_c$
   (4) $\tau_v + \tau_c$

35   In T-Shaped RC retaining walls, the main reinforcement in the stem is
      provided on
      (1)   the front face in one direction
      (2)   the front face in both   direction
      (3)   the inner face in one direction
      (4)   the inner face in both   direction

36   The average shear stress in a member calculated on the cross section of
      unstiffened web shall not exceed:
      (1)   0.45 f_y
      (2)   0.40 f_y
      (3)   0.65 f_y
      (4)   0.66 f_y

37   The permissible bending stress in the slab base of steel column for all
      grades of steel is limited to
      (1)   165 N/mm^2
      (2)   175 N/mm^2
      (3)   185 N/mm^2
      (4)   200 N/mm^2

38   Whenever the earthquake or wind loading is considered in design of a
      member, the permissible stresses may be increased by
      (1)   25%
      (2)   30%
      (3)   33.33%
      (4)   35%

39   When width b, effective depth d, overall depth D, the maximum area of
      reinforcement in RCC beam shall not exceed
      (1)   0.04 bd
      (2)   0.04 bD
      (3)   0.05 bd
      (4)   0.05 bD

40   For vertical stirrups, the maximum spacing of shear reinforcement measured
      along the axis of the members shall not exceed
      (1)   0.70 d
      (2)   0.75 d
      (3)   0.80 d
      (4)   0.90 d

41 For a short column, the ratio of effective length of the column to its least lateral dimension should not exceed
(1) 11
(2) 12
(3) 15
(4) 18

42 In Limit State Method of design of RCC flexural members, the centre of gravity of the compressive forces acting on the section from the topmost fibre of concrete is at a distance of..........
(1) 0.57 of the depth of neutral axis
(2) 0.36 of the depth of neutral axis
(3) 0.42 of the depth of neutral axis
(4) None of these

43 Combined footing may be
(1) Rectangular and circular
(2) Trapezoidal and circular
(3) Rectangular and trapezoidal
(4) All of above

44 In the limit state design of concrete section the limiting value of the depth of the neutral axis $X_{u(max)}/d$ for steel grade Fe 415 is
(1) 0.53
(2) 0.48
(3) 0.46
(4) 0.42

45 The following soil is good for making bricks
(1) Black Cotton
(2) Silty
(3) Alluvial
(4) Sand and silt

46 The percentage of perforation in solid bricks is about
(1) 5
(2) 10
(3) 15
(4) 20

47 The tolerance in the width of mould of a class I brick is about
(1) ± 3 mm
(2) ± 6mm
(3) ± 10 mm
(4) ± 12 mm

48 Good quality stones for buildings should not absorb water in 24 hours
    (1) 5%
    (2) 10%
    (3) 7.5%
    (4) 12.5%

49 Marble is a
    (1) Igneous rock
    (2) Sedimentary rock
    (3) Metamorphic rock
    (4) Granite rock

50 The stone suitable for rubble masonry should be
    (1) hard
    (2) tough
    (3) heavy
    (4) light

51 The sand is mixed with lime mortar to
    (1) Reduce cost
    (2) Reduce setting time
    (3) Improve strength
    (4) Prevent shrinkage and cracking

52 The commonly used lime in white washing is
    (1) Hydraulic lime
    (2) Fat lime
    (3) Plain lime
    (4) White lime

53 A horizontal layer of brick laid mortar is known as
    (1) Course
    (2) Stretcher
    (3) Header
    (4) Closer

54 A type of bond in a brick masonry consisting of alternate course of headers and stretchers, is called
    (1) English bond
    (2) Flemish bond
    (3) Stretching bond
    (4) Heading bond

55 The mortar joint in masonry which is normal to the face of wall is known as.........
(1) bed joint
(2) wall joint
(3) cross joint
(4) bonded joint

56 The type of bond provided in brick masonry for carrying heavy loads is
(1) single Flemish bond
(2) double Flemish bond
(3) English bond
(4) zigzag bond

57 The stone masonry at a higher level should be completed with:
(1) Shoring
(2) Under pinning
(3) Single scaffolding
(4) Double scaffolding

58 For a typical staircase, the multiplication of Rise and Tread (in mm) should be generally:
(1) 300 mm to 350 mm
(2) 400 to 450 mm
(3) 375 mm to 400 mm
(4) 450 mm to 500 mm

