



Booklet Series

A

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Test Booklet

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PAPER CODE

PAPER/II-06/SUR

Roll No. : _____

Name of the Candidate : _____

Test Duration : 03 Hours

Total Questions : 100

Total Maximum Marks : 200

INSTRUCTIONS TO CANDIDATES

1. Candidates will be admitted to the Examination Hall/Room on production of their Admit Card and Original ID such as **EPIC/Aadhaar/Driving License** with a view to establish the true identity of the candidate.
2. Candidates shall reach the venue of examination at least 30 minutes in advance and admission will be refused to a candidate who is late by 10 minutes from the start of the examination.
3. No candidate shall be permitted to leave the Examination Hall/Room until the time for the examination is over or until permitted to do so but not until the half of the allotted time.
4. Candidates must use a **BLUE/BLACK** ball point pen **ONLY** to make entries on the OMR Answer Sheet.
5. The candidates should not bring any articles (other than those specified above) such as books, notes, loose sheets, mobile phones, pagers, digital diaries, calculators, smart watches, etc. inside the Examination Hall/Room. Any candidate found in possession of the said articles will be liable to be de-barred from applying all future examinations to be conducted by the Board.
6. After receiving the Test Booklet with OMR inserted, the candidates may pull out the OMR Answer Sheet and fill in the necessary details. However the candidates are not allowed to break open the seal of the Test Booklet until the invigilator informs them to do so.
7. Mark carefully your Roll Number, Question Booklet Code and Booklet Series on the OMR Answer Sheet and append signature at the appropriate place. Write your Roll Number and **Name in the Question Booklet**. In the absence of the Roll Number and Question Booklet Series on the OMR Answer Sheet, it may NOT be evaluated.
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12. In the event of a mistake made in marking the Roll Number in the OMR Answer Sheet or the OMR Series the candidates will not be given a new OMR Answer Sheet but he/she will be allowed to use whitener or correcting fluid for correction of the Roll Number and the Booklet Series only.
13. **Change of answer will not be permitted in the OMR Answer Sheet. Using of correcting fluid (of any sort) will be treated as wrong attracting negative marking.**
14. The candidates must abide by such instructions as may be specified on the cover of the Answer Paper or instructions to candidates given at the back of the Admit Card. If a candidate fails to do so or indulges in improper conduct, he/she will render himself/herself liable to expulsion from the examination or such other punishment as the Board deemed fit to impose.
15. At the end of the Test, candidates must submit the OMR Answer Sheet to the invigilator on duty. Candidates shall be allowed to take their Question Booklet only after the end of the examination session.
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17. Examination centre once opted cannot be changed.

PLEASE REFER THE BACKSIDE OF THE QUESTION BOOKLET FOR MORE INSTRUCTIONS.

PAPER/II-06/SUR

SEAL



1. Which method is used to balance a traverse when angular measurements are more precise than linear measurements ?

- (A) Bowditch's Rule
- (B) Transit Rule
- (C) Compass Rule
- (D) Graphical Method


2. What is the main objective of levelling in surveying ?

- (A) Measuring horizontal angles
- (B) Determining elevation differences between points on the earth's surface
- (C) Calculating direction of a line
- (D) Measuring magnetic bearing

3. What is the importance of conventional symbols in topographic maps ?

- (A) To provide a uniform standard for interpretation
- (B) To show elevation only
- (C) For aesthetic design
- (D) To decorate maps

4. On a military map, what does

 the symbol of a solid blue line with small black arrows typically represent ?

- (A) Drainage or canal with flow direction
- (B) Underground cable
- (C) Boundary wall
- (D) Railway

5. When working in rugged terrain, which feature of a Total Station significantly improves efficiency compared to manual methods ?



- (A) Optical plummet
- (B) Auto-leveling compensator
- (C) Tripod stand
- (D) Reflectorless distance measurement

6. What is a cadastral map primarily used for ?

- (A) Measuring altitude of terrain
- (B) Displaying road networks
- (C) Showing boundaries of land parcels
- (D) None of the above

7. A line has WCB of 280° . What is its Reduced Bearing (RB) ?



- (A) $N 80^\circ W$
- (B) $S 80^\circ W$
- (C) $N 100^\circ W$
- (D) $S 100^\circ W$

