64/2026

Question Booklet Alpha Code	A	Question Booklet Serial Number:

Total Number of Questions : 100	Time : 1 Hour 30 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 unnumbered, 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 1/3rd 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.**

1. A steel rod section tapers from 10 mm to 5 mm diameter in a length of 100 mm. If the total extension is limited to 0.4 mm, then determine the maximum axial load it can support. Take $E = 2 \times 10^5$ N/mm^2

(A) 31.4 kN (B) 3.14 kN

(C) 1.57 kN (D) 157 kN

2. What is the value of maximum bending moment in a simply supported beam of span 5 m subjected to UDL, if the maximum shear force is 50 kN?

(A) 250 kNm (B) 62.5 kNm

(C) 125 kNm (D) 37.50 kNm

3. Maximum shear stress at the quarter span section of a simply supported beam subjected to central concentrated load is 3 N/mm^2. Find the central concentrated load, if the cross-section is 100 $\times$ 200 mm.

(A) 40 kN (B) 20 kN

(C) 80 kN (D) 60 kN

4. Euler crippling load of a long column with both ends hinged is 100 kN. What is the crippling load of a column with same material and length but with both ends fixed?

(A) 100 kN (B) 200 kN

(C) 400 kN (D) 141.2 kN

5. What is the distribution factor of the members BA, BC of the continuous beam ABC with simple supports? All the members are having same length and same flexural rigidity.

(A) (0.5, 0.5) (B) (0.57, 0.43)

(C) (0.38, 0.62) (D) (1.0, 0.0)

6. What is the static indeterminacy of a portal frame having one column end fixed and other column end hinged? All the members are having same length and flexural rigidity.

(A) 1 (B) 2

(C) 3 (D) 4

7. What is the relation between Rotation Factor (RF) and Distribution Factor (DF)?

(A) RF = 0.5 DF

(B) RF = – 0.5 DF

(C) RF = 0.75 DF

(D) RF = – 1.5 DF

8. A propped cantilever beam of span 2 m carries a UDL of 20 kN/m throughout the length. Find the prop reaction.

(A) 40 kN

(B) 7.5 kN

(C) 15 kN

(D) 20 kN

9. The maximum bending moment at a given section of a simply supported girder occurs when a number of wheel loads moves from left to right of the girder is

(A) Average load on the left of the section = Average load on the right of the section

(B) The biggest load is at the section

(C) All the loads are at the left of the section

(D) When the resultant of all wheel loads and biggest load are equidistant from the midpoint of the girder.

10. The expression for strain energy stored due to bending is

(A) $SE = \int \frac{M^2 ds}{2EI}$

(B) $SE = \int \frac{M^2 ds}{EI}$

(C) $SE = \int \frac{M ds}{2EI}$

(D) $SE = \int \frac{M^2 ds}{EJ}$

11. A vertical isosceles triangular gate with its vertex up has a height of 3 m and a base width of 2 m. If the vertex of the gate is 2 m below the free water surface, find the total pressure force on one side of the plate. Take specific weight of water as 10 kN/m^3.

(A) 120 kN

(B) 90 kN

(C) 1200 kN

(D) 900 kN

12. If u and v, the components of velocity in x and y directions respectively of a two-dimensional steady incompressible flow, are given by

$u = px - qy$ and

$v = ny - mx$, then the condition to be satisfied is

(A) $p + m = 0$ (B) $q + n = 0$

(C) $p + q + m + n = 0$ (D) $p + n = 0$

13. In a fluid flow, point P is at a higher elevation than point Q. The head loss between these points is H_L. The total heads at P and Q are H_P and H_Q respectively. The flow will take place

(A) always from P to Q

(B) from Q to P, if $H_P + H_L = H_Q$

(C) from P to Q, if $H_P + H_L = H_Q$

(D) from Q to P, if $H_Q + H_L = H_P$

14. A turbine develops 420 kW power under a net head of 20 m. If the overall efficiency of the turbine is 0.84, then the discharge of water having specific weight 10 kN/m^3 through the turbine in m^3/s is

(A) 20.5 (B) 2.05

(C) 2.5 (D) 25

15. For a uniform flow in a rectangular channel, the depth of flow is 0.5 m and Froude number is 2.0. Find the specific energy.