59 A king post truss is suitable for span roofs of spans varying between .....
(1) 3.5 m to 5.0 m
(2) 5 m to 8 m
(3) 8 m to 10 m
(4) None of these

60 The grooved cement pointing is applied over the stone masonry
(1) To increase strength of stone masonry
(2) To increase appearance of masonry
(3) To increase imperviousness
(4) None of these

61 The slenderness ratio for masonry walls should not be more than
(1) 10
(2) 20
(3) 30
(4) 40

62 The stretcher bond in brick masonry can be used only when the thickness of wall is
    (1) 90mm
    (2) 180mm
    (3) 190mm
    (4) 280mm

63 Nominal mix M20 concrete represent ingredients ratio as
    (1) 1:3:6
    (2) 1:2:4
    (3) 1:1.5:3
    (4) 1:1:2

64 The strength and durability of concrete depends upon
    (1) Size of aggregate
    (2) Grading of aggregates
    (3) Moisture contents of aggregates
    (4) All of these

65 Bulking of sand is
    (1) Compaction of sand
    (2) Segregating sand of particular size
    (3) Increase in volume of sand due to presence of moisture upto certain extent
    (4) Type of sand

66 The admixtures are added to concrete to
    (1) Accelerate the rate of setting and hardening of concrete
    (2) Make the concrete water proof, acid proof etc.
    (3) Reduce the bleeding and segregation of concrete mix
    (4) All of above

67 Vicats apparatus is used to perform the test of
    (1) Fineness
    (2) Consistency
    (3) Soundness
    (4) Compressive strength

68 The bulk density of aggregates depends upon its
    (1) Shape
    (2) Grading
    (3) Compaction
    (4) All of these

69 The two main compounds of Ordinary Portland cement are
(1) Tricalcium silicate and dicalcium silicate
(2) Dicalcium silicate and aluminates
(3) Tricalcium aluminates and silicate
(4) Tricalcium silicate and tricalcium aluminates

70 The development of strength of cement and its fineness are related as
(1) Inversely proportional
(2) Directly proportional
(3) Not related
(4) Randomly connected

71 Rapid hardening cement can be obtained by
(1) Fine grinding of clinker
(2) Addition of gypsum
(3) Addition of calcium sulphate
(4) Higher content of time

72 The addition of pozzolona to Portland cement may cause
(1) Decrease in early strength
(2) Increase in early strength
(3) Decrease in curing time
(4) Increase in permeability

73 An air-entraining agent when added to concrete improves
(1) Strength of concrete
(2) Workability concrete
(3) Density of cement
(4) Durability of concrete

74 The workability of concrete can be improved by:
(1) Increasing the size of aggregate
(2) Decreasing of aggregate content
(3) Increasing the fine aggregate content
(4) Increasing the flaky aggregate content

75 The strength of concrete is directly proportional
(1) Water cement ratio
(2) Cement water ratio
(3) Sand cement ratio
(4) Water aggregate ratio

76 For the purpose of determining the seismic forces, India is divided into..............zones.
(1) 4
(2) 5
(3) 6
(4) 7

77 The yield stress of mild steel of normally rolled structural steel is about (in N/mm^2)
(1) 240 to 260
(2) 330 to 360
(3) 420
(4) 550

78 The members which support covering material of a sloping roof, are
(1) Rafters
(2) Purlins
(3) Battens
(4) Struts

79 The gross diameter of a rivet is the diameter of
(1) Cold rivet measured before driving
(2) Rivet measured after driving
(3) Rivet hole
(4) None the above

80 Generally the purlins are place at the panel so as to avoid
(1) Axial force in rafter
(2) Shear force in rafter
(3) Deflection of rafter
(4) Bending moment in rafter

81 The vertical retaining wall of the R.C.C. Counterfort is designed as a ....
(1) Cantilever
(2) Simply Supported slab
(3) Continuous slab
(4) none of these

82 The effective length of fillet weld should not be less than
(1) Two times weld size
(2) Four times weld size
(3) Six times weld size
(4) Weld size

83   Which of the following types of the riveted joint is free from bending stress
      (1)   Lap joint
      (2)   Butt joint with single cover plate
      (3)   Butt joint with double cover plate
      (4)   None of the above