8. What is the correction applied when local attraction is suspected in a compass survey ?

- (A) Subtract declination from observed bearing
- (B) Adjust bearing using difference in Fore Bearing (FB) and Back Bearing (BB)
- (C) Take back bearing only
- (D) Ignore local attraction if less than 2°



9. Which scale is generally used for cadastral mapping ?
(A) 1 : 1,00,000
(B) 1 : 2,500
(C) 1 : 25,000
(D) 1 : 50,000
10. The term "Contour" in topographical mapping represents
(A) Underground drainage line
(B) Line joining points of equal elevation
(C) Property division line
(D) Road centre line
11. Which of the following is represented by blue color on conventional survey maps ?
(A) Buildings
(B) Contours
(C) Roads
(D) Water bodies
12. A benchmark in survey maps is symbolized by
(A) BM
(B) Triangle with dot
(C) Cross inside a circle
(D) Dotted rectangle
13. Which of the following software is commonly used for processing GPS data in modern surveying ?
(A) AutoCAD
(B) Microsoft Excel
(C) Trimble Business Center (TBC)
(D) Adobe Illustrator

14. What is the primary purpose of hydrographic surveying ?
(A) Mapping property boundaries on land
(B) Measuring wave height in oceans
(C) Measuring depth and features of water bodies
(D) Observing cloud patterns over rivers
15. A field has four sides of equal length (100 m), but not all angles are right angles. Which method is best suited to calculate its area ?
(A) Trapezoidal rule
(B) Simpson's rule
(C) Cross-staff method
(D) Area by triangulation
16. What does the term 'Fore Bearing' (FB) refers to in compass surveying ?
(A) Bearing from the end of the line to the start
(B) True bearing of the North direction
(C) Bearing measured in reverse direction
(D) Bearing measured in the direction of survey
17. What is the primary function of cement in concrete ?
(A) Acts as a filler
(B) Provides color
(C) Binds the aggregates together
(D) Prevents water loss



18. In RCC (Reinforced Cement Concrete) work, what is the typical mix ratio used for M20 grade concrete ?



- (A) 1 : 2 : 4
- (B) 1 : 1.5 : 3
- (C) 1 : 3 : 6
- (D) 1 : 2.5 : 5

19. The first step in temporary adjustment of a Total Station at a station point is

- (A) Centering
- (B) Focusing
- (C) Setting horizontal angle
- (D) None of the above

20. In the working procedure of a Total Station, which step comes immediately after sighting the prism ?



- (A) Recording field notes
- (B) Levelling the instrument
- (C) Powering off the instrument
- (D) Measuring and storing angle and distance data

21. Which type of lettering is commonly used in engineering drawings for clarity and uniformity ?

- (A) Cursive Writing
- (B) Gothic Lettering
- (C) Calligraphy
- (D) Roman Script

22. Which type of line is used to represent hidden details in a drawing ?

- (A) Continuous thick line
- (B) Dashed line
- (C) Chain thin line
- (D) Wavy line

23. Which factor is most important when selecting a good alignment for a new transmission line ?

- (A) Availability of local labor
- (B) Number of existing road crossings
- (C) Avoidance of forest, urban and water bodies
- (D) None of the above

24. Which type of tower is best suited for locations where a sharp change in the direction of the transmission line occurs ?



- (A) Tangent tower
- (B) Suspension tower
- (C) Angle tower
- (D) None of the above

25. Which scale is used to measure three units such as meters, decimeters and centimeters ?

- (A) Vernier scale
- (B) Diagonal scale
- (C) Plain scale
- (D) Linear scale



26. If a scale has an Representative Fraction (R.F.) of $1/2000$, what length on the drawing will represent 50 meters on the ground ?

