राष्ट्रीय प्रौद्योगिकी संस्थान वरंगल
वरंगल – 506004, तेलंगाना, भारत
NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL
WARANGAL – 506004, Telangana, INDIA

QUESTION BOOKLET – ADVANCED TEST FOR RECRUITMENT TO TECHNICAL CADRE POSTS

Post:	Technician
Department	Civil Engineering
Advt.:	01/2026 dated 09.01.2026
Date of Exam:	11-08-2026
Duration:	2 Hours
Total Marks:	200 (100 Q X 2 M each)
No. of Questions:	100 (MCQs)
Negative Marking:	1/4th mark for every wrong answer

INSTRUCTIONS TO THE CANDIDATES

1. This is an Advanced Test comprising 100 Multiple Choice Questions (MCQs), to be conducted in MCQ mode only.
2. The duration of the test is 2 hours.
3. Answers must be marked on the OMR Answer Sheet using a blue or black ballpoint pen only. Use of pencils is not permitted.
4. Candidates must write/mark their Roll Number, Post applied for, and other required details in the designated space on the OMR Answer Sheet.
5. Answers marked on the Question Booklet or on any sheet other than the OMR Answer Sheet will not be evaluated.
6. For each question, darken the circle corresponding to the correct answer completely and clearly on the OMR Answer Sheet.
7. Each question carries equal marks. There will be a negative marking of ¼ th mark for every wrong answer. No marks will be deducted for questions not attempted.
8. Mark only one answer for each question. Marking more than one circle for a question will be treated as a wrong answer.
9. Overwriting, cutting, or erasing that leaves the OMR Answer Sheet unclear may result in the answer not being evaluated.
10. No candidate shall leave the examination hall during the test.
11. Any attempt to copy, use unfair means, or communicate with others will result in immediate disqualification.
12. The use of electronic gadgets, calculators, mobile phones, smart watches, or any written/printed material is strictly prohibited.
13. Rough work, if any, should be done only on the separate sheet provided for the purpose.
14. Ensure that the OMR Answer Sheet is duly filled and handed over to the Invigilator before leaving the examination hall.
15. Failure to submit the OMR Answer Sheet will result in cancellation of candidature.
16. All material provided, including rough sheets, must be returned before leaving the examination hall.

Q1. What is the standard modular size of a burnt clay building brick as per IS 1077?

A. 19 cm x 9 cm x 9 cm
B. 20 cm x 10 cm x 10 cm
C. 22.5 cm x 11.25 cm x 7.5 cm
D. 19 cm x 10 cm x 10 cm

Q2. Which constituent of cement is responsible for early strength development within the first 7 days?

A. Dicalcium Silicate (C2S)
B. Tricalcium Silicate (C3S)
C. Tricalcium Aluminate (C3A)
D. Tetracalcium Aluminoferrite (C4AF)

Q3. The minimum compressive strength of First-Class Bricks should not be less than:

A. 3.5 N/mm²
B. 7.0 N/mm²
C. 10.5 N/mm²
D. 15.0 N/mm²

Q4. Which apparatus is used to conduct the Vicat needle test on cement?

A. Fineness test
B. Soundness test
C. Standard consistency & setting time test
D. Tensile strength test

Q5. Defect in timber caused by improper seasoning leading to longitudinal separation of fibers along annual rings is:

A. Ring shake
B. Star shake
C. Heart shake
D. Knot

Q6. Initial setting time of Ordinary Portland Cement (OPC) should not be less than:

A. 15 minutes
B. 30 minutes
C. 60 minutes
D. 600 minutes

Q7. The frog in a brick is provided primarily to:

A. Reduce brick weight
B. Form a key for holding mortar
C. Indicate manufacturer's name only
D. Improve fire resistance

Q8. The optimum moisture content of timber used for general structural work in buildings should be in the range of:

A. 2% - 5%
B. 10% - 12%
C. 20% - 25%
D. 35% - 40%

Q9. Soundness of cement due to free lime is tested using which apparatus?