84   Select the correct statement :
      (1)   Material cost of rivet is higher than of a bolt
      (2)   Tensile strength of a bolt is less than that of a rivet
      (3)   Bolts are used as a temporary fastenings where as rivets are used
            as permanent fastenings
      (4)   Riveting is less noisy than bolting

85   The basic wind speed is specified at height 'h ' above mean ground level
      in open terrain,   the value of 'h' is..........
      (1)   10m
      (2)   20m
      (3)   25m
      (4)   50m

86   To minimize the total cost of a roof truss, the ratio of the cost of truss
      to the cost of purlin shall be
      (1)   1
      (2)   2
      (3)   3
      (4)   4

87   Gantry girders are designed to resist
      (1)   Lateral loads
      (2)   longitudinal   loads and vertical loads
      (3)   Lateral, longitudinal and vertical loads
      (4)   Lateral and   longitudinal loads

88   A portion of a beam between two sections is said to be in pure bending
      when there is....
      (1)   Constant bending moment and zero shear force
      (2)   Constant shears force and zero bending moment
      (3)   Constant bending moment and constant shear force
      (4)   None of the above

89   If a material has identical elastic properties in all directions it is said to
      be........
      (1)   Homogenous
      (2)   Isotropic
      (3)   Elastic
      (4)   Orthotropic

90   If a composite bar of steel and copper is heated, the copper bar will be under.....
     (1)   Tension
     (2)   Compression
     (3)   Shear
     (4)   Torsion

91   Maximum bending moment in a beam occurs where......
     (1)   Deflection is zero
     (2)   Shear force is maximum
     (3)   Shear force is minimum
     (4)   Shear force changes sign

92   Slope at the end of a simply supported beam span L with uniformly distributed load W unit/length over the entire span is given by
     (1) $(WL^3/3EI)$
     (2) $(WL^3/16EI)$
     (3) $(WL^3/24EI)$
     (4) $(WL^2/24EI)$
     where EI flexural rigidity

93   A simply supported beam with rectangular cross-section is subjected to a central concentrated load. If the width and depth of beam is doubled, the deflection at centre of the beam will be reduced to ....
     (1)   50%
     (2)   25%
     (3)   12.5%
     (4)   6.25%

94   When the axis of axis load lies in the plane of rivet group, the rivets are subjected to
     (1)   Only shear stresses
     (2)   Only tensile stresses
     (3)   Both, (1) and (2)
     (4)   None of the above

95   When the bolts are subjected to reversal of stresses, the most suitable type of bolt is
     (1)   Black bolt
     (2)   Ordinary unfinished bolt
     (3)   Turned & fitted bolt
     (4)   High strength bolt

96 The maximum bending moment (M) caused by a concentrated load (W) at the mid span of a simply supported beam is
   (1) $M = (WL/2)$
   (2) $M = (WL/8)$
   (3) $M = (WL/4)$
   (4) $M = (WL/12)$

97 The variation of the bending moment in the segment of a beam where the load is uniformly distributed is
   (1) Zero
   (2) Linear
   (3) Parabolic
   (4) Cubic

98 The middle third rule in the stability analysis of retaining walls ensures the condition of no.....
   (1) Overturning
   (2) Tension
   (3) Compression
   (4) Crushing

99 The shear stress on a beam section is maximum
   (1) At the centroid of the section
   (2) On the extreme free surface fibres
   (3) At the free edges
   (4) At the neutral axis but not at the centroid of the section

100 The maximum tensile stress in a cantilever beam with concentrated load acting downwards on the span is caused at
   (1) Top fibre at mid span
   (2) Bottom fibre at mid span
   (3) Bottom fibre at support
   (4) Top fibre at support

101 The shear force and bending moment is zero at the free end of a cantilever beam, if it carries
   (1) Point load at the free end.
   (2) Point load at the middle of its length.
   (3) Uniformly distributed load over the whole length.
   (4) None of the above

102 Principal plane is defined as a plane on which the shear stress is ....
   (1) Maximum
   (2) Half of the normal
   (3) Zero
   (4) None of these

103 Poisson's ratio is a involving ....
   (1) Elastic Modulii
   (2) Stresses
   (3) Strains
   (4) none of these

104 The necessary condition for equilibrium of body is
   (1) $\Sigma H = 0$
   (2) $\Sigma V = 0$
   (3) $\Sigma M = 0$
   (4) All of the above