(A) 2.0 m (B) 1.5 m

(C) 1.8 m (D) 1 m

16. The rainfall on five successive days on a catchment was 2 cm, 5 cm, 8 cm, 4 cm and 3 cm respectively. If the ϕ-index for the storm can be assumed to be 3 cm/day, then the total direct runoff from the catchment is

(A) 11 cm (B) 22 cm

(C) 8 cm (D) 20 cm

17. A direct runoff hydrograph due to an isolated storm was triangular in shape with base of 80 h and peak of 50 m^3/s. If the catchment area is 180 km^2, the rainfall excess in the storm was

(A) 4 cm (B) 2 cm

(C) 5 cm (D) 10 cm

18. The base period of a particular crop is 100 days. If the duty is 1440 hectares/cumecs, then the delta is about

(A) 70 cm (B) 100 cm

(C) 50 cm (D) 60 cm

19. The dilution method (tracer method) of stream gauging is ideally suited for measuring discharges in

(A) flood flow in a mountain stream

(B) a large alluvial river

(C) steady flow in a small turbulent stream

(D) a river stretch having heavy industrial pollution loads

20. The volume of water that can be extracted by force of gravity from a unit volume of aquifer material is called

(A) Specific yield

(B) Specific storage

(C) Specific retention

(D) Specific capacity

21. In a closed traverse, the algebraic sum of latitudes should be

(A) Equal to departure

(B) Zero

(C) Equal to perimeter

(D) Equal to area

22. A benchmark fixed on the roof of a building has an RL of 112.500 m. During levelling, a Back Sight of 1.850 m is taken on the benchmark using an inverted staff and a Force Sight of 2.300 m is taken on ground point P. The RL of point P is

(A) 108.350 m
(B) 112.050 m
(C) 116.650 m
(D) 114.350 m

23. A triangulation station is best located on

(A) Valley bottom
(B) Dense forest area
(C) Elevated point with intervisibility
(D) River bank

24. Total Station becomes ineffective if

(A) There is no benchmark nearby
(B) Line of sight between the instrument and the prism is obstructed
(C) The area is perfectly flat
(D) The survey area is small

25. Which remote sensing resolution determines the smallest object that can be identified?

(A) Spectral resolution
(B) Temporal resolution
(C) Spatial resolution
(D) Radiometric resolution