- (A) 25 cm
- (B) 2.5 cm
- (C) 5 cm
- (D) 10 cm



27. Which of the following instruments combines the functionalities of electronic theodolite and Electronic Distance Measurement (EDM) in one unit ?
- (A) Auto Level
(B) Theodolite
(C) GPS Receiver
(D) Total Station
28. Which component of the Total Station is used to store field data electronically ?
- (A) Telescope
(B) Keyboard and Display Unit
(C) Optical Plummet
(D) Data Logger
29. Which of the following factors is considered least important while selecting a road alignment ?
- (A) Length of the road
(B) Volume of traffic
(C) Height of embankment
(D) Number of signboards
30. What does a topographical map primarily represent ?
- (A) Land ownership and boundaries
(B) Underground pipelines
(C) Soil classification zones
(D) Natural and man-made features along with elevations
31. In the aligned system of dimensioning, how should dimensions be placed relative to the dimension lines ?
- (A) Parallel and above the dimension line, readable from the bottom or right side
(B) Perpendicular to the dimension line, readable from the bottom or right side
(C) Parallel and within the dimension line, readable from the left side
(D) None of the above
32. What is the primary objective of surveying ?
- (A) To determine the relative position of points on or near the earth's surface
(B) To determine land prices
(C) To calculate volumes
(D) To analyze soil types
33. Which instrument is commonly used in tacheometric surveying?
- (A) Chain
(B) Dumpy level
(C) Prismatic compass
(D) Theodolite with stadia diaphragm
34. The standard tachometric formula for horizontal distance when the line of sight is horizontal is
- (A) $D = KS + C$
(B) $D = S/K + C$
(C) $D = (KS)^2 + C$
(D) $D = (S+C)/K$



35. While marking tentative alignment in a railway survey, what is usually considered the most ?
- (A) Number of bridges
 - (B) Least gradient and shortest possible distance
 - (C) Cost of rails
 - (D) None of the above
36. Which of the following activities is not included in a detailed survey for a railway project ?
- 
- (A) Topographic mapping
 - (B) Soil investigation
 - (C) Environmental clearance
 - (D) Longitudinal and cross-section levelling
37. What is the standard length of a surveyor's chain used in chain surveying ?
- (A) 10 meters
 - (B) 20 meters
 - (C) 50 meters
 - (D) None of these
38. Which tool is used for marking right angles during chain surveying?
- 
- (A) Cross-staff
 - (B) Ranging rod
 - (C) Arrow
 - (D) Chain

39. What is the main purpose of providing a curve in a road or railway alignment ?

- (A) To increase the length of alignment
- (B) To reduce the cost of construction
- (C) To change the direction of alignment smoothly
- (D) None of the above

40. A transition curve is provided between a straight path and a circular curve primarily to

- (A) Increase the radius gradually and avoid sudden jerk
- (B) Change vertical alignment smoothly
- (C) Balance the centrifugal force
- (D) Both (A) and (C)

41. Which AutoCAD command creates a copy of the selected object at a specified distance and parallel to the original object ?

- (A) MOVE
- (B) ROTATE
- (C) OFFSET
- (D) MIRROR





42. Which file format is commonly used to save AutoCAD drawings for sharing with others who may not have AutoCAD ?



(A) .rvt
(B) .dxf
(C) .docx
(D) None of these



43. Why is a theodolite primarily used in surveying ?

(A) Levelling terrain
(B) Calculating area directly
(C) Measuring horizontal and vertical angles
(D) None of the above

44. In theodolite surveying, what is the term “face left” and “face right” related to ?

(A) The observer's position while recording readings
(B) Position of the compass needle
(C) The direction of chain line
(D) The reading method of vertical circle

45. Which survey is carried out first to gather general information about terrain, obstructions and feasibility for a new road alignment?



(A) Reconnaissance Survey
(B) Preliminary Survey
(C) Location Survey
(D) Detailed (Construction) Survey

46. According to standard road classification, which of the following carries the highest order of traffic and connects major cities and ports ?

(A) National Highways
(B) State Highways
(C) Major District Roads
(D) Village Roads

47. In which type of surveying is curvature of earth ignored?

(A) Aerial Surveying
(B) Plane Surveying
(C) Geodetic Surveying
(D) Satellite Surveying

48. Which of the following is not a type of scales used in surveying ?

(A) Plain scale
(B) Diagonal scale
(C) Vernier scale
(D) Linear scale



49. What is the primary cause of multipath error in Global Positioning System (GPS) ?

(A) High battery voltage
(B) Weak satellite signals
(C) GPS signals reflecting of buildings or other surfaces
(D) None of the above



50. Which of the following best describes Differential GPS (DGPS) ?

- (A) Uses satellite imagery to correct map features
- (B) Enhances the accuracy of GPS by using correction signals from a fixed base station
- (C) Calculate distances using topographic maps
- (D) Measures time difference between two satellites

51. In third angle projection, where is the top view placed in relation to the front view ?



- (A) Directly below
- (B) Directly above
- (C) To the left
- (D) To the right

52. What are conventional signs in surveying ?

- (A) Road signs used in cities
- (B) Symbols used in maps to represent objects
- (C) Traffic signals
- (D) Symbols for construction equipment