105 Every material obeys the Hooks law within its
   (1) Elastic limit
   (2) Plastic limit
   (3) Limit of proportionality
   (4) None of the above

106 A soil has a bulk density of 22 kN/mm^2 water content 10% .The dry density of soil is
   (1) 18.6 kN/mm^2
   (2) 20 kN/mm^2
   (3) 22 kN/mm^2
   (4) 23.2 kN/mm^2

107 Relative density of compacted dense sand is approximately equal to
   (1) 0.4
   (2) 0.6
   (3) 0.95
   (4) 1.2

108 Which of the following methods is most accurate for the determination of the water content of a soil sample?
   (1) Oven drying method
   (2) Sand bath method
   (3) Alcohol method
   (4) Calcium carbide method

109 Which of the following is a measure of particle size range
   (1) Effective size
   (2) Uniformity coefficient
   (3) Coefficient of curvature
   (4) None of the above

110 A pycnometer is used to determine
   (1) Water content
   (2) Specific gravity
   (3) Both (1) and (2)
   (4) None of these

111 At liquid limit, all soil have
   (1) Same shear strength of small magnitude
   (2) Same shear strength of large magnitude
   (3) Different shear strength of small magnitude
   (4) Different shear strength of large magnitude

112 According to IS classification, the range of silt size particle
   (1) 4.75 mm to 2.00 mm
   (2) 2.00 mm to 0.425 mm
   (3) 0.425 mm to 0.075 mm
   (4) 0.075 mm to 0.002 mm

113 The failure of foundation of a building is due to
   (1) Withdrawal of subsoil moisture
   (2) Unequal settlement of soil
   (3) Lateral escape of supporting material
   (4) All of these

114 A black cotton soil is unsuitable for foundation because if
   (1) Undergoes volumetric changes with change of atmospheric conditions
   (2) Swells excessively when wet
   (3) Shrinks excessively when dry
   (4) All of the above

115 The ratio of the volume of voids to the total volume of soil mass is called.
   (1) Water content ratio
   (2) Porosity
   (3) Void ratio
   (4) Degree of saturation

116 The lowest part of a structure which transmits the load to the soil is known as
   (1) Super structure
   (2) Plinth
   (3) Foundation
   (4) Basement

117 The most suitable methods for drainage of fine grained cohesive soils is:
   (1) Well point system
   (2) Vacuum method
   (3) Deep well system
   (4) Electro osmosis methods

118 The effect of cohesion on a soil is to
   (1) Reduce both the active earth pressure intensity and passive earth pressure intensity
   (2) Increase both the active earth pressure intensity and passive earth pressure intensity
   (3) Reduce the active earth pressure intensity but to increase passive earth pressure intensity
   (4) Increase the active earth pressure intensity but to reduce passive earth pressure intensity

119 Lime stabilisation is very effective in treating
   (1) Sandy soils
   (2) Silty soils
   (3) Non-plastic soils
   (4) Plastic clayey soils

120 A soil having particles of nearly the same size is known as
   (1) Well graded
   (2) Uniformly graded
   (3) Poorly graded
   (4) Gap graded

121 While designing the pile as a column, the end conditions are nearly
   (1) both ends hinged
   (2) both ends fixed
   (3) one ends fixed and other end hinged
   (4) one ends fixed and other end free

122 During erection the pile of length "l" is supported by a crane at a distance of
   (1) 0.207 l
   (2) 0.293 l
   (3) 0.707 l
   (4) 0.793 l

123 The differential settlement in case of foundation on sandy soils should not exceed
   (1) 25mm
   (2) 40mm
   (3) 65 mm
   (4) 100mm

124 Silt is fine grained soil with .... plasticity.
(1) Little
(2) Medium
(3) Substantial
(4) High

125 An ideal fluid is
(1) One which obeys Newton's law of viscosity
(2) Frictionless and incompressible
(3) Very viscous
(4) Frictionless and compressible

126 Surface tension of water
(1) Increase with decrease in temperature
(2) Decrease with decrease in temperature
(3) Is independent of temperature
(4) None of these

127 An artesian aquifer is the one where
(1) Water surface under the ground is at atmospheric pressure
(2) Water is under pressure between two impervious strata
(3) Water table serves as upper surface of zone of saturation
(4) None of the above

128 Water logging is caused due to
(1) Inadequate drainage facilities
(2) Over irrigation
(3) Presence of impermeable strata
(4) All of these

129 Lining of a canal is necessary
(1) To minimize the seepage losses is canal
(2) To prevent erosion of bed and sides due to high velocities
(3) To increase the discharge is canal section by increasing the velocity
(4) All of the above .