A. Le-Chatelier apparatus
B. Autoclave apparatus
C. Vicat apparatus
D. Slump cone

Q10. Workability of concrete with low slump (10 to 25 mm) is best measured by:

A. Slump cone test
B. Flow table test
C. Compacting factor or Vee-Bee test
D. Penetration test

Q11. The process of removing sap and moisture from freshly felled timber is called:

A. Preserving
B. Seasoning
C. Veneering
D. Barking

Q12. Maximum water absorption for First Class Bricks after 24 hours immersion in cold water should not exceed:

A. 15% of dry weight
B. 20% of dry weight
C. 25% of dry weight
D. 30% of dry weight

Q13. Efflorescence in bricks is caused by the presence of excess:

A. Alumina
B. Silica
C. Soluble salts (alkalis)
D. Iron oxide

Q14. The length of a standard Metric Surveying Chain commonly used in India is:

A. 10 m and 15 m
B. 20 m and 30 m
C. 50 m and 100 m
D. 66 ft and 100 ft

Q15. A sight taken on a leveling staff placed at a point of known elevation (Bench Mark) is called:

A. Fore Sight (FS)
B. Intermediate Sight (IS)
C. Back Sight (BS)
D. Change Point (CP)

Q16. In levelling, Height of Instrument (HI) is calculated as:

A. RL of Bench Mark - Back Sight
B. RL of Bench Mark + Back Sight
C. Fore Sight + Back Sight
D. RL of Bench Mark - Fore Sight

Q17. Cumulative error in chaining occurs due to:

A. Wrong holding of handles
B. Incorrect length of chain / non-standard temperature
C. Bad sighting
D. Improper marking of tape

Q18. The line joining points of equal elevation on the surface of the earth is known as:

A. Contour line
B. Isogon
C. Horizontal line
D. Datum line

Q19. Correction for sag in a surveying tape is always:

A. Additive
B. Subtractive
C. Zero
D. Multiplicative

Q20. An automatic level differs from a dumpy level primarily because it has:

A. Digital display
B. Internal compensator mechanism
C. Electronic laser beam
D. Fixed bubble tube

Q21. In a 20-meter metric chain, tallies are provided at every:

A. 1 meter interval
B. 2 meter interval
C. 5 meter interval
D. 10 meter interval

Q22. The parallax in a telescope during levelling is removed by:

A. Adjusting foot screws
B. Focusing objective and eyepiece
C. Tilting the bubble tube
D. Rotating the tribrach

Q23. A point on which both Fore Sight (FS) and Back Sight (BS) are taken during levelling is called:

A. Datum point
B. Bench mark
C. Change point (Turning point)
D. Station point

Q24. The algebraic sum of checks in Rise & Fall method of levelling is:

A. $\sum BS - \sum FS = \sum Rise - \sum Fall$ = Last RL - First RL
B. $\sum BS + \sum FS$ = Last RL
C. $\sum Rise - \sum Fall$ = HI - RL
D. $\sum BS - \sum FS$ = Total Rise

Q25. Which tape is least affected by temperature variations and is used for high-precision baseline measurements?

A. Linen tape
B. Metallic tape
C. Steel tape
D. Invar tape

Q26. In structural drawings, the abbreviation 'NTS' stands for:

A. Not To Scale
B. Near Top Surface
C. New Technical Specification
D. Non-Tensioned Steel

Q27. On a site plan, contour lines that are drawn very close to each other represent a:

A. Flat plain
B. Gentle slope
C. Steep slope or cliff
D. Valley

Q28. Which view in architectural drawings shows the vertical cross-section through a building exposing walls, floors, and roof construction?

A. Site Plan
B. Sectional Elevation
C. Key Plan
D. Layout Plan

Q29. In engineering drawings, a line formed by alternate long dashes and single short dashes represents:

A. Hidden line
B. Center line / Axis
C. Dimension line
D. Cutting plane line

Q30. What does a North Arrow symbol indicate on a site plan drawing?

A. Prevailing wind direction
B. Orientation of the project relative to Geographical North
C. Drainage slope direction
D. Sunpath trajectory

Q31. In a structural drawing layout, grid lines are generally numbered with letters on one axis and numbers on the orthogonal axis to:

A. Indicate load capacity
B. Easily identify specific column/beam intersections
C. Show concrete cover depth
D. Specify reinforcement bar diameter

Q32. Standard drawing sheet size A1 measures:

A. 841 x 1189 mm
B. 594 x 841 mm
C. 420 x 594 mm
D. 297 x 420 mm

Q33. The symbol 'FFL' on a civil engineering building drawing stand for:

A. Finished Floor Level
B. Formwork Foundation Line
C. Foundation Footing Level
D. First Floor Layout

Q34. Dashed lines in architectural floor plans are primarily used to represent:

A. Ground level
B. Hidden edges or overhead objects (like beam outlines/chajja)
C. Property boundaries
D. Center lines

Q35. A scale written as '1:100' on a site plan means:

A. 1 mm on drawing represents 100 mm on ground
B. 1 m on drawing represents 100 m on ground
C. Both A and B are correct
D. 1 cm on drawing represents 100 m on ground

Q36. In RCC detailing drawings, bar mark designation '12-T16-01-200 c/c' indicates:

A. 12 bars of 16 mm diameter at 200 mm center to center spacing
B. 16 bars of 12 mm diameter
C. 12 mm spacing and 16 bars
D. Total 200 bars

Q37. Which drawing shows municipal limits, setback lines, plot boundaries, and surrounding roads?

A. Structural Beam Plan
B. Site / Plot Layout Plan
C. Electrical Plan
D. Foundation Section

Q38. The term 'Plinth Level' refers to:

A. Bottom level of foundation footing
B. Top level of ground surrounding the building
C. Built-up floor level of the building above ground level
D. Height of door lintel

Q39. What is the weight per meter length of a 12 mm diameter steel reinforcing bar?

A. 0.617 kg/m
B. 0.888 kg/m
C. 1.580 kg/m
D. 2.220 kg/m

Q40. Standard formula for weight per unit length (kg/m) of steel rebar with diameter 'd' in mm is:

A. $d^2 / 100$
B. $d^2 / 162$
C. $d^2 / 200$
D. $162 / d^2$

Q41. In Bar Bending Schedule (BBS), what extra length is added for a standard 90-degree hook at each end of a tension bar?

A. 9d
B. 12d
C. 16d
D. 24d

Q42. When calculating Earthwork in excavation for a trench with vertical sides, the quantity is calculated as:

A. Length x Width x Depth
B. Length + Width + Depth
C. 2 x (Length + Width) x Depth
D. Area of top surface only

Q43. In estimation, damp proof course (DPC) is measured in which unit?

A. Cubic meters (m^3)
B. Square meters (m^2)
C. Running meters (m)
D. Quintals

Q44. What is the deduction in length made for a 45-degree bend in a reinforcement bar during cutting length calculation?

A. 1d
B. 2d
C. 3d
D. 4d

Q45. The unit of measurement for RCC roof slab concrete work as per IS 1200 is:

A. Square meters (m^2)
B. Cubic meters (m^3)
C. Metric Tons
D. Running meters

Q46. In a Bar Bending Schedule, what is the clear cover provided for RCC columns in standard practice?

A. 15 mm
B. 25 mm
C. 40 mm
D. 75 mm

Q47. How many bags Ordinary Portland Cement make 1 metric ton?

A. 10 bags
B. 15 bags
C. 20 bags
D. 25 bags

Q48. The lap length of reinforcing bars in tension as per IS 456 should generally not be less than:

A. 24d or Ld
B. 10d
C. 15d
D. 60d

Q49. Plinth area of a building refers to:

A. Carpet area of rooms only
B. Built-up covered area measured at the plinth level including wall thickness
C. Plot area minus garden area
D. Usable area of balconies

Q50. For a bent-up bar at 45 degrees in a slab, the additional length added for one crank is:

A. 0.42 D
B. 0.50 D
C. 0.85 D
D. 1.0 D

Q51. The nominal mix ratio 1 : 2 : 4 corresponds to which grade of concrete?

A. M10
B. M15
C. M20
D. M25

Q52. What is the concrete nominal mix proportion for M20 grade concrete?

A. 1 : 3 : 6
B. 1 : 2 : 4
C. 1 : 1.5 : 3
D. 1 : 1 : 2

Q53. As per IS 456:2000, what is the minimum grade of concrete recommended for Reinforced Cement Concrete (RCC) work?

A. M10
B. M15
C. M20
D. M25

Q54. Minimum period for striking/removal of formwork for vertical props to slab spanning up to 4.5 meters is:

A. 3 days
B. 7 days
C. 14 days
D. 21 days

Q55. Which type of scaffolding is typically used for brick masonry wall construction?

A. Single scaffolding
B. Double scaffolding
C. Needle scaffolding
D. Suspended scaffolding

Q56. Double scaffolding (Mason's scaffolding) is mandatory for:

A. Brick masonry
B. Stone masonry
C. Painting walls
D. Plastering ceiling

Q57. What is the volume of 1 bag of cement in cubic meters?

