124/23

Question Booklet Alpha Code

<div style="border:1px solid">A</div>

A

Total Number of Questions : 100   **Time : 90 Minutes**

Maximum Marks : 100

<div style="border:1px solid">INSTRUCTIONS TO CANDIDATES</div>

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.

A

1. A 20 m chain was used to measure the length of line and was found as 500 m. Later it was found that the chain was 0.05 m too long. What is the true length of line ?

   A) 500.25   B) 498.75   C) 499.75   D) 501.25

2. Primary line plotted on paper is called

   A) Tie line   B) Check line
   C) Base line   D) Boundary line

3. The line normal to a level surface is known as

   A) Level line   B) Plumb line
   C) Line of collimation   D) Horizontal line

4. What is/are principle/s of plane table surveying ?

   i. An unknown point can be fixed by knowing its directions from two known positions.

   ii. The whole plot is divided into right angled triangles and trapezium, computing individual areas and adding these areas together to get the area of whole plot.

   A) i only   B) ii only
   C) i and ii   D) None of these

5. Which of the following is/are errors due to the external forces in compass survey ?

   i. Variations in declination
   ii. Incorrect centering
   iii. Local attraction

   A) i only   B) ii and iii only
   C) iii only   D) i and iii only

6. The line joining the optical center of object glass to the center of the eye piece is known as

   A) Axis of level tube   B) Horizontal axis
   C) Axis of telescope   D) Line of sight

7. Tellurometer uses _____ of EM spectrum.

   A) Light waves   B) Radio waves
   C) Infrared rays   D) Gamma rays

A   -3-

8. The outer line of an object are drawn using _____ pencil.

    A) 3H   B) HB   C) H   D) 2H

9. The layout plan are drawn to a scale not less than

    A) 1 : 2000   B) 1 : 500   C) 1 : 1000   D) 1 : 1400

10. The horizontal clearance of building for low and medium voltage line is

    A) 2.1 m   B) 3 m   C) 1.2 m   D) 2.5 cm

11. The correct set of the combination of total station is

    A) Theodolite, EDM   B) Electronic theodolite, EDM

    C) EDM, GPS   D) Theodolite, Compass

12. How many minimum satellites are operational in the constellation of GPS ?

    A) 20   B) 24   C) 28   D) 32

13. How many meridians are used in surveying ?

    A) 6   B) 8   C) 3   D) 5

14. Which of the following expression is correct to calculate the correction of curvature (Cc) in levelling ? ('d' is the distance sighted measured in km)

    A) $Cc = 0.05658\ d^2$ m   B) $Cc = 0.07849\ d^2$ m

    C) $Cc = 0.01121\ d^2$ m   D) $Cc = 0.06728\ d^2$ m

15. The length to width ratio of A2 drawing paper is

    A) $1 : \sqrt{2}$ B) 1 : 2   C) $\sqrt{2} : 1$ D) $1 : \sqrt{3}$

16. The command used to draw an arc between two non parallel entities is called

    A) Stretch   B) Array

    C) Fillet   D) Extend

17. Which of the following are draw commands used in AutoCAD ?

    i. Arc

    ii. Hatch

    iii. Text

    A) i only   B) i and ii

    C) ii only   D) i, ii and iii

18. When the projectors are parallel to each other and also perpendicular to the plane, the projection is called

A) Isometric projection
B) Orthographic projection
C) Perspective projection
D) Oblique projection

19. In perspective projection, the line of intersection of picture plane with the ground plane is known as

A) Auxillary ground line
B) Ground line
C) Horizon line
D) None of these

20. What is Floor Area Ratio (FAR) as per NBC ?

A) Total floor area/Plot area
B) Ground floor area/Total built up area
C) Plot area/Total built up area
D) Total built up area/Plot area

21. The ratio of extension of a circular bar of diameter 'd' loaded with an axial load 'P' to that of a circular bar of same length and material but diameter tapering from '2d' at one end to 'd' at other end is

A) ½
B) 4
C) ¼
D) 2

22. A steel bar of cross sectional area 1 cm^2 and length 5 cm is held between two supports such that one support is fixed and other freely moves from x = 0 to 5.001 cm. Calculate the stress induced in the bar when temperature is raised by 50°C. Take $\alpha_s = 12 \times 10^{-6}/°C$ and $E = 2 \times 10^5$ MPa.