130 Irrigation canals are generally aligned along
(1) Ridge line
(2) Contour line
(3) Valley line
(4) Straight line

131 The shoulder provided along the road edge should be
    (1) Rougher than the traffic lanes
    (2) Smoother than the traffic lanes
    (3) Of same colour as that of the pavement
    (4) Of very low load bearing capacity

132 The terrain may be classified as rolling terrain if the cross- slope of land is
    (1) Upto 10%
    (2) Between 10% and 25%
    (3) Between 25% and 60%
    (4) More than 60%

133 A water bound macadam road is an example of
    (1) Rigid pavement
    (2) Semi rigid pavement
    (3) Flexible pavement
    (4) none of these

134 A camber on a pavement, is provided by,
    (1) Straight line method
    (2) Parabolic method
    (3) Straight & Parabolic at crown
    (4) All of these

135 The pavement width of a road depends upon
    (1) Area through which road passes
    (2) Type of traffic
    (3) Number of lanes
    (4) All of the above

136 The transition curve used in the horizontal aliment of highways as per IRC recommendation is
    (1) Spiral
    (2) Lemniscates
    (3) Cubic parabola
    (4) Any of the above

137 The provision of traffic signals at inter-sections
    (1) Reduces right angled and rear end collisions
    (2) Increases right angled and rear end collisions
    (3) Reduces right angled collision but may increase rear end collision
    (4) Reduces ear end collisions but may increase right angled collisions

138 Bitumen of grade 80/100 means
   (1) Its penetration value is 8 mm
   (2) Its penetration value is 10 mm
   (3) Its penetration value is 8 to 10 mm
   (4) Its penetration value is 80 to 100 mm

139 The method of design of flexible pavement as recommended by IRC is
   (1) Group index method
   (2) CBR method
   (3) Westergaard method
   (4) Benkelman beam method

140 The distribution mains are designed for
   (1) Maximum daily demand
   (2) Maximum hourly demand
   (3) Average daily demand
   (4) Maximum hourly demand on maximum day

141 Ground water is usually free from
   (1) Suspended impurities
   (2) Dissolved impurities
   (3) Both suspended and dissolved impurities
   (4) None of the above

142 The most common cause of acidity in water is
   (1) Carbon dioxide
   (2) Oxygen
   (3) Hydrogen
   (4) Nitrogen

143 Residual chlorine in water is determined by
   (1) Starch iodide method
   (2) Orthotolidine method
   (3) Both (1) and (2)
   (4) None of the above

144 The settling velocity of a particle in a sedimentation tank depends on
   (1) Depth of tank
   (2) Surface area of tank
   (3) Both depth and surface area of tank
   (4) None of the above

145 The alum when added as a coagulant in water
  (1) Does not require alkalinity in water for flocculation
  (2) Does not affect pH value of water
  (3) Increase pH value of water
  (4) Decrease pH value of water

146 The suitable method for disinfection of swimming pool water is
  (1) Ultra violet rays treatment
  (2) Lime treatment
  (3) By using potassium permanganate
  (4) Chlorination

147 The type of valve which allows water to flow in one direction but prevents its flow in the reverse direction is
  (1) Reflux valve
  (2) Sluice valve
  (3) Air relief valve
  (4) Pressure relief valve

148 A good trap should
  (1) Not have self cleaning property
  (2) Restrict the flow of water
  (3) Provide an adequate water seal at all lines.
  (4) All of these

149 Normal standard process of applying chlorine to water
  (1) Plain chlorination
  (2) pre chlorination
  (3) Post chlorination
  (4) double chlorination

