

103/2023-E

Question Booklet
Alpha Code

A

Question Booklet
Serial Number

111413

Total No. of questions : 100

Time : 75 Minutes

Maximum : 100 Marks

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 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

103/2023-E

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. If the void ratio of a soil sample is 0.50, the porosity is :
(A) 100% (B) 30%
(C) 20% (D) 33.33%
2. The ratio of plasticity index to the percentage of clay size is :
(A) Relative density (B) Thixotropy
(C) Activity (D) Sensitivity
3. The plasticity chart is obtained by plotting :
(A) Plasticity index on y-axis and plastic limit on x-axis
(B) Liquid limit on y-axis and plasticity index on x-axis
(C) Plasticity index on y-axis and liquid limit on x-axis
(D) Plastic limit on y-axis and plasticity index on x-axis
4. According to Darcy's law for flow through porous media, the discharge per unit time is proportional to :
(A) Cohesion (B) Effective stress
(C) Stability number (D) Hydraulic gradient
5. As per the Indian standard soil classification system, a sample of silty clay with liquid limit of 45% and plasticity index of 30% is classified as :
(A) CH (B) CL
(C) CI (D) ML
6. If duty (D) is 2160 hect/cumec and base period (B) is 100 days for an irrigated crop, then delta in meters is given by :
(A) 4 m (B) 0.4 m
(C) 0.2 m (D) 0.02 m

7. Temporary dam constructed to exclude water from a specific area is called :
- (A) Diversion dam (B) Cofferdam
(C) Debris dam (D) None of the above
8. Type of cross drainage work where Natural drain is passed over the canal :
- (A) Aqueduct (B) Siphon aqueduct
(C) Super passage (D) Level crossing
9. Select the causes of waterlogging :
- (A) Seepage from canals (B) Over Irrigation of fields
(C) Inadequate surface drainage (D) All of the above
10. The ratio of rate of change of discharge of an outlet to the rate of change of discharge of the distributing channel :
- (A) Sensitivity (B) Efficiency
(C) Drowning ratio (D) Flexibility
11. In quadrantal bearing system, bearing of a line varies from :
- (A) 0° to 360° (B) 0° to 180°
(C) 0° to 90° (D) 90° to 180°
12. If the magnetic bearing of the Sun at a place at noon is 176° , the magnetic declination at that place is :
- (A) 2° E (B) 2° W
(C) 4° E (D) 4° W
13. The combined correction due to curvature and refraction (in m) for a distance of 1 km on the surface of Earth is :
- (A) 0.763 (B) 0.0673
(C) 0.673 (D) 7.63

14. The method of levelling in which the heights of mountains are found by observing the temperature at which water boils is known as :

- (A) Barometric levelling (B) Reciprocal levelling
(C) Profile levelling (D) Hypsometry

15. Analectic lens provided in a tachometer is a :

- (A) Concave lens (B) Convex lens
(C) Plano-convex lens (D) Plane lens

16. The type of surveying in which the curvature of the earth is taken into account is called :

- (A) Geodetic surveying (B) Plane surveying
(C) Preliminary surveying (D) Topographical surveying

17. A leveling is carried out to establish the Reduced Levels (RL) of point R with respect to the Bench Mark (BM) at P. The staff readings taken are given in the table :

Staff station	BS	IS	FS	RL
P	1.650			100.000 m
Q	-0.900		-1.500	
R			0.750	?

