Test Booklet Code A **Test Booklet Sr No.**

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TEST PAPER

Marks: 100 **Time: 60 minutes**

ROLL NO.: _____	**NAME:** _____
SIGNATURE: _____	**DATE / TIME:**_____

	INSTRUCTIONS FOR THE CANDIDATES
1.	Before attempting the paper carefully read out all the Instructions & Examples given on Side 1 of Answer Sheet (OMR Sheet) supplied separately.
2.	At the start of the examination, please ensure that all pages of your Test booklet are properly printed; your Test booklet is not damaged in any manner and contains 100 questions. In case of any discrepancy the candidate should immediately report the matter to the invigilator for replacement of Test Booklet. No claim in this regard will be entertained at the later stage.
3.	An **OMR Answer Sheet** is being provided separately along with this Test booklet. Please fill up all relevant entries like Roll Number, Test Booklet Code etc. in the spaces provided on the OMR Answer Sheet and put your signature in the box provided for this purpose.
4.	Make sure to fill the correct Test booklet code on Side 2 of the OMR Answer Sheet. If the space for the Booklet Code is left blank or more than one booklet code is indicated therein, it will be deemed to be an incorrect booklet code & Answer Sheet will not be evaluated. The candidate himself/herself will be solely responsible for all the consequences arising out of any error or omission in writing the test booklet code.
5.	**This Test Booklet consists of 06 pages containing 100 questions**. Against each question four alternative choices (1), (2), (3), (4) are given, out of which one is correct. Indicate your choice of answer by darkening the suitable circle with **BLACK/BLUE pen** in the OMR Answer Sheet supplied to you separately. Use of Pencil is strictly prohibited. More than one answer indicated against a question will be deemed as incorrect response.
6.	The maximum marks are 100. Each question carries one mark. **There will be no negative marking. The total time allocated is 60 minutes.**
7.	Do not fold or make any stray marks on the OMR Answer Sheet. Any stray mark or smudge on the OMR Answer Sheet may be taken as wrong answer. Any damage to OMR Answer Sheet may result in disqualification of the candidate.
8.	**On completion of the test, candidate must hand over the OMR Answer Sheet to the invigilator on duty in the room/hall.**
9.	**Use of Mobile phones and calculators etc. are not allowed.**
10.	**Keep all your belongings outside the Examination hall. Do not retain any paper except the ADMIT CARD.**