A) 80 MPa
B) 120 MPa
C) 90 MPa
D) 60 MPa

23. Which of the following statements are true ?

i. Ability of a material to absorb energy within elastic limit is known as strain energy density.

ii. Maximum instantaneous stress and elongation in case of impact loading is calculated by principles of work.

iii. Work done during non-elastic strain is spend in enhancing the cohesion of particles and energy expended appears as heat.

A) i only
B) i and ii
C) ii and iii
D) All of the above

A

24. The maximum stress in a steel wire of 10 mm diameter bent into a circular arc is 50 MPa. Determine the radius of bent.

Take E = 2×10^5 N/mm^2

A) 10 m   B) 15 m   C) 20 m   D) 25 m

25. An I section of 200 mm deep and 160 mm wide has 16 mm thick flanges and 5 mm thick web. The beam is subjected to a shear force of 200 kN. The beam is kept at horizontal. Shear stress developed in the flange just above the web is 58.27 MPa. Calculate the shear stress developed in the web just at the junction.

A) 58.27 MPa   B) 9.55 MPa

C) 56.92 MPa   D) 9.32 MPa

26. A circular shaft of diameter 200 mm is subjected to a torque of 78.54 kN–m. The maximum torsional stress induced is 50 MPa. Calculate torsional stress at a point situated at a radial distance of 40 mm from the center line of the shaft.

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

27. A cylindrical shell of 2 m long and 100 cm internal diameter and 10 mm metal thickness is subjected to an internal pressure of 2.4 N/mm^2. The efficiency of circumferential joint and longitudinal joint are 80% and 60% respectively. Calculate circumferential stress and longitudinal stress in MPa.

A) 120, 60   B) 150, 100

C) 200, 75   D) 150, 75

28. Choose the correct relationship between bending moment 'M', shear force 'F' and rate of loading 'W'.

A) $\dfrac{dF}{dx} = -W$ B) $\dfrac{dF}{dx} = M$

C) $\dfrac{dW}{dx} = -F$ D) $\dfrac{dM}{dx} = W$

29. "If a number of forces are simultaneously acting on a particle, then the resultant of these forces will have the same effect as produced by all the forces". This is known as