If RL of P is + 100.000 m, then RL (in m) of R is

- (A) 101.500 m (B) 100.300 m
(C) 103.300 m (D) 105.100 m

18. While leveling in an undulating terrain, it is preferable to set up the instrument on :

- (A) The top of summit (B) The bottom of a valley
(C) One side of the slope (D) A flat location

19. Excessive fluoride in drinking water causes :

- (A) Alzheimer's disease
- (B) Mottling of teeth and embrittlement of bones
- (C) Skin cancer
- (D) Methemoglobinemia

20. Zeolite process is same as :

- (A) Lime soda process
- (B) Excess lime treatment
- (C) Ion exchange treatment
- (D) Excess alum and lime treatment

21. A ship is berthed in a chamber and lifted by principles of buoyancy; such a chamber is called :

- (A) Wet dock
- (B) Dry dock
- (C) Floating dock
- (D) Refuge dock

22. Desire lines are drawn based on :

- (A) Spot speed studies
- (B) Traffic volume studies
- (C) Accident studies
- (D) Origin and destination studies

23. The longitudinal movement of rails in a track is known as :

- (A) Hogging
- (B) Buckling
- (C) Creep
- (D) Crack

24. Mud pumping is commonly associated with :

- (A) Bituminous penetration macadam construction
- (B) Cement concrete pavement on granular subgrade
- (C) Premixed bituminous construction
- (D) Cement concrete pavement on clay subgrade

25. At highway stretches where the required overtaking sight distance cannot be provided, it is necessary to incorporate :
- Half the required overtaking sight distance
 - Atleast twice the stopping sight distance
 - One third the required overtaking sight distance
 - Three times the stopping sight distance
26. Maximum size of a fillet weld for a plate of square edge is :
- 1.5 mm less than the thickness of the plate
 - One half thickness of the plate
 - Thickness of the plate itself
 - 1.5 mm more than the thickness of the plate
27. According to IS 875 Part 3, the factor k_2 for the calculation of wind load depends upon :
- Height of the building
 - Terrain of the building site
 - Class of the building
 - All of the above
28. For linear elastic systems, the type of displacement function for the strain energy is :
- Linear
 - Quadratic
 - Cubic
 - Quartic
29. If the shear force at a section of beam under bending is equal to 0 then the bending moment at the section is :
- Zero
 - Maximum
 - Minimum
 - Constant
30. A homogeneous simply supported prismatic beam of width B, depth D and span L is subjected to a concentrated load of magnitude P. The load can be placed anywhere along the span of the beam. The maximum flexural stress developed in beam is :
- $\frac{2}{3} \frac{PL}{BD^2}$
 - $\frac{3}{2} \frac{PL}{BD^2}$
 - $\frac{4}{3} \frac{PL}{BD^2}$
 - $\frac{3}{4} \frac{PL}{BD^2}$

31. The number of simultaneous equations to be solved in the slope deflection method is equal to :
- (A) The degree of static indeterminacy
 - (B) The degree of kinematic indeterminacy
 - (C) The number of joints in the structure
 - (D) None of the above
32. Influence line for redundant structures can be obtained by :
- (A) Castigliano's theorem
 - (B) Muller Breslau principle
 - (C) Unit load theorem
 - (D) Maxwell-Betti's reciprocal theorem
33. The partial factor of safety for concrete as per IS : 456-2000 is :
- (A) 1.50
 - (B) 1.15
 - (C) 0.87
 - (D) 0.446
34. The minimum area of tension reinforcement in a beam shall be greater than :
- (A) $\frac{0.085 bd}{f_y}$
 - (B) $\frac{0.087 f_y}{bd}$
 - (C) $0.04 bd$
 - (D) $\frac{0.4 bd}{f_y}$
35. In modern housekeeping principle (5S) the Japanese word SEIRI indicate :
- (A) Set in order
 - (B) Standardize
 - (C) Sustain
 - (D) None of these

36. Workability of concrete can be measured using slump, compaction factor and Vee bee time. Consider the following statements for workability of concrete :

- (i) As the slump increases, the Vee bee time increases.
- (ii) As the slump increases, the compaction factor increases.

Which of the following is TRUE?

