

101/2018



A

Question Booklet  
Alpha Code

A

Question Booklet  
Serial Number

103881

Total Number of Questions : 100

Time : 75 Minutes

Maximum Marks : 100

### INSTRUCTIONS TO CANDIDATES

1. The Question Paper will be given in the form of a Question Booklet. There will be four versions of Question Booklets with Question Booklet Alpha Code viz. **A, B, C & D**.
2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the Question Booklet.
3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.
4. If you get a Question Booklet where the alpha code does not match to the allotted alpha code in the seating position, please draw the attention of the Invigilator **IMMEDIATELY**.
5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your Question Booklet is un-numbered, please get it replaced by new Question Booklet with same alpha code.
6. The Question Booklet will be sealed at the middle of the right margin. Candidate should not open the Question Booklet, until the indication is given to start answering.
7. Immediately after the commencement of the examination, the candidate should check that the Question Booklet supplied to him/her contains all the 100 questions in serial order. The Question Booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same alpha code. This is most important.
8. A blank sheet of paper is attached to the Question Booklet. This may be used for rough work.
9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**
10. Each question is provided with four choices **(A), (B), (C)** and **(D)** having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball Point Pen in the OMR Answer Sheet.
11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**
12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.
13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.

SEAL



1. Who presides over the joint sitting of the two Houses of the Parliament ?
  - A) The President
  - B) The Chairman of the Rajya Sabha
  - C) The Speaker of the Lok Sabha
  - D) The Prime Minister
  
2. What is the maximum time interval permitted between two sessions of Parliament ?
  - A) 90 days
  - B) 6 months
  - C) 120 days
  - D) 8 months
  
3. The Right to Information Act of the Parliament received the Assent of the President of India on
  - A) 15<sup>th</sup> June 2005
  - B) 15<sup>th</sup> July 2005
  - C) 15<sup>th</sup> September 2005
  - D) 11<sup>th</sup> January 2005
  
4. Which is the longest river in Kerala ?
  - A) Pamba
  - B) Nila
  - C) Periyar
  - D) Bharatha Puzha
  
5. Which district in Kerala is connected to Tamil Nadu via 'Aryankavu Pass' ?
  - A) Kollam
  - B) Kottayam
  - C) Idukki
  - D) Pathanamthitta
  
6. From where was Kerala's first Newspaper 'Rajya Samacharam' published ?
  - A) Kochi
  - B) Tellicherry
  - C) Calicut
  - D) Cannanore
  
7. 'Atmavidya Sangam' was founded by
  - A) Dr. Palpu
  - B) Vagbhatananda
  - C) Chattampi Swamikal
  - D) Sahodaran Ayyappan
  
8. Who among the following called 'Ayyankali as Pulayaraja' ?
  - A) Sree Narayana Guru
  - B) Nehru
  - C) Gandhiji
  - D) Dr. B. R. Ambedkar

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9. Who introduced Land Reforms Bill in Kerala Legislative Assembly ?
- K. R. Gowri
  - E. M. S. Namboothiripad
  - C. Achutha Menon
  - V. S. Achuthanandan
10. 'American Model Arabikkadalil' is a slogan related with
- Malabar Rebellion
  - Punnapra Vayalar Struggle
  - Salt Satyagraha
  - Vaikom Satyagraha
11. 'Indulekha' the first modern novel in Malayalam was written by
- Iravikutty Pillai
  - V. T. Bhattathiripad
  - O. Chandu Menon
  - K. Madhavan Nair
12. Who is the journalist associated with 'Kesari' ?
- Balakrishna Pillai
  - Sanjayan
  - Maman Mappila
  - Ramakrishna Pillai
13. Who is known as the Father of the Library Movement in Kerala ?
- K. M. Panikker
  - P. N. Panikker
  - P. Kunhiraman Nair
  - C. Achutha Menon
14. Who authored the book titled 'Kerala Yesterday Today and Tomorrow' ?
- M. T. Vasudevan Nair
  - P. C. Kuttikrishnan
  - Madavikutty
  - E. M. S. Namboothiripad

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15. P. V. Sindhu who won silver medal in Rio. Olympics, 2016 is a
- A) Swimmer
  - B) Table Tennis Player
  - C) Badminton Player
  - D) Golf Player
16. Which of the following countries has decided to withdraw from 'Kyoto Protocol' ?
- A) Canada
  - B) Japan
  - C) China
  - D) North Korea
17. BRICS SUMMIT, 2017 was held in
- A) New Delhi
  - B) Moscow
  - C) Xiamen
  - D) Geneva
18. The device that can connect analogue signals to digital signals and vice versa is
- A) SMPS
  - B) MODEM
  - C) UPS
  - D) Mother Board
19. CPU gets address of the next instruction to be processed from
- A) Program counter
  - B) Memory Address Register
  - C) Index Register
  - D) Instruction Register
20. Address of the first cell in the work sheet is
- A) 1A
  - B) A
  - C) 1
  - D) A1