26. The highest point on a mass haul diagram indicates

(A) Maximum fill
(B) Maximum cut accumulated
(C) Zero earthwork
(D) Minimum haul

27. A building costing ₹20 lakh has a scrap value of ₹2 lakh after 30 years.

Annual straight-line depreciation is

(A) ₹ 40,000 (B) ₹ 50,000

(C) ₹ 60,000 (D) ₹ 70,000

28. Two buildings have the same construction cost. Can their valuations differ?

(A) Both must have identical valuation

(B) Valuation depends only on cost

(C) Age has no effect on valuation

(D) Location and income potential affect valuation

29. Which item is least likely to be measured in cubic meters?

(A) Earth filling in plinth

(B) Concrete work

(C) Wood work in frames

(D) Half-brick thick masonry

30. Measurement of the construction of seal coat for road work is measured in

(A) m^3 (B) m^2

(C) kg (D) m^2

31. Identify the statement which is not true. The process of cold working of steel

(A) increases the yield strength

(B) increases the ductility

(C) decreases the percentage elongation

(D) results in residual strain

32. The main function of alumina in brick earth is to

(A) impart plasticity

(B) increase durability

(C) prevent shrinkage

(D) increase impermeability

33. As the fineness modulus of aggregate increases, its particle size

(A) decreases (B) increases

(C) remains same (D) none of these

34. The portion of a wall on which the end of an arch rests is known as

(A) Abutment (B) Lintel

(C) Soffit (D) Nosing

35. For the durability of water tanks, the minimum grade of concrete shall be

(A) M10 (B) M20

(C) M30 (D) M40

36. Choose the correct combination:

1.	Retarder	P.	Fly ash
2.	Accelerator	Q.	Superplasticizer
3.	Pozzolana	R.	Gypsum
4.	Workability	S.	Calcium chloride

(A) 1 – R, 2 – S, 3 – P, 4 – Q

(B) 1 – S, 2 – R, 3 – P, 4 – Q

(C) 1 – R, 2 – P, 3 – S, 4 – Q

(D) 1 – R, 2 – S, 3 – Q, 4 – P

37. The lowest part of a structure which transmits the load to the soil is known as

(A) Superstructure
(B) Plinth
(C) Foundation
(D) Basement

38. Temporary structures for workmen to construct high walls/columns is called

(A) Shoring
(B) Scaffolding
(C) Underpinning
(D) Formwork

39. Failure of a component or a structure due to several cycles of repeated loads is called

(A) Fatigue failure
(B) Buckling failure
(C) Brittle fracture
(D) Flexural failure

40. Which of the following chemicals causes rapid corrosion of steel reinforcement?

(A) Sulphate
(B) Carbon dioxide
(C) Alkali
(D) Chloride

41. Which among the following statements is not true about bar charts used in construction planning?

(A) Bar charts translate complex project timelines into an easy-to-digest graphical format
(B) The length of the bar typically indicates the duration of the activity for completion
(C) Bar chart cannot reflect the uncertainty in the duration times estimated for various activities.
(D) The bar chart can show clearly the interdependencies among various activities

42. Which among the following is a PERT event?

(A) Foundation digging is in progress

(B) Assemble the steel truss components

(C) Electrical works completed

(D) Quality control tests are being done

43. Calculate (i) variance and (ii) expected time for a construction activity based on the data given below:

Optimistic time – 10 days

Pessimistic time – 22 days

Most likely time – 14 days

(A) 4, 14.67

(B) 4, 10

(C) 14.67, 4

(D) 2, 14.67

44. Resource allocation is done to

(A) Increase the number of project activities

(B) Reduce the fluctuations in resource demand and usage

(C) Increase the project risk

(D) None of the above

45. The decisions of the arbitrator in disputes related to construction activities is

(A) Not having legal binding

(B) Having legal binding on both parties

(C) Advisory only

(D) Subjected to the approval of superior officer

46. Following options cannot be related to construction quality.

(A) Doing it right the first time and every time

(B) Increasing the variability

(C) Meeting or exceeding the needs of the customer

(D) Right value for the money invested

47. Who had developed quality trilogy of quality planning, quality control and quality improvement which forms the basis of quality management?

(A) Deming

(B) Philip Crosby

(C) Henry Fayol

(D) Juran

48. Which of the following tools is used in quality management?

(A) Cash flow diagram

(B) Fish bone diagram

(C) EOQ model

(D) ABC analysis

49. In ABC analysis, A category materials are

(A) Obsolete items

(B) Low value materials in high quantities

(C) High value materials in low quantities

(D) Medium value materials in moderate quantities

50. In construction industry, liquidated damages refer to

(A) Payment for extra work

(B) Bonus for early completion

(C) Pre-agreed amount payable as compensation if a specific obligation is breached

(D) Penalties imposed

51. Which one of the following pairs is not correctly matched?

(A) Check valve - To check water flow in all directions

(B) Sluice valve - To control flow of water through pipelines

(C) Air valve - To release the accumulated air

(D) Scour valve - To remove silt in a pipeline

52. The population equivalent of a city with average sewage flow - 100×10^6 L/day, 5-day BOD - 300 mg/L and 5-day BOD per capita - 0.075 kg/day is

(A) 2250 (B) 2,25,000

(C) 3,25,000 (D) 4,00,000

53. What is the correct sequence of formation of the following compounds during chlorination of water in which ammonia is present?