A. 0.025 m^3
B. 0.0347 m^3 (approx 0.035 m^3)
C. 0.050 m^3
D. 0.100 m^3

Q58. Formwork stripping time for beam soffits (props left under) as per IS 456 is:

A. 1 day
B. 7 days
C. 14 days
D. 21 days

Q59. In scaffolding, the horizontal member running parallel to the wall that supports transoms is called:

A. Standard
B. Ledger
C. Putlog
D. Shore

Q60. What is the primary role of formwork oil?

A. Increase concrete strength
B. Facilitate easy removal of shuttering without damaging concrete surface
C. Accelerate curing speed
D. Waterproof the concrete

Q61. Which of the following is an temporary inclined support provided to stabilize an unsafe/bulging wall?

A. Scaffolding
B. Raking Shore
C. Underpinning
D. Formwork

Q62. The process of placing new foundation under an existing structure without causing failure is known as:

A. Scaffolding
B. Shoring
C. Underpinning
D. Centering

Q63. Slump requirement for mass concrete construction work generally lies between:

A. 25 mm to 75 mm
B. 100 mm to 150 mm
C. 150 mm to 200 mm
D. Greater than 200 mm

Q64. As per Terzaghi's criteria, a foundation is classified as a 'Shallow Foundation' if its depth (D) relative to width (B) is:

A. Depth D $\leq$ Width B
B. Depth D > 5 times Width B
C. Depth D > 10 times Width B
D. Depth D $\geq$ 2 times Width B

Q65. Soil particle size corresponding to Silt according to Indian Standard classification (IS 1498) is:

A. Greater than 4.75 mm
B. 0.075 mm to 4.75 mm
C. 0.002 mm to 0.075 mm
D. Less than 0.002 mm

Q66. Soil particles smaller than 0.002 mm (2 microns) are classified as:

A. Sand
B. Silt
C. Clay
D. Cobbles

Q67. Which shallow foundation is used when two or more column loads overlap or column is near plot boundary?

A. Isolated footing
B. Combined footing
C. Pile foundation
D. Well foundation

Q68. A foundation slab covering the entire structural footprint to support multiple columns on weak soil is called:

A. Strap footing
B. Raft / Mat foundation
C. Strip footing
D. Spread footing

Q69. Black cotton soil exhibits high swelling and shrinkage due to the presence of which clay mineral?

A. Kaolinite
B. Illite
C. Montmorillonite
D. Quartz

Q70. Which shallow foundation is suitable for supporting continuous load-bearing masonry walls?

A. Isolated footing
B. Strip footing / Continuous footing
C. Pile foundation
D. Raft foundation

Q71. Soil formed by transportation through flowing water (rivers/streams) is known as:

A. Alluvial soil
B. Aeolian soil
C. Glacial soil
D. Marine soil

Q72. Strap footing consists of two isolated footings connected by a:

A. Tie rod
B. Rigid cantilever beam
C. Flexible slab
D. Steel truss

Q73. Safe Bearing Capacity (SBC) of soil is equal to:

A. Ultimate Bearing Capacity / Factor of Safety
B. Net Ultimate Capacity x Factor of Safety
C. Ultimate Capacity + Safe Settlement
D. Total Stress - Pore Water Pressure

Q74. Under-reamed piles are specially suitable for foundation in:

A. Sandy soil
B. Rocky strata
C. Expansive Black Cotton soils
D. Gravelly soil

Q75. The maximum angle of slope at which loose granular soil remains stable without sliding is called:

A. Angle of internal friction
B. Angle of repose
C. Angle of wall friction
D. Slope angle

Q76. As per IS 1172, standard per capita water demand for domestic consumption in Indian cities is:

A. 85 liters/head/day
B. 135 liters/head/day
C. 200 liters/head/day
D. 270 liters/head/day

Q77. Which trap is installed at the junction where house drain connects to the municipal sewer line to prevent sewer gas entry?

A. P-Trap
B. Gully Trap
C. Intercepting Trap
D. Nahni Trap

Q78. The chemical widely used for coagulation in municipal water treatment plants is:

A. Bleaching powder
B. Alum
C. Sodium Nitrate
D. Copper Sulfate

Q79. Biochemical Oxygen Demand (BOD) test is conducted at a standard incubation temperature and period of:

A. 20°C for 5 days
B. 37°C for 3 days
C. 27°C for 7 days
D. 100°C for 2 hours

Q80. Which pipe fitting prevents foul odor from entering building rooms through wastewater fixtures?