- (A) Both (i) and (ii) are True
- (B) Both (i) and (ii) are False
- (C) (i) is True and (ii) is False
- (D) (i) is False and (ii) is True

37. The cylinder strength of the concrete is less than the cube strength because of :

- (A) The difference in the shape of the cross section of the specimens
- (B) The difference in the slenderness ratio of the specimens
- (C) The friction between the concrete specimens and the steel plate of the testing machine
- (D) The cubes are tested without capping but the cylinders are tested with capping

38. Identify the methods of concrete mix design :

- (A) IS method
- (B) ACI method
- (C) All of the above
- (D) None of the above

39. Which among the following methods are non-destructive?

- (A) Ultrasonic pulse velocity test
- (B) Rebound hammer test
- (C) Pull out test method
- (D) All of the above

40. Expansion of EMD :

- (A) Early money deposit
- (B) Earnest money deposit
- (C) Earnest money deficiency
- (D) None of the above

41. Identify the correct equation :
- (A) Vacuum pressure = Atmospheric pressure – Absolute pressure
 - (B) Absolute pressure = Atmospheric pressure – Gauge pressure
 - (C) Vacuum pressure = Atmospheric pressure + Absolute pressure
 - (D) Gauge pressure = Atmospheric pressure – Absolute pressure
42. Find the total pressure on a triangular lamina vertically dipped in water so that its vertex is in the water surface and the base is parallel to the water surface. The base of the triangle is 4 m and its height is 3m :
- (A) 58.86 kN
 - (B) 117.72 kN
 - (C) 177.72 kN
 - (D) 88.86 kN
43. Cavitation is caused by :
- (A) High Velocity
 - (B) Low pressure
 - (C) High pressure
 - (D) High temperature
44. Isopleths are lines on a map through points having equal depth of :
- (A) Rainfall
 - (B) Infiltration
 - (C) Evapotranspiration
 - (D) Total run off
45. Sheet of water flowing over a weir/notch is called :
- (A) Crest
 - (B) Sill
 - (C) Nappe
 - (D) None of these
46. Which of the following is a mineral?
- (A) Geranite
 - (B) Syenite
 - (C) Quartz
 - (D) All of the above
47. The disease of dry rot in timber is caused by :
- (A) Lack of ventilation
 - (B) Alternate wet and dry conditions
 - (C) Complete submergence in water
 - (D) None of the above

48. Glazing is used to make the earthenware:
- (A) Hard (B) Porous
(C) Impervious (D) None of the above
49. Scale command can be accessed easily by typing :
- (A) SL (B) S
(C) SC (D) C
50. Which command is used to divide the object into segments having predefined length?
- (A) Divide (B) Chamfer
(C) Trim (D) Measure
51. Expand UCS (In the context of CAD) :
- (A) United CAD Software (B) User Coordinate System
(C) Universal Coordinate System (D) User CAD Software
52. The short cut command key for UNDO in CAD :
- (A) Ctrl + U (B) Ctrl + X
(C) Ctrl + Y (D) Ctrl + Z
53. Extension of CAD template file is :
- (A) .doc (B) .dxf
(C) .dwt (D) .dwg
54. To plot only a particular portion of a drawing, which option can be selected in plot area panel of PLOT window :
- (A) Display (B) Window
(C) Limits (D) None of the above
55. Identify the type of chain thin lines used to represent center lines, lines of symmetry and trajectories :
- (A) Type G (B) Type E
(C) Type K (D) Type B

56. Size of A3 size drawing sheet :
- (A) 210×297 (B) 297×420
 (C) 420×210 (D) 594×420
57. When a right circular cone is cut by a section plane inclined to the axis by an angle smaller than that the generators make with the axis, the conic section obtained is called :
- (A) Ellipse (B) Parabola
 (C) Hyperbola (D) Isosceles triangle
58. The point at which the conic cuts its axis is called :
- (A) Focus of the conic (B) Directrix of the conic
 (C) Vertex of the conic (D) Abscissa
59. The internal angle of a regular octagon is :
- (A) 108 (B) 120
 (C) 72 (D) 135
60. If the actual length of 4m of an object is represented as an object 20mm length in the drawing, then representative fraction is :
- (A) 1 : 200 (B) 200 : 1
 (C) 1 : 500 (D) 500 : 1
61. One km is equal to _____ miles :
- (A) 0.62137 (B) 1.8520
 (C) 1.60934 (D) 1
62. 1 Giga newton = :
- (A) 10^6 N (B) 10^{11} N
 (C) 10^9 N (D) 10^{10} N
63. Which key is used to obtain properties palette in CAD?
- (A) Ctrl + 1 (B) Ctrl + 2
 (C) Ctrl + 3 (D) Ctrl + 4