53. In river flow measurement, which of the following is used to measure flow velocity directly ?



- (A) Tacheometer
- (B) Echo Sounder
- (C) Vernier Caliper
- (D) Current Meter

54. While using a current meter in turbulent river sections, which of the following challenges most affects accuracy ?

- (A) Battery life of the meter
- (B) Variations in bed material
- (C) Fluctuating velocity of water at different depths
- (D) Direction of sunlight during the survey

55. What is the main principle of plane table surveying ?

- (A) Measurement of vertical angles
- (B) Drawing of maps without measurements
- (C) Only sketching of landscapes
- (D) Field observations and plotting done simultaneously

56. Which instrument is used for leveling the plane table ?



- (A) Plumb bob
- (B) Spirit level
- (C) Compass
- (D) U-frame

57. In topographical map preparation, what is the main purpose of using contour lines ?

- (A) To mark property boundaries
- (B) To show elevation and terrain relief
- (C) To measure road width
- (D) To locate underground utilities



58. In cadastral mapping, what is the significance of field measurement using chain and tape or Total Station ?



- (A) To measure groundwater level
- (B) To locate underground utilities
- (C) To find soil composition
- (D) To determine accurate parcel boundaries

59. Which of the following is a fixed point of known elevation used in levelling?

- (A) Datum
- (B) Benchmark
- (C) Turning point
- (D) Station



60. What is the least count of a levelling staff ?

- (A) 5 cm (B) 1 cm
- (C) 1 mm (D) 5 mm

61. Which projection method uses projectors perpendicular to the plane of projection ?



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

62. How many views are normally used to represent three dimensional object in isometric projection ?

- (A) One (B) Two
- (C) Three (D) Four

63. Which condition is most critical when selecting the final alignment for a railway line through hilly terrain ?

- (A) Number of vegetation types
- (B) Average train speed
- (C) Minimization of cutting and tunneling
- (D) None of the above

64. Which of the following materials is commonly used for load-bearing walls ?



- (A) Glass
- (B) Aluminum
- (C) Brick
- (D) None of these

65. Which one is not a method of tachometric distance measurement ?

- (A) Stadia method
- (B) Tangential method
- (C) Subtense method
- (D) Barometric method

66. Which method is used to interpolate contours between known points ?

- (A) Cross-staff method
- (B) Radiation method
- (C) Plane table method
- (D) Arithmetic calculation method



67. Which of the following projections preserves angles and is best suited for navigation purposes ?
(A) Conformal Projection
(B) Equal-area Projection
(C) Azimuthal Projection
(D) Cylindrical Equal-Distance Projection
68. The Mercator projection is most commonly used for
(A) Geological cross-sections
(B) Land ownership mapping
(C) Marine navigation
(D) Population density analysis
69. In which method of plane table surveying is the location of a point determined by drawing rays from two known stations ?
(A) Radiation
(B) Intersection
(C) Resection
(D) Traversing
70. Plane table surveying is primarily which type of method ?
(A) Graphical
(B) Analytical
(C) Mathematical
(D) None of the above
71. What is the angle between the isometric axes in isometric projection ?
(A) 120° (B) 90°
(C) 30° (D) 45°
72. Sectional views are used in Engineering drawings primarily to
(A) Expose internal details of the part
(B) Represent 3D images
(C) Show exact dimensions only
(D) Add clarity to outer shapes
73. Which of the following is not included in the detailed estimate of a building project ?
(A) Quantity of materials
(B) Labour cost
(C) Machinery depreciation
(D) Site overhead charges
74. During the preparation of a detailed estimate in Civil Engineering Project, which document is prepared to show the summarized cost under various subheads ?
(A) Specification Note
(B) Abstract of Cost
(C) Measurement Book
(D) None of these
75. In cadastral survey, what does the term "Khasra number" refer to ?
(A) Plot number assigned to a piece of land
(B) Ownership details
(C) A government Survey Officer
(D) A type of measurement error



76. Which term refers to the line that defines the boundary of a property in cadastral surveying ?

- (A) Contour Line
- (B) Chain Line
- (C) Plot Line
- (D) Boundary Line

77. Which of the following is used to determine the elevation difference between two points located on opposite banks of a river ?