A. Foot valve
B. Water Trap
C. Sluice valve
D. Non-return valve

Q81. Minium recommended self-cleansing velocity in public sewers to prevent silt deposition is:

A. 0.15 m/s
B. 0.45 m/s to 0.75 m/s
C. 2.5 m/s
D. 5.0 m/s

Q82. Gully traps are placed on house drainage systems to receive wastewater from:

A. Water Closet
B. Bathroom, kitchen sink, and wash basin
C. Septic tank outlet
D. Rainwater pipes only

Q83. Water supply pipe network system where main line passes through center and sub-mains branch out in gridiron pattern is:

A. Dead End System
B. Gridiron / Reticulation System
C. Ring System
D. Radial System

Q84. Septic tank is a primary sewage treatment unit combining:

A. Aerobic digestion and filtration
B. Sedimentation and anaerobic sludge digestion
C. Chlorination and oxidation
D. Screening and grit removal

Q85. pH value of safe potable drinking water should be within the range of:

A. 4.5 to 5.5
B. 6.5 to 8.5
C. 8.5 to 10.5
D. 1.0 to 14.0

Q86. A vertical pipe carrying discharge from water closets, urinals, and latrines is called:

A. Waste pipe
B. Soil pipe
C. Vent pipe
D. Anti-siphonage pipe

Q87. Disease caused due to excessive presence of nitrates (> 45 mg/L) in drinking water supplied to infants is:

A. Fluorosis
B. Methemoglobinemia
C. Cholera
D. Typhoid

Q88. Disinfection of water by chlorine to kill harmful pathogenic bacteria is known as:

A. Coagulation
B. Aeration
C. Chlorination
D. Sedimentation

Q89. What Personal Protective Equipment (PPE) is mandatory for preventing head injury from falling objects at site?

A. Earplugs
B. Hard Hat
C. High-visibility jacket
D. Leather gloves

Q90. As per safety regulations, full body safety harness (safety belt) must be worn when working at heights exceeding:

A. 1.0 meter
B. 1.8 meters
C. 5.0 meters
D. 10.0 meters

Q91. In deep trench excavation, benching or sloping/shoring is mandatory if excavation depth exceeds:

A. 0.5 meters
B. 1.5 meters
C. 3.0 meters
D. 5.0 meters

Q92. Safety color red on construction site signs indicates:

A. Mandatory action / PPE requirement
B. Prohibition / Stop / Danger / Fire equipment
C. Caution / Warning hazard
D. First aid station

Q93. Which class of fire extinguisher is used to combat electrical equipment fires (Class C/E)?

A. Water type
B. Dry Chemical Powder or CO2 extinguisher
C. Foam extinguisher
D. Wet chemical

Q94. What is the primary function of a Scaffolding Green Tag?

A. Indicates scaffold is unsafe to use
B. Indicates scaffold is fully inspected, safe, and ready for work
C. Indicates scaffold is under alteration
D. Indicates scaffold is for demolition

Q95. Safe minimum horizontal distance required between steel scaffolding and live 11 kV overhead power line is:

A. 1.0 meter
B. 3.0 meters (10 feet)
C. 0.5 meters
D. No gap required

Q96. Tool Box Talk (TBT) at a construction site is:

A. A tool repair workshop session
B. Short 5 to 10 minute daily safety briefing before commencing work
C. Material inventory check
D. Commercial tender meeting

Q97. Permit to Work (PTW) system is strictly required for which high-risk site activity?

A. Confined space entry / Hot work / Deep excavation
B. Office documentation
C. Sweeping site floors
D. Landscaping plants

Q98. What protective measure prevents materials from falling off scaffolding edges onto workers below?

A. Guardrail only
B. Toe-board and safety netting
C. Ladder extension
D. Base plate

Q99. Safety helmet color yellow on site is conventionally worn by:

A. Site Engineers / Visitors
B. General Laborers / Earthmoving operators
C. Safety Officers
D. Electricians

Q100. In case of chemical splash in worker's eyes, immediate first-aid action is:

A. Rub eyes vigorously with hands
B. Flush eyes immediately with clean flowing water for at least 15 minutes
C. Apply heavy ointment immediately
D. Cover eyes with dry dark cloth without washing

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