A) Principle of superposition

B) Principle of transmissibility

C) Principle of physical independence of forces

D) Principle of resolution of forces

A

30. Find the centre of gravity of a right circular solid cone of height 40 mm and radius 30 mm from the top vertex.

    A) 1 cm   B) 3 cm   C) 1.3 cm   D) 2.7 cm

31. Smith's test on stones is used to find

    A) Presence of soluble matter   B) Toughness of a stone

    C) Crystallisation of $CaSO_4$ D) Rate of wear of stones

32. Articles prepared from clay which is burnt at low temperature and cooled down slowly is known as

    A) Stoneware   B) Porcelain

    C) Whiteware   D) Earthenware

33. Which of the following brick is prepared from clay containing a higher percentage of iron ?

    A) Fire brick   B) Paving brick

    C) Curved sector brick   D) Acidic brick

34. Which of the following lime contains more than 30 percentage of clay ?

    A) Fat lime   B) Hydraulic lime   C) Poor lime   D) Quick lime

35. Identify the defect occurs to timber when it is converted to commercial form.

    A) Wane   B) Sap strain

    C) Callus   D) Druxiness

36. Which of the following scaffolding is preferred to do construction work on upper part of a multi-storeyed building ?

    A) Trestle scaffolding   B) Needle scaffolding

    C) Mason's scaffolding   D) Bricklayer's scaffolding

37. The external jamb of a door or a window opening at right angles to the wall face is known as

    A) Rebate   B) Transome   C) Reveal   D) Mullion

38. When the final coat of paint has not sufficient opacity, the background is clearly seen. This defect is known as

    A) Wrinkling   B) Grinning   C) Running   D) Bloom

A

39. Minimum point required by a project for GRIHA certification is
    A) 25   B) 50   C) 60   D) 40

40. Which of the following statements about cavity walls are incorrect ?
    i. It provides good thermal and sound insulation.
    ii. More costlier compared to solid walls.
    iii. Moisture gets collected in cavity and causes dampness.
    iv. Outer efflorescence is prevented.
    v. Increase the weight on foundation due to two separate walls.
    A) i, iii, iv, v   B) ii, iii, v
    C) i, ii, v   D) i, ii, iv, v

41. Identify the unit for estimating quantity of soling.
    A) sq.m   B) m
    C) cu.m   D) litres

42. Find the years purchase for an interest rate of 5%.
    A) 20   B) 100   C) 50   D) 25

43. Which of the following method will be adopted when the rental value is not available from the property concerned, but there are evidences of sale price of properties as a whole ?
    A) valuation based on profit
    B) direct comparison with the capital value
    C) rental method of valuation
    D) development method of valuation

44. In which of the following method of land valuation the plot of land is divided into zones of varying rates ?
    A) Zonal method   B) Comparative method
    C) Abstractive method   D) Belting method

45. A machine was purchased for Rs. 12,000/-. Assume its salvage value at the end of 6 years to be Rs. 3,000/-. Determine the amount of depreciation for each year by straight line method.
    A) Rs. 1,500   B) Rs. 2,000   C) Rs. 1,300   D) Rs. 1,700

A

46. Mortar applied in raked, cleaned and wet joints in excess to form raised band is known as
    A) Weather pointing
    B) Flush pointing
    C) Trucked pointing
    D) Ruled pointing

47. Which of the following statement is/are correct ?
    i. The continuous length of DPC to be laid in a single day is limited to 6 m.
    ii. Surface of mossaic flooring is to be covered with wet bags after about 2 hrs. of laying.
    iii. For the application of oil distemper it is mixed with required amount of linsed oil and applied on the surface.
    iv. Polish is pure shellac varying from pale orange to lemon yellow colour, free from resin, dirt dissolved in water at the rate of 0.15 kg of shellac to 1 L of water.
    A) iv only
    B) ii only
    C) i and iv
    D) ii and iii

48. A 6 m × 5 m wall is to be plastered. It is having a ventilator opening of 60 cm × 90 cm and a window opening of 1800 cm × 1200 cm. Estimate the quantity of plastering for outer face only.
    A) 28 m^2
    B) 27 m^2
    C) 29 m^2
    D) 30 m^2

49. Amount charged by the engineering department when take up the work of other department for establishment, design, planning and supervision is
    A) work establishment charges
    B) untage charges
    C) execution charges
    D) supervisory charges

50. The weight of 3 m length of 12 mm diameter steel bar is
    A) 2.67 kg
    B) 0.267 kg
    C) 2.35 kg
    D) 0.235 kg

51. Which among the below set of colours are generally known as the primary colours of light ?
    A) Red, Green, Blue
    B) White, Yellow, Blue
    C) Red, Green, Black
    D) Black, White, Red