1	A good brick should not absorb water by weight more than ____ of its dry weight. (1) 5% (2) 10% (3) 15% (4) 20%
2	Efflorescence is (1) the formation of white patches on the brick surface (2) due to insoluble salts in the brick clay (3) swelling of brick due to presence of carbonaceous matter and gas (4) deformation of brick due to exposure to rain
3	The term king closer is used in relation to (1) doors and widows (2) King post truss (3) Queen post truss (4) brick masonary
4	Which one of the following test is used to determine the rate of wear of stones? (1) Crushing test (2) abrasion test (3) attrition test (4) impact test
5	The horizontal projections at the head of a door frame which are embedded into the side walls for fixing the frame are known as (1) horns (2) holdfasts (3) jambs (4) rebates
6	Which of the following is not a natural defect in timber? (1) Knot (2) Twisted fibres (3) Burls (4) Honey combing
7	Seasoning of timber is required to (1) soften the timber (2) harden the timber (3) strengthening the timber (4) removing sap from timber
8	Before testing setting time of cement, one should first test for (1) Soundness (2) strength (3) fineness (4) consistency
9	For complete hydration of cement, water-cement ratio needed is (1) less than 0.25 (2) more than 0.25 but less than 0.35 (3) more than 0.35 but less than 0.45 (4) more than 0.45 but less than 0.60
10	Distemper is used to coat (1) external concrete surfaces (2) interior surfaces not exposed to weather (3) wood work (4) compound walls
11	The expansion and shrinkage of plywoods are comparatively very low as plies in plywood are (1) held in position by adhesives (2) glued under pressure (3) placed at right angles to each other (4) prepared from veneers
12	The representative fraction of 1/2500 means that the scale 1 cm is equal to (1) 0.25 m (2) 2.5 m (3) 25 m (4) 250 m
13	A 30 m chain is found to be 0.1 m short throughout the measurement. If distance measured is recorded as 300 m, then actual distance measured is (1) 299.0 m (2) 300.1 m (3) 301.0 m (4) 310.0 m
14	Which of the following methods of plane table is used to locate the position of an inaccessible point? (1) Radiation (2) Intersection (3) Traversing (4) Resection
15	The angle of intersection of two plane mirrors of an optical square is (1) 30o (2) 45o (3) 60o (4) 90o
16	The spire test is done for which of the following permanent adjustments of theodolite. (1) Adjustment of plate levels (2) Adjustment of line of sight (3) Adjustment of horizontal axis (4) Adjustment of bubble and vertical axis frame
17	Bowditch rule is applied to (1) an open traverse for graphical adjustment (2) a closed traverse for adjustment of closing error (3) determine the effect of local attraction (4) All of these
18	The following consecutive level readings were taken on a continuously sloping ground, using a 3 m staff: 0.425, 1.035, 1.950, 2.360, 2.950, 0.750, 1.565, 2.450, 0.310, 1.025, 2.165 and 2.955. Which of these readings are back sights? (1) 0.425, 2.950, 0.750, 0.310 (2) 0.425, 0.750, 0.310, 2.955 (3) 0.425, 0.750, 0.310 (4) 0.425, 2.360, 0.750, 0.310
19	A level was set up at point A and the distance to staff station was 100 m. The net combined correction due to curvature and refraction as applied to staff reading is (1) 0.00673 m (2) 0.000673 m (3) - 0.00673 m (4) - 0.000673 m
20	A series of closely spaced contour lines represent a (1) steep slope (2) gentle slope (3) uniform slope (4) plane surface
21	For a tacheometer, the additive and multiplying constants are, respectively (1) 0 an 100 (2) 100 and 0 (3) 0 and 0 (4) 100 and 100
22	Subtense bar is an instrument used for (1) leveling (2) measurement of horizontal distances in plain areas (3) measurement of horizontal distances in undulated areas (4) measurement of angles
23	Pycnometer is used to determine (1) water content and voids ratio (2) specific gravity and dry density (3) water content and specific gravity (4) voids ratio and dry density

24	A soil having particles of nearly the same size is known as (1) well graded (2) uniformly graded (3) poorly graded (4) gap graded
25	Which one of the following gives the correct decreasing order of the densities of a soil sample? (1) Saturated, submerged, wet and dry (2) Saturated, wet, submerged and dry (3) Saturated, wet, dry and submerged (4) Wet, saturated, submerged and dry
26	A soil sample has properties: Liquid limit = 45%, Plastic limit = 25%, Shrinkage limit = 17%, Natural moisture content = 30%. The consistency index of soil is 5/20 (2) 8/20 (3) 13/20 (4) 15/20
27	A soil has a discharge velocity of 6 × 10-7 m/s and a void ratio of 0.5, its seepage velocity is (1) 18 × 10-7 m/s (2) 12 × 10-7 m/s (3) 6 × 10-7 m/s (4) 3 × 10-7 m/s
28	Degree of consolidation is directly proportional to (1) time and inversely proportional to drainage path (2) time and inversely proportional to square of drainage path (3) drainage path and inversely proportional to time (4) square of drainage path and inversely proportional to time
29	Coarse grained soils are best compacted using (1) drum roller (2) rubber tyre roller (3) sheep's foot roller (4) vibratory roller
30	The bearing capacity of a water logged soil can be improved by (1) dompacting the soil (2) draining the soil (3) dncreasing the depth of foundation (4) grouting
31	In standard penetration test, the split spoon sampler is penetrated into the soil stratum by giving blows from a drop whose height and free fall, respectively are (1) 30 kg and 60 cm (2) 60 kg and 30 cm (3) 65 kg and 75 cm (4) 75 kg and 65 cm
32	If s is the shear strength, c and ϕ are shear strength parameters, and σn is the normal stress at failure, then Coulomb's equation for shear strength of soil is given by (1) c = (s + $\sigma n \tan\phi$) (2) c = (s - $\sigma n \tan\phi$) (3) s = (σn + c $\tan\phi$) (4) s = (c - $\sigma n \tan\phi$)
33	In the plate load test for determining the bearing capacity of soil, the size of square bearing plate should be (1) less than 300 mm (2) between 300 mm and 750 mm (3) between 750 mm and 1 m (4) greater than 1 m
34	Bearing capacity of soil strata supporting a footing of size 3 m × 3 m will not be affected by the presence of ground water table at a depth which is _____below the base of footing. (1) 1.5 m (2) 2.5 m (3) 3 m (4) 9 m
35	A dry sand sample is used in triaxial test. The cell pressure is 50 kPa and the deviator stress at failure is 100 kPa. The angle of internal friction of the sample is (1) 15o (2) 30o (3) 35o (4) 40o
36	During seepage through an earth mass, the direction of seepage is (1) parallel to the equipotential lines (2) perpendicular to the stream lines (3) perpendicular to the equipotential lines (4) along the direction of gravity
37	A deposit of fine sand has porosity n and specific gravity G. The hydraulic gradient ie to develop boiling condition of sand is given by (1) ie= (G -1)(1 – n) (2) ie= (G -1)(1 + n) (3) ie= (G -1)/(1 – n) (4) ie= (G -1)/(1 + n)
38	Pascal-sec is the unit of (1) pressure (2) kinematic viscosity (3) dynamic viscosity (4) surface tension
39	Select the correct statement (1) Absolute pressure = (Gauge pressure – Atmospheric pressure) (2) Gauge pressure = (Absolute pressure – Atmospheric pressure) (3) Absolute pressure = (Atmospheric pressure + Vacuum pressure) (4) Gauge pressure = (Atmospheric pressure + Vacuum pressure)
40	Which of the following statements represent steady uniform flow? (1) Flow through an expanding pipe at constant rate (2) Flow through an expanding pipe at increasing rate (3) Flow through a long pipe at decreasing rate (4) Flow through a long pipe at constant rate
41	The magnitude of resultant velocity at point (1, 1) for a stream function, ψ = (x2 – y2) is: (1) 2 (2) $2\sqrt{2}$ (3) 4 (4) $4\sqrt{2}$
42	Each term in Bernoulli's equation represents (1) force per unit volume (2) force per unit weight (3) energy per unit volume (4) energy per unit weight