64. In profile levelling, the staff reading on two neighboring pegs 20m apart are 1.200 and 1.000 respectively. It means the proposed road had:
- (A) Falling gradient 1 in 100 (B) Rising gradient 1 in 100
(C) Falling gradient 1 in 20 (D) Rising gradient 1 in 20
65. The RB of a line is N 85° W. Its WCB is :
- (A) 5° (B) 15°
(C) 275° (D) 105°
66. The measurement is made in square meters in case of :
- (A) Cement concrete in foundation (B) RCC structure
(C) Hollow concrete block wall (D) None of the above
67. 1 ton pressure equal to :
- (A) 1 newton (B) 1 mm mercury
(C) 1 atm pressure (D) None of the above
68. Equation of continuity is based on the principle of conservation of :
- (A) Mass (B) Energy
(C) Momentum (D) None of the above
69. The pitot static tube measure :
- (A) Stagnation pressure
(B) Static pressure
(C) Dynamic pressure
(D) Difference in total and dynamic pressure
70. The instrument used for accurate centering in plane table survey is :
- (A) Spirit level (B) Alidade
(C) Plumbing fork (D) Trough compass

71. Who wrote the famous poem *kakke kakke koodevide*?
- (A) Kumaranasaan (B) Ulloor S. Parameswara Iyer
(C) Vythilingam Sreedhara Menon (D) Vallathol Narayana Menon
72. Who among the following had founded the Central Hindu College at Varanasi, presently known as Banaras Hindu University?
- (A) Bal Gangadhar Tilak (B) Annie Besant
(C) Madan Mohan Malaviya (D) David Hare
73. Dharoi wet land, where a bird survey was conducted recently, is located in which state?
- (A) Gujarat (B) Assam
(C) Maharashtra (D) Andhra Pradesh
74. Which footballer won the best FIFA men's player award 2023?
- (A) Kylian Mbappe Lottin (B) Cristiano Ronaldo
(C) Neymar da Silva Santos Júnior (D) Lionel Messi
75. Who is known as the father of Kerala Renaissance?
- (A) K. Kelappan (B) Chattampi Swamikal
(C) Sree Narayana Guru (D) V.T. Bhattathiripad
76. Name the first book completely printed in Malayalam language :
- (A) Indulekha (B) Samkshepa Vedartam
(C) Vasana Vikriti (D) Sharada
77. Which article of the constitution of India deals with amendments?
- (A) Article 368 (B) Article 352
(C) Article 359 (D) Article 367
78. Name India's first payments bank :
- (A) Jio Payments Bank (B) Paytm Payments Bank
(C) Airtel Payments Bank (D) India Post Payments Bank

79. The first Indian State that introduced a law on RTI was :
- | | |
|---------------|--------------------|
| (A) Kerala | (B) Tamil Nadu |
| (C) Karnataka | (D) Andhra Pradesh |

80. Which is India's first private rocket?
- | | |
|-----------------|--------------|
| (A) New Shepard | (B) Chetak |
| (C) SALVO | (D) Vikram-S |