A

52. What is a Colour wheel ?

    A) A visual tool that shows additive colours

    B) A visual tool that shows basic colour

    C) Visual that display subtractive colours

    D) A wheel that you can put colours on in any order

53. What is Value ?

    A) Colour unity   B) The scale of lightness to darkness

    C) The vividness of a colour   D) Analogous colours

54. A heart has what type of balance ?

    A) Vertical   B) Radial   C) Symmetrical   D) Asymmetrical

55. Which of the following is not a principle of design ?

    A) Scale   B) Contrast   C) Balance   D) Colour

56. Which of the following is not a design element ?

    A) Value   B) Line   C) Space   D) Movement

57. Which of the following sentences clearly defines Anthropometry ?

    A) Study of people and their relationship with the environment around

    B) Relation of one part to another or whole

    C) The measurement of the size and proportions of the human body

    D) Ratio between the size of object and actual size

58. Which of the following is a transitional space ?

    A) Work area   B) Corridor

    C) Multipurpose hall   D) Drawing room

59. What is Tint ?

    A) A mixture of a colour with black

    B) A mixture of a colour with white

    C) A mixture of three colours

    D) A mixture of colours they are complementary

60. Warm colours are usually associated with what kind of emotion ?
    A) Laziness   B) Peace   C) Aggression   D) Passiveness

61. Which highest gateway of India was built by Akbar ?
    A) Delhi Gate   B) Amarsing Gate
    C) Lahore Gate   D) Buland Darwaza

62. Which dynasty gave India its famous temples of Khajuraho ?
    A) Mauryas   B) Paramara
    C) Chandelas   D) Holkars

63. Which of the following temple is an example of rock-cut architecture ?
    A) Rajarajeshwara Temple, Thanjavur   B) Shore Temple, Mamallapuram
    C) Jagannatha Temple, Puri   D) Kailasa Temple, Ellora

64. Which among the following temples of India is known as Black pagoda ?
    A) Meenakshi Temple, Madurai   B) Sun Temple, Konark
    C) Lord Jagannath Temple, Puri   D) Brihadeeswara Temple, Tanjore

65. Which of the following is not a world heritage sites ?
    A) Sanchi stupa   B) Mandu fort
    C) Khajuraho temples   D) Bhimbetka rock shelters

66. Who built the Red Fort at Agra ?
    A) Babar   B) Shahjahan
    C) Akbar   D) Bahadur Shah Zafar

67. What is Pietra Dura ?
    A) Decorating the ceilings with miniature paintings
    B) Combination of Indian and Persian Art
    C) Flowers adorn the walls with precious stones
    D) Buildings with glazed tiles and marble

68. Which architect became the first woman in history to be awarded the Pritzker prize ?
    A) Elisabeth Diller   B) Kazuyo Sejima
    C) Zaha Hadid   D) Renzo Piano

69. The main block of the Supreme Court building of India was designed by which of the following architects ?

    A) Anant Damodar Raje

    B) Vasanth Kamath

    C) Achyut Purushotham Kanvinde

    D) Ganesh Bhikaji Deolalikar

70. The Statue of Unity in India is the world's tallest statue of

    A) Vinoba Bhave

    B) Dr. B. R. Ambedkar

    C) Sardar Vallabhbhai Patel

    D) M. K. Gandhi

71. A Public Sector Company, under the Ministry of Housing and Urban Affairs (MoHUA), which is a key partner with the Government in building assets for the nation ?

    A) HUDCO   B) HIL   C) HOC   D) HDFC

72. The order of stages of town development according to Griffith Taylor is

    A) Juvenile, Infantile, Senile, Mature

    B) Infantile, Juvenile, Mature, Senile

    C) Infantile, Juvenile, Senile, Mature

    D) Senile, Infantile, Juvenile, Mature

73. According to direction growth of town is studied under

    A) Horizontal and vertical growth

    B) Concentric and ribbon growth

    C) Scattered and concentric growth

    D) Ribbon and scattered growth

74. Which among the following is not an aspect of zoning ?

    A) Density   B) Height   C) Width   D) Use

75. Which among the following is not a feature of precinct ?

    A) All roads within a precinct are local roads

    B) Precinct is planned and developed as residential unit only

    C) Buildings within a precinct do not face towards arterial or sub arterial roads

    D) Precinct diverts noise and bustle of traffic

76. Arterial road on which fast urban traffic is allowed to move speedily and safely

    A) Collectors street

    B) Express way

    C) Outer ring road

    D) Inner ring road

77. Arrangement of taking one road over another by means of a bridge is called
    A) Fly over
    B) Round about
    C) Traffic island
    D) Tunnel