150 For maximum alkalinity of water, pH value should be
  (1) 0
  (2) 10
  (3) 14
  (4) < 7

151 Disinfection of drinking water is carried out to remove
  (1) Turbidity
  (2) Colour
  (3) Odour
  (4) Bacteria

152 The most common coagulant is
   (1) Magnesium sulphate
   (2) Water content
   (3) Chlorine
   (4) Bleaching powder

153 Manholes on server lines are provided for
   (1) Period cleaning
   (2) Providing air for oxidation
   (3) Removal of part of sewerage
   (4) All of the above

154 Which of the following sewers is preferred for combined system of sewage?
   (1) Circular sewer
   (2) Egg shaped sewer
   (3) Rectangular sewer
   (4) None of the above

155 The velocity of flow in a sewer does not depends on
   (1) Grade of sewer
   (2) Length of sewer
   (3) Hydraulic means depth of sewer
   (4) Roughness of sewer

156 Which of the following unit works in anaerobic conditions?
   (1) Sludge digestion tank
   (2) Sedimentation tank
   (3) Activated sludge treatment
   (4) Trickling filters

157 The entry of foul smelling gases into the house coming from the sewers can be prevented by
   (1) Providing water seals for all the fixtures
   (2) Providing water seals for all the fixtures and a vent pipe in the plumbing system
   (3) Providing sufficient vent pipes in the plumbing system
   (4) Exhaust fans .

158 The trap used for a water closet is called
   (1) Gully trap
   (2) P-trap
   (3) Intercepting trap
   (4) Anti-siphon trap

159 Rise of water table above the ground surface cause
   (1) Equal increase in pore water pressure and total stress
   (2) Equal decrease in pore water pressure and total stress
   (3) Increase in pore water pressure but decrease in total stress
   (4) Decrease in pore water pressure but increase in total stress

160 The waste water coming from kitchens and bath rooms is popularly known as:
   (1) Domestic sewage discharge
   (2) Sludge discharge
   (3) Drainage discharge
   (4) None of these

161 Sewage treatment works are normally designed for a design period of:
   (1) 40-50 years
   (2) 30-40 years
   (3) 15-20 years
   (4) 5-10 years

162 Laying of severs is usually done with the help of:
   (1) a theodolite
   (2) a compass
   (3) a plane table
   (4) sight rails and boning rods

163 Pathogenic bacteria enter wastewaters, primarily from:
   (1) Industrial wastes
   (2) Domestic wastes
   (3) Both industrial as well as domestic wastes
   (4) Infiltration in sewers from the surrounding soils

164 Minimum D.O. prescribed for a river stream, to avoid fish kills, is:
   (1) 2 ppm
   (2) 4 ppm
   (3) 8 ppm
   (4) 10 ppm

165 Manhole covers are made circular:
   (1) To strengthen the cover
   (2) To make the entry convenient
   (3) For architectural reason
   (4) To prevent falling of the cover into the manhole

166 Carbon monoxide is hazardous to health, because:
- (1) It causes loss of sense of smell
- (2) It is carcinogenic in nature
- (3) It reduces oxygen carrying capacity of blood
- (4) It may cause conjunctives

167 Self cleansing velocity is:
- (1) The minimum velocity of flow required to maintain a certain amount of solids in the flow
- (2) The maximum velocity of flow required to maintain a certain amount of solids in the flow
- (3) Such flow velocity as would be sufficient to flush out any deposited solids in the sewer
- (4) Such flow velocity as would be sufficient to ensure that sewage does not remain in the sewer

168 The type of pile which is driven at an inclination to resist inclination forces is known as
- (1) friction pile
- (2) sheet pile
- (3) batter pile
- (4) anchor pile

169 "Cup shake" in timber is a
- (1) Defect in wood
- (2) Property of broad leaved tree
- (3) Method of evaluating life of a tree
- (4) Resin found in tree

170 Plywood is obtained from
- (1) Bamboo
- (2) Commonly available timber
- (3) Teak wood
- (4) Shisham wood

171 The tendency of a stone is to split along
- (1) Texture
- (2) Fracture
- (3) Cleavage
- (4) Structure

172 Laterite is chemically classified as
- (1) Calcareous rocks
- (2) silicious rocks
- (3) Argillaceous rocks
- (4) Metamorphic rocks

173 Potash- lead glass is also known as
(1) Hard glass
(2) Bohemian glass
(3) soda glass
(4) Flint glass

174 Glass formed by mixture of sodium silicate and calcium silicate is known as
(1) Soft glass
(2) Hard glass
(3) Flint glass
(4) None of these