81. On the basis of your reading of the following passage answer the questions :

In an extraordinary display of courage and stamina, a Florida man swam 25 miles over 38 hours to reach land while towing two people and helping two more, after their light plane crashed off, the Bahamas. Mr. Dan Tuckfield, 35, recovering in hospital in Miami wept yesterday as he described how, despite his efforts, two died after more than 12 hours in the water. All five aboard survived when their twin-engined, Piper Seneca ditched into the ocean off Bimini. Before it sank, Mr. Tuckfield managed to retrieve his wetsuit, flippers and a face-mask. The pilot, Bread Youngberg, 48, and passenger Delabo Hicks 58, survived, while Mr. Bloom, 54 and his wife Dorothy died. Mr. Bloom was unable to swim, so Mr. Tuckfield carried her on his back while Mr. Bloom wearing a life jacket was attached to his wetsuit with a strap. Mr. Tuckfield even tried to save their dog, a spaniel, by tucking it under his arm. The party stayed near the wreckage for about four hours, but after several planes had flown overhead without responding to their emergency lights, they decided to swim towards Bimini, where they could see lights.

- (i) Choose the correct word which has the meaning, 'to get possession of something again' :

- | | |
|--------------|------------|
| (A) Display | (B) Crash |
| (C) Retrieve | (D) Decide |

- (ii) Find out the correct answer from the given sentences :

- | |
|---|
| (A) The party stayed near the wreckage for about 2 hours |
| (B) The party stayed near the wreckage for about 4 hours |
| (C) The party stayed near the wreckage for about 5 hours |
| (D) The party stayed near the wreckage for about 10 hours |

- (iii) Identify the correct answer to fill in the blanks in the following sentence :

The party stayed near the _____ for about four hours, but after several planes had flown overhead without responding to their emergency lights, they decided to swim towards Bimini.

- | | |
|---------------|----------------------|
| (A) Face-mask | (B) Emergency lights |
| (C) Wreckage | (D) Life jacket |

- (iv) Choose the correct answer for the sentence given below :

Mr. Tuckfield tried to save their _____.

- | | |
|------------|------------|
| (A) Horse | (B) Rabbit |
| (C) Parrot | (D) Dog |

82. Find the correctly spelt word from the following :

- (A) Fortunately (B) Passionatly
(C) Absolutly (D) Extraordinery

83. Choose the correct substitution for the sentence :

'one who is not pleased by anything'.

- (A) Precarious (B) Destitute
(C) Outspoken (D) Fastidious

84. Fill in the blank with the appropriate form of the verb :

It _____ raining since lunch time.

- (A) have been (B) has been
(C) is being (D) are being

85. Choose the option that completes the sentence correctly :

It wasn't your fault. It was _____.

- (A) An accident (B) The biscuit
(C) A question (D) Some sugar

86. Complete the sentence by using one of the following words :

A vegetarian is a person who doesn't eat _____.

- (A) Meat (B) Meal
(C) Wheat (D) Fruit

87. Choose the correct option in which direct speech changed into indirect speech :

He said, "Where shall I be this time next year?"

- (A) He asked that where should he be that time next year.
- (B) He wondered where he should be that time the next year.
- (C) He contemplated where he shall be that time the following year.
- (D) He wondered where he would be that time the following year.

88. Find out the correct answer in which active voice changed into passive voice :

Who can count the stars in the sky?

- (A) By whom can the stars in the sky be counted?
- (B) By whom the stars in the sky counted?
- (C) By whom could the stars be counted in the sky?
- (D) By whom can the stars in the sky being counted?

89. Choose the correct option that completes the sentence by using a comparative :

It was very hot yesterday but today it's even _____.

- (A) Sweating
- (B) Hotter
- (C) Hottest
- (D) Sweater

90. Choose the correct question tag for the following sentence :

You haven't got a newspaper, _____?

- (A) do you?
- (B) have you?
- (C) are you?
- (D) haven't you?