43	When pipes are connected in parallel, the total head loss is (1) equal to the sum of head loss in each pipe (2) same in each pipe (3) equal to the reciprocal of the sum of head loss in each pipe (4) all of these
44	In a fluid flow, point A is at a higher elevation than point B. The total heads at A and B are HA and HB, respectively. If head loss between these points is HL, flow will take place (1) from A to B if (HA + HL) = HB (2) from B to A if (HA + HL) = HB (3) from B to A if (HB + HL) = HA (4) always from A to B
45	Velocity distribution for laminar flow in pipes is (1) linear (2) parabolic (3) cubic (4) logarithmic
46	Which one of the following statements is correct regarding hydraulic gradient line (HGL) and total energy line (TEL) in open channels flow? (1) HGL coincides with free surface (2) TEL coincides with free surface (3) TEL and HGL coincide with free surface (4) HGL can never rise
47	For a sphere of radius 150 mm, moving with a uniform velocity of 2 m/s through a liquid of specific gravity 0.9 and viscosity 8 poise, Reynolds number is: (1) 67.5 (2) 300 (3) 337.5 (4) 675
48	The size of venturimeter is specified by (1) pipe diameter (2) throat diameter (3) both pipe and throat diameter (4) angle of diverging section
49	In laminar flow through a circular pipe of diameter 200 mm, the maximum velocity is 1 m/s. The velocity at a distance of 50 mm from the centre of pipe will be (1) 0.25 m/s (2) 0. 50 m/s (3) 0.75 m/s (4) 1.0 m/s
50	A channel carries a discharge of 30 m3/s at depth of 1 m and bed slope of 0.0009. What is the discharge carried by the channel at the same depth if the slope is 0.0001? (1) 10 m3/s (2) 15 m3/s (3) 60 m3/s (4) 90 m3/s
51	If head over a triangular notch is doubled, discharge Q will increase to (1) 2Q (2) 5.657Q (3) 2.828Q (4) 4Q
52	Cipoletti weir is a trapezoidal weir having sides slope as (1) 1 Horizontal : 1 Vertical (2) 1 Horizontal : 2 Vertical (3) 1 Horizontal : 3 Vertical (4) 1 Horizontal : 4 Vertical
53	A turbine where in the total available energy of water is converted to kinetic energy is called (1) reaction turbine (2) mixed flow turbine (3) impulse turbine (4) axial flow turbine
54	The flow of water in the impeller of a centrifugal pump casing is a_____ flow. (1) forced vortex (2) free vortex (3) centrifugal (4) radial
55	Zero hardness of water is achieved by (1) using lime soda process (2) excess lime treatment (3) using excess alum dosage (4) ion exchange method
56	The types of pipes generally used in water supply distribution schemes is (1) RCC pipes (2) Hume pipes (3) CI pipes (4) GI pipes
57	The process in which chlorination is done beyond the break point is known as (1) pre chlorination (2) post chlorination (3) super Chlorination (4) break point chlorination
58	The purpose of providing a balancing reservoir in a water supply distribution system is to (1) equalise pressures in the distribution system (2) store adequate quantity of water to meet requirements in case of any breakdown of inflow. (3) store water for fire fighting (4) take care of fluctuations in the rate of water consumption
59	Dissolved oxygen in streams is (1) maximum at noon (2) minimum at noon (3) maximum at mid night (4) same throughout the day
60	Which of the following parameters is NOT necessary for the design of a sedimentation tank (1) volume of water to be treated per day (2) surface area of tank (3) depth of tank (4) detention period
61	Sewage treatment units are designed for (1) maximum flow only (2) minimum flow only (3) average flow only (4) maximum and minimum flow
62	Egg shaped sewers are preferred to circular shaped sewers because (1) they possess better hydraulic properties (2) they resist soil erosion (3) velocity remains high even at low discharges (4) flow remains stable
63	Which one of the following pairs in not correctly matched (1) Check valve To check water flow in all directions (2) Sluice valve To control flow of water through pipe line (3) Air valve To release accumulated air (4) Scour valve To remove silt in pipe line