- (A) Check levelling
- (B) Cross-section levelling
- (C) Profile levelling
- (D) Reciprocal levelling

78. In precise levelling, which factor significantly affects the sensitivity of the bubble tube ?

- (A) The observer's eyesight
- (B) The levelling staff color
- (C) Length of the telescope
- (D) Radius of curvature of the bubble tube

79. What is the purpose of a railway alignment survey ?



- (A) To measure groundwater levels
- (B) To determine the most economical and efficient route for a railway line
- (C) To locate mineral deposits
- (D) To measure existing traffic volume

80. What is the first step in a railway line survey project ?

- (A) Detailed Survey
- (B) Tentative Alignment Marking
- (C) Reconnaissance Survey
- (D) Final Location Survey

81. Which compass is mostly used in compass survey work ?

- (A) Magnetic Compass
- (B) Surveyor Compass
- (C) Engineering Compass
- (D) Prismatic Compass

82. Which one of the following is a precaution to be taken while using a prismatic compass ?

- (A) Use near metallic objects
- (B) Use on a tilted surface
- (C) Rotate compass continuously
- (D) Hold it at chest level and keep it steady

83. What does the command LINE do in AutoCAD ?

- (A) Measures a line
- (B) Draws a straight line between two points
- (C) Erases a line
- (D) Connects circles

84. In AutoCAD, the shortcut Z + Enter + A + Enter is used for

- (A) Undo the last action
- (B) Zoom to the last object
- (C) Zoom all
- (D) Zoom to selection





85. Which of the following is a type of orthographic projection ?
(A) Front view
(B) Perspective projection
(C) Isometric projection
(D) Oblique projection
86. What is the angle between the projectors and the plane of projection in first angle projection ?
(A) 0° (B) 30°
(C) 45° (D) 90°
87. What does GIS stand for in surveying and mapping ?
(A) General Imaging System
(B) Geospatial Imaging Software
(C) Geographic Information System
(D) Global Interface Solution
88. Which of the following is a main component of Global Positioning System (GPS) ?
(A) Vernier Scale
(B) Rover and Base Stations
(C) Plumb Bob
(D) None of these
89. What is the basic requirement for preparing a site plan ?
(A) Accurate field measurements and orientation
(B) Ownership certificate
(C) Satellite image
(D) Building permit

90. In digital cadastral mapping, which of the following is a key challenge while preparing a composite map ?
(A) Getting land owner signatures
(B) Tracing the map outline
(C) Drawing the map with pencil
(D) Merging old records with updated geospatial data

91. Which type of projection shows the object as it appears to the human eye ?
(A) Orthographic projection
(B) Oblique projection
(C) Isometric projection
(D) Perspective projection

92. What does the conventional symbol 'Δ' (triangle) typically represent on a topographic map ?
(A) Tree
(B) Benchmark
(C) Well
(D) Survey station

93. What is the main use of Abney level in contouring ?
(A) Measuring chainage
(B) Determining area
(C) Establishing gradient lines
(D) None of the above





94. A plot has an irregular boundary and varying elevation. The contour plan is drawn and the volume is to be computed using the trapezoidal rule. If the areas enclosed by contours are 150 m^2 , 180 m^2 , 210 m^2 and the distance between contours is 2 m, what is the volume ?



- (A) 720 m^3
- (B) 960 m^3
- (C) 1020 m^3
- (D) 1080 m^3



95. What is the primary purpose of a transmission line survey ?

- (A) To mark boundary walls
- (B) To identify road locations
- (C) To determine the best path for electrical transmission lines
- (D) None of the above

96. What is the main role of the sag template in transmission line surveying ?

- (A) Designing the tower foundation
- (B) Estimating total project cost
- (C) Controlling the vertical profile of the conductor
- (D) Measuring wind pressure

97. Which type of field book is most commonly used in chain surveying ?

- (A) Double line field book
- (B) Open field book
- (C) Level field book
- (D) Plain table field book

98. What is the most accurate method for chaining on sloping ground ?

- (A) Stepping method
- (B) Approximation method
- (C) Optical method
- (D) None of the above

99. Which projection is best suited for representing large countries with greater east-west extent like the USA ?

- (A) Conical Projection
- (B) Cylindrical Projection
- (C) Azimuthal Projection
- (D) Mercator Projection



100. Equal-area projections are mainly used when



- (A) True distances are needed for military use
- (B) Shape and direction are most important
- (C) Accurate comparison of land areas is required
- (D) Exact representation of global curvature is needed