91. ഭാരതപ്പുഴയുടെ കൈവഴിയായ ശോകനാശിനിപ്പുഴയുടെ തീരത്ത് സ്ഥിതി ചെയ്യുന്ന ഭഗവതിക്ഷേത്രം ഏതാണ്?
 (A) തിരുവില്വാമല ക്ഷേത്രം (B) തിരുവാലത്തൂർ ക്ഷേത്രം
 (C) തിരുവാറന്മുള ക്ഷേത്രം (D) തിരുവട്ടാർ ക്ഷേത്രം
92. 'ഗംഗാദത്തൻ' എന്ന പേരിൽ അറിയപ്പെടുന്ന പുരാണ കഥാപാത്രം ആരാണ്?
 (A) ദ്രോണൻ (B) ശല്യൻ
 (C) ഭീഷ്മൻ (D) കൃപൻ
93. താഴെ കൊടുക്കുന്നതിൽ താരകാസുരന്റെ പുത്രൻ ആരാണ്?
 (A) വിദ്യന്മാലി (B) സത്യവാൻ
 (C) താരാനാഥൻ (D) ത്രിപുരൻ
94. "അമ്പലം ഇല്ല, പൂജയും ഇല്ല, പ്രതിഷ്ഠയും ഇല്ല." ഈ രൂപമില്ലാത്ത മൂർത്തി കൂടികൊള്ളുന്നത് ഏത് സ്ഥലത്താണ്?
 (A) കട്ടപ്പന (B) വെച്ചുച്ചിറ
 (C) വിലങ്ങറ (D) ഓച്ചിറ
95. തൃശൂർ വടക്കുന്നാഥ ക്ഷേത്രത്തിൽ നിന്നും എട്ടു നാഴികയോളം തെക്കുപടിഞ്ഞാറായി സ്ഥിതി ചെയ്യുന്ന പ്രസിദ്ധമായ ദേവാലയം ഏതാണ്?
 (A) തൃപ്രയാർ ക്ഷേത്രം (B) കൊടുങ്ങല്ലൂർ ക്ഷേത്രം
 (C) പെരുവനം മഹാശിവക്ഷേത്രം (D) കൂടൽമാണിക്യം ക്ഷേത്രം
96. ദേവശില്പിയുടെ പേര് എന്താണ്?
 (A) ബൃഹസ്പതി (B) മയൻ
 (C) വിശ്വകർമ്മാവ് (D) വിശ്വാമിത്രൻ
97. ജനകമഹാരാജാവിന്റെ കൊട്ടാരത്തിൽ വസിച്ചിരുന്ന അഗാധ പണ്ഡിതനും മഹാതാതികനുമായിരുന്ന ശ്രേഷ്ഠനായ ഈ മൂനിയുടെ പേര് എന്താണ്?
 (A) വസിഷ്ഠൻ (B) പരശുരാമൻ
 (C) യാജ്ഞവൽക്യൻ (D) വിഭാണ്ഠകൻ
98. 'ചിലന്തിയമ്പലം' എന്ന പേരിൽ പ്രസിദ്ധി നേടിയ ക്ഷേത്രം?
 (A) പള്ളിയറ ക്ഷേത്രം (B) മധൂർ ക്ഷേത്രം
 (C) ആയിരവല്ലി ക്ഷേത്രം (D) പട്ടാഴി ക്ഷേത്രം
99. കേരളത്തിലെ ഏക സൂര്യക്ഷേത്രം ഏത് ജില്ലയിലാണ് സ്ഥിതി ചെയ്യുന്നത്?
 (A) ആലപ്പുഴ (B) കോട്ടയം
 (C) കൊല്ലം (D) എറണാകുളം
100. കേരളത്തിലെ ഏറ്റവും വലിയ ചുമർചിത്രം എന്ന് പ്രസിദ്ധിയാർജ്ജിച്ച ചിത്രം ഏത് പുരാണകഥയെ ആസ്പദമാക്കി വരച്ചതാണ്?
 (A) ഗോവർദ്ധനോദ്ധാരണം (B) ശാകുന്തളം
 (C) സന്താനഗോപാലം (D) ഗജേന്ദ്രമോക്ഷം