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21. Hardness of Quartz in Mohs Scale is  
A) 6                      B) 6.5                      C) 7                      D) 7.5
22. Smith test is conducted to test which property of stone ?  
A) Hardness              B) Durability              C) Strength              D) Fire Resistance
23. Detachment of paint film from a surface is known as  
A) Chalking              B) Grinning              C) Flaking              D) Alligating
24. In cavity wall construction, each leaf of the cavity wall shall not be less than  
A) 75 mm              B) 70 mm              C) 65 mm              D) 60 mm
25. The outer projection of a tread in a stair is called  
A) Winder              B) Scotia              C) Nosing              D) Soffit
26. V-groove pointing is done generally in  
A) Brick Masonry                      B) Block Masonry  
C) Laterite Masonry                      D) Rubble Masonry
27. A roof which slopes in two directions is called  
A) Shed Roof                      B) Hip Roof  
C) Gable Roof                      D) North Light Roof
28. Los Angeles test on aggregate is conducted to determine  
A) Hardness              B) Toughness              C) Soundness              D) Strength
29. The compaction factor value of 0.92 corresponds to the workability class of  
A) Very low              B) Low              C) Medium              D) High
30.  $\text{CaCl}_2$  is an admixture used as \_\_\_\_\_ in plain concrete.  
A) Retarder              B) Accelerator              C) Plasticizer              D) Additive
31. As per IS specification, modulus of elasticity of concrete ( $E_c$ , in  $\text{N/mm}^2$ ) can be taken as  
A)  $E_c = 5700 \sqrt{f_{ck}}$                       B)  $E_c = 570 \sqrt{f_{ck}}$   
C)  $1/5700 \sqrt{f_{ck}}$                       D)  $5700 f_{ck}$

Where  $f_{ck}$  is the characteristic strength of concrete in  $\text{N/mm}^2$ .

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32. According to IS 456-1978, minimum slenderness ratio for a short column is
- A) Less than 18
  - B) Less than 12
  - C) Between 18 and 24
  - D) More than 12
33. Minimum distance between horizontal parallel reinforcements of the same size should not be less than
- A) 3.5 times diameter
  - B) 3 times diameter
  - C) 2 times diameter
  - D) One diameter

34. In limit state design of concrete for flexure, the area of stress block is taken as

- A)  $0.53 f_{ck} x_u$
- B)  $0.35 f_{ck} x_u$
- C)  $0.46 f_{ck} x_u$
- D)  $0.36 f_{ck} x_u$

Where  $f_{ck}$  is the characteristic strength of concrete,  $x_u$  is the depth of neutral axis.

35. If 't' mm is the thickness of the plate to be connected by a rivet, then suitable size of rivet may be obtained by equation

- A)  $\phi = 60\sqrt{t}$  mm
- B)  $\phi = 6\sqrt{t}$  mm
- C)  $\phi = 6\sqrt{t}$  cm
- D) None of the above

36. The ratio of size of fillet to throat thickness for a standard 45° fillet is given by

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

37. Maximum permissible slenderness ratio of a member normally acting as a tie in a roof truss is

- A) 350
- B) 300
- C) 250
- D) 200

38. If 'd' is the distance between the flange angles, the vertical stiffeners in plate girders are spaced not greater than

- A) 2.0 d
- B) 1.75 d
- C) 1.50 d
- D) 1.25 d



39. For double angles carrying tension, placed back to back and connected to either side of the gusset plate, the sectional area of the section, is equal to cross sectional area of
- The section
  - The section plus area of rivet holes
  - The section minus area of rivet holes
  - The section multiplied by the area of the rivet hole
40. A soil sample has a porosity of 40%. The specific gravity of soil is 2.70. Void ratio will be
- 0.667
  - 0.676
  - 0.766
  - 0.666
41. Minimum centre to centre spacing of friction pile of diameter 'D' as per BIS specification
- 2D
  - 3D
  - 2.5D
  - 3.5D
42. A soil has liquid limit of 60%, plastic limit of 35% and shrinkage limit of 20% and it has a natural moisture content of 50%. The liquidity index of soil is
- 0.8
  - 0.6
  - 1.5
  - 1.25
43. The angle of internal friction is least for
- Fine sand
  - Medium sand
  - Coarse sand
  - Clays
44. The length to diameter ratio of cylindrical soil sample used in triaxial test is taken as
- 1.5
  - 2.0
  - 2.5
  - 3.0
45. A cast-in situ bored pile 0.50 m diameter and 10 m deep is placed in a purely cohesive soil. If the cohesion of the soil is  $4 \text{ t/m}^2$  and adhesion between the pile and the soil is half the value of cohesion, then the ultimate bearing capacity of the pile is
- $49\pi/4$
  - $39\pi/4$
  - $29\pi/4$
  - $19\pi/4$
46. The minimum open length of the sample in Standard penetration test should be
- 40 cm
  - 50 cm
  - 60 cm
  - 70 cm
47. Design the rate of super elevation for a horizontal highway curve of radius 500 meters and speed 100 kmph. Assume mixed traffic condition.
- 0.07
  - 0.089
  - 0.087
  - 0.090