175 Primary bond in solid of a typical metal includes
(1) Hydrogen bond
(2) Vander Waals bond
(3) Mixed bond
(4) Ionic bond

176 Stones used for ornamental works must be
(1) soft
(2) Hard
(3) Light
(4) Heavy

177 The defect indicated by white decayed spots in timber is known as
(1) Druxiness
(2) Doatiness
(3) Foxiness
(4) Wane

178 Which of the following bridge exploits the advantages of superposition of positive and negative bending moments?
(1) T – Beam Bridge
(2) Balanced cantilever bridge
(3) Bow string grider bridge
(4) Cable stayed bridge

179 Courbon method of designing is adopted for
(1) Flat slab bridge
(2) T – Beam Bridge
(3) Balanced cantilever bridge
(4) Cable stayed bridges

180 The type of loading to be considered while designing temporary bridges is

    (1) IRC class AA

    (2) IRC class A

    (3) IRC class B

    (4) IRC class 70R

181 For Designing Railways Bridges, the load considered are as per

    (1) IRC class AA

    (2) IRC class 70R

    (3) EUDL as per bridges rules

    (4) IRC class 70R For Designing and class AA for checking

182 Brick provided on edge along the road is measured in units

    (1) Cubic m

    (2) Sq. m

    (3) Meter

    (4) % cubic m

183 The measurement of door frame is in units

    (1) Cubic m

    (2) Sq. m

    (3) meter

    (4) % cubic m

184 Barbed wire fencing is measured in units

    (1) Cubic m

    (2) Sq. m

    (3) Meter

    (4) none of these

185 Pavement of 50 mm thick concrete flooring

    (1) Cubic m

    (2) % sq m

    (3) Meter

    (4) Sq. M

186 A contract is an agreement between

    (1) Two parties valid in law

    (2) Several agencies

    (3) Three agencies

    (4) Two parties without legal binding

187 A turn-key contract means
   (1) To design and build
   (2) To build the structure only
   (3) To perform all the functions from inception to completion of the construction
   (4) The same as the unit price contract

188 The objectives of cost control is
   (1) To locate the areas of inefficient functioning
   (2) Basis for preparing estimates
   (3) Estimation of profit or loss
   (4) All of these

189 Which of the following has more fire resistant characteristics
   (1) Marble
   (2) Lime stone
   (3) Compact sand stone
   (4) Granite

190 Crushing strength of a good building stone should be more than
   (1) 50 MPa
   (2) 100 MPa
   (3) 150 MPa
   (4) 200 MPa

191 Which of the following ingredients of the brick earth enables the brick to remain its shape ?
   (1) Alumina
   (2) Silica
   (3) Iron
   (4) Magnesia

192 Glazing is used to make earthenware
   (1) Hard
   (2) Soft
   (3) Porous
   (4) Impervious

193 The initial setting time for ordinary Portland cement as per IS specifications should not be less than
   (1) 10 Minutes
   (2) 30 Minutes
   (3) 60 Minutes
   (4) 600 Minutes

194 Paints with white lead base are suitable for painting of
  (1) Wood work
  (2) Iron work
  (3) Both wood work and iron work
  (4) None of the above

195 Expansion joints in masonry walls are provided in wall lengths greater than
  (1) 10m
  (2) 20m
  (3) 30m
  (4) 40m

196 Angle of inclination of axis of member for lacing bars shall not be greater than
  (1) 30^0
  (2) 40^0
  (3) 60^0
  (4) 70^0

197 The height between two floors is 3.00 m and riser is 150 mm. Assuming two flights between the floors, the number of treads will be
  (1) 18
  (2) 19
  (3) 20
  (4) 21

198 Putty is made up of
  (1) White lead and turpentine
  (2) Powered chalk and raw linseed oil
  (3) Red lead and linseed oil
  (4) Zinc oxide and boiled linseed oil

199 The coefficient of linear expansion of granite is in the range of that of
  (1) Glass
  (2) Mild steel
  (3) High carbon steel
  (4) Bamboo

200 Weakest section in a fillet weld is
  (1) Throat of the fillet
  (2) Smaller side
  (3) Side parallel to force
  (4) Side perpendicular to force

SPACE FOR ROUGH WORK