1. NCl_3

2. NH_2Cl

3. $NHCl_2$

Select the correct answer using the codes given below:

(A) 1, 2, 3 (B) 2, 3, 1

(C) 3, 1, 2 (D) 1, 3, 2

54. In which method of population forecasting, increase in population from decade to decade is assumed constant?

(A) Arithmetical increase method

(B) Geometrical increase method

(C) Incremental increase method

(D) Decreased rate of growth method

55. Flocculation of iron from water by addition of lime is an example of which of the following process?

(A) Chemical precipitation

(B) Chemical coagulation

(C) Adsorption

(D) Ion exchange process

56. Which of the following is not commonly used as a filter media in the treatment of water?

(A) Anthracite

(B) Sand

(C) Crushed rock

(D) Garnet sand

57. Which of the following is an anaerobic process for treating sewage?

(A) Oxidation ditch

(B) Imhoff tank

(C) Rotating biological contractors

(D) Activated sludge process

58. The detention period of a septic tank is _____.

(A) 1 minute

(B) 1 hour

(C) 12-36 hours

(D) 1 week

59. The correct relation between Theoretical Oxygen Demand (TOD), Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) is given by

(A) TOD > COD > BOD

(B) TOD > BOD > COD

(C) BOD > TOD > COD

(D) BOD > COD > TOD

60. _____ is formed in filters due to insufficient washing of sand grains.

(A) Mud ball
(B) Air binding
(C) Sand leakage
(D) None of these

61. According to IS 456:2000, the limit state method of design ensures that a structure satisfies

(A) Only the strength requirements under ultimate loads
(B) Only the serviceability requirements during its design life
(C) Both strength and serviceability requirements throughout its design life
(D) Economy of construction only

62. If the percentage of tensile reinforcement provided in a singly reinforced concrete beam subjected to bending is less than the limiting percentage of tensile reinforcement, then the beam is expected to exhibit

(A) Sudden crushing of concrete without warning
(B) Yielding of tension reinforcement followed by crushing of concrete
(C) Simultaneous yielding of steel and crushing of concrete
(D) Failure due to diagonal tension cracks

63. According to IS 456:2000, the maximum design shear stress ($\tau_{c,\ max}$) is specified to prevent which of the following failure modes in a reinforcement concrete beam?

(A) Yielding of shear reinforcement due to excessive shear force
(B) Formation of flexural-shear cracks caused primarily by bending stresses.
(C) Bond failure between the concrete and longitudinal reinforcement
(D) Crushing of the concrete web due to diagonal compressive stresses.

64. A rectangular reinforced concrete beam of width 300 mm and effective depth 500 mm is subjected to a factored shear force of 180 kN. The design shear strength of concrete is 0.60 N/mm^2. According to IS 456:2000, for what shear force should the shear reinforcement (stirrups) be designed?

(A) 180 kN

(B) 90 kN

(C) 0 kN

(D) 60 kN

65. According to IS 456:2000,when a tension reinforcement bar is curtailed in a reinforced concrete beam, it must be extended beyond the theoretical cut-off point for a minimum distance of

(A) d or 12ϕ, whichever is greater

(B) d or 20ϕ, whichever is greater

(C) $2d$ or 12ϕ, whichever is greater

(D) Development length

66. A rectangular slab panel has effective spans of 3.9 m and 8.0 m and is simply supported on all four sides. The main reinforcement should be provided predominantly along

(A) 8.0 m span

(B) 3.9 m span

(C) Both spans equally

(D) Diagonally across the slab

67. IS 456:2000 limits the clear spacing between adjacent tension reinforcement bars in reinforced concrete beams primarily to achieve which of the following objectives?