48. For plain and rolling terrain, the length of transition curve ( $L_s$ ) for a design speed 'V' and radius of circular curve 'R' is
- A)  $L_s = 2.7 V/R$                       B)  $L_s = 2.7 V^2/R$   
 C)  $L_s = 2.7 V/R^2$                       D)  $L_s = 2.5 V^2/R$
49. Average speed maintained by a vehicle over a particular stretch of road, while vehicle in motion is called
- A) Space-mean speed  
 B) Time-mean speed  
 C) Spot speed  
 D) Running speed
50. P C U value of bus and truck in a signalized inter-section is
- A) 2.2                      B) 2.8                      C) 3.2                      D) 4.6
51. In a rotary road way, as per IRC the recommended minimum radii of Central Island are \_\_\_\_\_ times the radius of entry curves.
- A) 1.33                      B) 1.43                      C) 2.33                      D) 2.43
52. In irrigation, actually irrigated area within the Gross Command Area is called
- A) Culturable area  
 B) Commanded area  
 C) Culturable command area  
 D) Culturable cultivated area
53. Thiessen Polygon Method is used to estimate the
- A) Computation of Storage  
 B) Computation of Runoff  
 C) Computation of Discharge from Aquifer  
 D) Computation of Average Precipitation
54. The volume of water that an aquifer releases from or takes into storage per unit surface area of aquifer per unit change in the component of head normal to that surface is called
- A) Coefficient of transmissibility  
 B) Storage coefficient  
 C) Coefficient of permeability  
 D) Percolation coefficient



55. Deductions for openings in plastering of walls for small openings between 0.5 sqm to 3 sqm is given by
- A) Two times the opening size
  - B) One times the opening size
  - C) 0.5 times the opening size
  - D) No deduction is made
56. If the payments of annuity continue for indefinite period, it is called
- A) Perpetual annuity
  - B) Deferred annuity
  - C) Annuity due
  - D) Annuity certain
57. Estimate the quantity of brickwork required for a 20 cm wall of 4 m long, 3.2 m high
- A) 12.2 sq.m
  - B) 2.56 sq.m
  - C) 2.56 cu.m
  - D) 256 cu.m
58. While taking estimation of roads, the normal lead and lift are respectively
- A) 25.0 m and 1.0 m
  - B) 25.0 m and 1.5 m
  - C) 30.0 m and 1.0 m
  - D) 30.0 m and 1.5 m
59. Half brick wall is normally designated as
- A) 20 cm
  - B) 15 cm
  - C) 10 cm
  - D) 5 cm
60. Two forces are acting at an angle of  $120^\circ$ . The bigger force is 40 N and the resultant is perpendicular to the smaller one. The smaller force is
- A) 40 N
  - B) 120 N
  - C) 20 N
  - D) None of these
61. The length of a column, having a uniform circular cross-section of 75 mm diameter and whose ends are hinged is 5 m. If the value of E for the material is 210 GPa, the permissible maximum crippling load will be
- A) 12.88 kN
  - B) 128.8 kN
  - C) 1288 kN
  - D) 2880 kN
62. The deflection at any point of a perfect frame can be obtained by applying a unit load at the joint in
- A) Vertical direction
  - B) Horizontal direction
  - C) Inclined direction
  - D) The direction in which the deflection is required



63. The slenderness ratio of a vertical column of a square cross-section of 25 mm sides and 3000 mm length is  
A) 200                      B) 380                      C) 416                      D) 240
64. If the shear force along a section of a beam is zero, the bending moment at the section is  
A) Maximum  
B) Minimum  
C) Zero  
D) Average of minimum and maximum value
65. If the length of a cantilever carrying an isolated load at its free end is doubled, the deflection at free end will increase by  
A) no change              B) 2                      C) 1/8                      D) 8
66. When a uniformly distributed load longer than the span of the girder moves from left to right then the maximum bending moment at midsection of span occurs when the uniformly distributed load occupies  
A) Less than the left half span  
B) Whole of left half span  
C) More than the left half span  
D) Whole span
67. In a three hinged arch shear force is usually  
A) Maximum at springing  
B) Varies with slope  
C) Maximum at crown  
D) Maximum at quarter points
68. Degree of static indeterminacy of a rigid jointed plane frame having 15 members, 3 reaction components and 14 joints is  
A) 3                      B) 4                      C) 6                      D) 8
69. The fixed support in a real beam becomes in the conjugate beam a  
A) Roller support                      B) Hinged support  
C) Fixed support                      D) Free end
70. The degree of static indeterminacy upto which column analogy method can be used is  
A) 2                      B) 3                      C) 4                      D) unrestricted