78. Which of the following is not a grade interchange ?
    A) Clover leaf
    B) Rotary interchange
    C) 3 way interchange
    D) Round about

79. Which type of parking is most preferred when width of street is limited ?
    A) 45 degree parking
    B) 60 degree parking
    C) Parallel parking
    D) Right angled parking

80. The minimum area required for a medium size park is
    A) 4 hectare
    B) 8 hectare
    C) 6 hectare
    D) 12 hectare

81. The method adopted for removing suspended solids during treatment of water
    A) Screening
    B) Filteration
    C) Adsorption
    D) Sedimentation

82. Coagulation is adopted for removing
    A) Colour
    B) Dissolved gases
    C) Colloidal solids
    D) Floating objects

83. If the length of a sedimentation tank is 15 m and the detention period is 150 minutes the horizontal flow velocity is given by
    A) 0.1 mm/minute
    B) 100 mm/minute
    C) 10 mm/minute
    D) 1 mm/minute

84. JAR test is used determine
    A) Dosage of coagulant
    B) Dosage of disinfectant
    C) Size of sedimentation tank
    D) Hardness

85. Name one method to remove permanent hardness.
    A) Boiling
    B) Adding lime
    C) Zeolite process
    D) None of these

A

86. The maximum permissible limit of turbidity of drinking water as per WHO is
    A) 28 NTU
    B) 25 NTU
    C) 30 NTU
    D) 27 NTU

87. Which of the following is not a stage in the refrigeration cycle ?
    A) Compression
    B) Condensation
    C) Expansion
    D) Exhaustion

88. A type of waste disposal in which waste is isolated from environment until it is safe
    A) Composting
    B) Sanitary landfill
    C) Vermi composting
    D) Incineration

89. Activated sludge process is an example of
    A) Aerobic attached growth process
    B) Anaerobic suspended growth process
    C) Aerobic suspended growth process
    D) Anaerobic attached growth process

90. Which method of population forecasting is suitable for a large and old city ?
    A) Incremental increase method
    B) Logistic curve method
    C) Geometric increase method
    D) Arithmetic increase method

91. Which among the following statements is not true about feasibility report ?
    A) It gives an idea about the necessity of the project
    B) It gives an idea about the cost benefit ratio
    C) It includes the detailed measurements of works
    D) It gives a brief about the circumstances under which the proposal is taken up

92. Which of the following is a Project Management Software Package ?
    A) AUTOCAD
    B) MS EXCEL
    C) PRIMA VERA
    D) STAAD PRO

93. Which type of contract is also called unit price contract ?
    A) Piece work contract
    B) Lumpsum contract
    C) Cost plus percentage contract
    D) Item rate contract

A

94. Amount of money that is deposited by the contractor with the department inviting tender at the time of submitting tender to prevent future refusal by the contractor to accept tender is called

    A) Earnest money deposit
    B) Caution deposit

    C) Security deposit
    D) Non refundable deposit

95. Which of the following comes under pre measurement ?

    A) Earth work excavation
    B) Brick work

    C) Painting
    D) Jungle clearance

96. The stage of a construction project in which performance the structure is evaluated

    A) Briefing stage
    B) Planning stage

    C) Commissioning stage
    D) Designing stage

97. Which among the following is an example of preliminary estimate ?

    A) Revised estimate
    B) Supplementary estimate

    C) Plinth area rate estimate
    D) Annual repair estimate

98. The expansion of PERT is

    A) Project Execution and Review Technique

    B) Project Expansion Review Technique

    C) Project Execution and Reversal Technique

    D) Project Evaluation and Review Technique

99. Which among the following will tell you how much total time the critical tasks can be delayed before the entire project misses its completion target ?

    A) Event
    B) Float
    C) Lag
    D) Lead

100. CPM is

    A) Activity oriented
    B) Event oriented

    C) Time oriented
    D) Result oriented

Space for Rough Work