(A) To ensure adequate shear resistance of the beam section

(B) To limit the width of flexural cracks under service loads and enhance durability

(C) To increase the ultimate moment-carrying capacity of the beam

(D) To prevent buckling of tension reinforcement before yielding

68. A reinforced concrete column in an unbraced frame is fixed at its base and free at its top. If the unsupported height of the column is 3.0 m, then the effective length of the column for design purposes is

(A) 2.0 m (B) 3.0 m

(C) 4.5 m (D) 6.0 m

69. A short tied reinforced concrete column having a gross cross-sectional area of 1,02,000 mm^2 is reinforced with 2,000 mm^2 of longitudinal steel reinforcement. If M_{20} concrete and Fe_{500} steel is used, then the ultimate axial load carrying capacity of the column as per IS 456:2000 is

(A) 1340 kN (B) 1470 kN

(C) 1600 kN (D) 1740 kN

70. A rectangular reinforced concrete column of size 300 mm × 400 mm is reinforced with 16 mm diameter longitudinal bars. The maximum permissible pitch of lateral ties as per IS 456:2000 is

(A) 400 mm (B) 240 mm

(C) 256 mm (D) 300 mm

71. The minimum eccentricity to be considered in the design of RCC columns as per IS 456 is

(A) (L/1000 + D/20) (minimum 20 mm)

(B) (L/500 + D/30) (minimum 20 mm)

(C) (L/300 + D/10) (minimum 20 mm)

(D) (L/400 + D/15) (minimum 20 mm)

72. An RCC column is considered short when

(A) Slenderness ratio < 12

(B) Slenderness ratio < 10

(C) Slenderness ratio < 15

(D) Slenderness ratio < 20

73. The heel slab of a cantilever retaining wall is located

(A) In front of stem

(B) Below stem only

(C) On retained earth side

(D) On exposed face side

74. A circular slab supported along its circumference and subjected to UDL develops

(A) Only radial moments

(B) Only circumferential moments

(C) Both radial and circumferential moments

(D) No bending moment

75. Water retaining structures are generally designed using

(A) Limit State Method only

(B) Working Stress Method

(C) Plastic Method

(D) Ultimate Load Method

76. Prestressing is the process of

(A) Increasing concrete grade

(B) Introducing compressive stress before loading

(C) Increasing steel area

(D) Reducing dead load

77. The permissible tensile stress in concrete for water tanks is restricted mainly to

(A) Increase strength

(B) Prevent cracking and leakage

(C) Reduce dead load

(D) Improve workability

78. A fillet weld is primarily subjected to

(A) Bearing stress
(B) Shear stress
(C) Torsion only
(D) Compression only

79. The primary tensile stress in a circular water tank wall is

(A) Radial tension
(B) Hoop tension
(C) Shear stress
(D) Bearing stress

80. The purpose of shear connectors in composite beams is to

(A) Increase dead load
(B) Prevent slip between steel and concrete
(C) Reduce span length
(D) Improve aesthetics

81. The percentage air voids (n_a) in a compacted soil is defined as

(A) Ratio of volume of air to volume of voids
(B) Ratio of volume of air to total volume of soil
(C) Ratio of volume of voids to total volume of soil
(D) Ratio of volume of solids to total volume

82. For a cohesive backfill, the tensile stress at top of the wall is

(A) $-\frac{2C}{\sqrt{k_a}}$
(B) $-2C\sqrt{k_a}$
(C) $\frac{2C}{k_a}$
(D) $2Ck_a$

83. The air content of a partially saturated soil is 40%, and then the degree of saturation of the soil is

(A) 30%
(B) 40%
(C) 60%
(D) 20%

84. Which parameter is obtained from the slope of the virgin compression line in an e-log p curve?

(A) Coefficient of permeability

(B) Compression index

(C) Coefficient of volume compressibility

(D) Degree of consolidation

85. Increasing the compactive effort generally results in

(A) Lower MDD and Higher OMC

(B) Higher MDD and Lower OMC

(C) Higher MDD and Higher OMC

(D) Lower MDD and Lower OMC

86. Ratio of ultimate bearing capacity of circular footing to that of strip footing, if the diameter of circular footing and width of strip footing are same and having equal depth is