71. The elements of flexibility matrix of a structure
- A) are dependent on the choice of co-ordinates
  - B) are always dimensionally homogeneous
  - C) are independent of the choice of coordinates
  - D) both (A) and (B)
72. The product of  $H^+$  ions and  $OH^-$  ions in a stronger alkali is
- A) 0
  - B)  $10^{-1}$
  - C)  $10^{-7}$
  - D)  $10^{-14}$
73. The height of chimney required for effective disposal of 27 kg/hr. of  $SO_2$  emission is
- A) 42 m
  - B) 39 m
  - C) 222 m
  - D) 142 m
74. If 2% solution of a sewage sample is incubated for 5 days at  $20^\circ C$  and depletion of oxygen was found to be 5 ppm, B.O.D. of the sewage is
- A) 200 ppm
  - B) 250 ppm
  - C) 225 ppm
  - D) None of these
75. For treating the sewage of a large city, you will recommend
- A) A sedimentation tank and an activated sludge treatment plant
  - B) Sedimentation tanks with high rate trickling filters
  - C) A plant consisting of Imhoff tanks with low rate trickling filters
  - D) None of these
76. Self-purification of running streams may be due to
- A) Sedimentation, oxidation and coagulation
  - B) Dilution, sedimentation and oxidation
  - C) Dilution, sedimentation and coagulation
  - D) Dilution, oxidation and coagulation
77. Air pollution control devices suitable for the removing of finest dust particles from the air is
- A) Fabric filter
  - B) Wet scrubber
  - C) Cyclone separator
  - D) Electrostatic precipitator



78. The amount of residual chlorine left in public water supply for safety against pathogenic bacteria is about
- A) 1.0 to 5.0 ppm
  - B) 0.05 to 0.5 ppm
  - C) 0.5 to 1.0 ppm
  - D) 0.01 to 0.05 ppm
79. The process incorporating changes and rescheduling or replanning is called
- A) Resource levelling
  - B) Resource smoothening
  - C) Updating
  - D) Critical path scheduling
80. Slack time refers to
- A) An activity
  - B) An event
  - C) Both event and activity
  - D) None of these
81. The performance of a specific task in CPM is called
- A) Contract
  - B) Event
  - C) Activity
  - D) Dummy
82. The technique for establishing and maintaining priorities among the various jobs of a project is
- A) Critical ratio scheduling technique
  - B) Event flow scheduling technique
  - C) Slotting technique for scheduling
  - D) Short interval scheduling technique
83. In PERT analysis, the time estimates of activities and probability of their occurrence follow
- A) Normal distribution
  - B) Poisson's distribution curve
  - C) Beta distribution curve
  - D) None of these
84. When three pipes are connected end to end, rate of flow of water through each pipe will be
- A) Same
  - B) One third
  - C) Three times
  - D) One sixth





94. 'S' shaped spillway is also called as
- A) Saddle spillway
  - B) Ogee spillway
  - C) Conduit spillway
  - D) Chute spillway
95. The upper plate of a theodolite is fastened to
- A) The trunion axis
  - B) The outer spindle
  - C) The inner spindle
  - D) The lower plate
96. Theory of probability is applied to
- A) Cumulative errors only
  - B) Accidental error only
  - C) Both cumulative and accidental errors
  - D) None of these
97. The number of independent conditions required to be satisfied for the adjustment of a braced quadrilateral in triangulation survey is
- A) 4
  - B) 6
  - C) 8
  - D) 5
98. For a well-conditioned triangle, no angle should be less than
- A)  $20^\circ$
  - B)  $30^\circ$
  - C)  $45^\circ$
  - D)  $60^\circ$
99. Agonic line is the line joining points having
- A) Same declination
  - B) Maximum declination
  - C) Minimum declination
  - D) Zero declination
100. The bearing of the lines AB and BC are  $146^\circ 30'$  and  $68^\circ 30'$ . The included angle ABC is
- A)  $102^\circ$
  - B)  $78^\circ$
  - C)  $45^\circ$
  - D) None of these