(A) 1.33 (B) 0.75

(C) 0.6 (D) 1.5

87. The time factor for 50% consolidation is approximately

(A) 0.197 (B) 0.848

(C) 0.187 (D) 0.500

88. During seepage through an earth dam, piping is most likely to occur when

(A) Seepage velocity becomes zero

(B) Water table intersects downstream slope

(C) Soil becomes partially saturated

(D) Exit gradient exceeds critical hydraulic gradient

89. A soil specimen fails in a direct shear test under a normal stress of 200 kPa and shear stress of 130 kPa. Another specimen fails under normal stress of 400 kPa and shear stress of 230 kPa. The cohesion of the soil is

(A) 30 kPa
(B) 20 kPa
(C) 10 kPa
(D) 40 kPa

90. In a triaxial compression test on normally consolidated saturated clay under undrained conditions, the pore pressure parameter A at failure is generally

(A) Negative
(B) Zero
(C) Between 0.5 and 1.0
(D) Greater than 2

91. The speed-density relationship on a highway follows Greenshields' linear model. If the free-flow speed is 80 km/h and the jam density is 160 veh/km, then the maximum flow occurs at

(A) 20 km/h
(B) 40 km/h
(C) 60 km/h
(D) 80 km/h

92. For a summit curve, the length of curve is governed by

(A) Overtaking sight distance only
(B) Stopping sight distance and driver's eye-object geometry
(C) Rate of change of centrifugal force
(D) Extra widening requirements

93. A traffic engineer wishes to determine the optimum signal cycle length using Webster's formula. If the total lost time per cycle is 12 s and the sum of critical flow ratios is 0.77, then the optimum cycle length is

(A) 60 s
(B) 100 s
(C) 80 s
(D) 90 s

94. For a flexible pavement designed using the CBR method, the design traffic is increased from 20 msa to 80 msa while all other parameters remain unchanged. The pavement thickness will

(A) Increase linearly

(B) Increase logarithmically

(C) Increase but not in direct proportion to traffic

(D) Remain unchanged

95. The equilibrium cant required for a BG railway curve is 120 mm. The cant actually provided is 90 mm. The cant deficiency is

(A) 30 mm (B) 90 mm

(C) 120 mm (D) 210 mm

96. The principal advantage of transition curves in highway is

(A) Reduction in pavement thickness

(B) Gradual introduction of centrifugal force and superelevation

(C) Reduction in right-of-way requirements

(D) Increase in stopping sight distance

97. For airport runway numbering, a runway oriented approximately at magnetic heading 274° will be designated as

(A) 26 (B) 27

(C) 28 (D) 29

98. A four-step transportation planning process includes trip generation, trip distribution, modal split and traffic assignment. Which of the following is the correct sequence?

(A) Trip generation → Modal split → Trip distribution → Traffic assignment

(B) Trip generation → Trip distribution → Modal split → Traffic assignment

(C) Trip distribution → Trip generation → Modal split → Traffic assignment

(D) Modal split → Trip generation → Trip distribution → Traffic assignment

99. A traffic stream has an average speed of 72 km/h and an average spacing of 30 m between successive vehicles. The corresponding traffic flow is

(A) 1200 veh/h (B) 1800 veh/h

(C) 2400 veh/h (D) 3000 veh/h

100. Airport site is at MSL with level ground. The basic runway length is 2000 m. The airport reference temperature is 45°C and the standard atmospheric temperature at MSL is 15°C. What is the actual runway length?

(A) 2200 (B) 2400

(C) 2600 (D) 2800

SPACE FOR ROUGH WORK