64	The trap used for a water closet is called (1) gully trap (2) p-trap (3) intercepting trap (4) anti syphon trap
65	Self cleansing velocity is (1) the minimum velocity of flow required to maintain a certain amount of solids in the flow. (2) the maximum velocity of flow required to maintain a certain amount of solids in the flow. (3) such flow velocity as would be sufficient to flush out any deposited solids in sewer. (4) such flow velocity as would be sufficient to ensure that sewage does not remain in the sewer.
66	Maximum bending moment in a beam occurs where (1) deflection is zero (2) shear force is maximum (3) shear force is minimum (4) shear force changes sign
67	Which one of the following statements is correct? (1) shear force is the first derivative of bending moment. (2) bending moment is the first derivative of shear force. (3) shear force is the first derivative of intensity of load. (4) load intensity on a beam is the first derivative of bending moment.
68	The diagram showing the variation of axial load along the span is called (1) shear force diagram (2) bending moment diagram (3) thrust diagram (4) influence line diagram
69	The relationship between the radius of curvature R, bending moment M and flexural rigidity EI is given by (1) R = M/EI (2) M = EI/R (3) EI = R/M (4) E = MI/R
70	A rectangular beam of cross section 100 × 200 mm is subjected to a shear force of 20 kN. The maximum shear stress in the section is (1) 1 N/mm2 (2) 1.125 N/mm2 (3)1.33 N/mm2 (4) 1.5 N/mm2
71	The shear centre of a section is defined as the point at which (1) load must be applied to produce zero twisting moment on the section (2) shear force is zero (3) shear force is maximum (4) shear force is minimum
72	The ratio of width to depth of a strongest beam that can be cut out of a cylindrical log of wood is (1) 1/2 (2) 1/√2 (3) 1/3 (4) 1/√3
73	The shear stress distribution over a rectangular cross section of a beam follows (1) a straight line path (2) a circular path (3) parabolic path (4) elliptical path
74	A prismatic beam of length L and fixed at both ends carries a uniformly distributed load. The distance of points of contra flexure from either end is (1) 0.207L (2) 0.211L (3) 0.277L (4) 0.25L
75	A bar 40 mm in diameter is subjected to an axial load of 4 kN. The extension of bar for the gauge length 200 mm is 0.003 mm. The decrease in diameter is 0.00018 mm. The Poisson ratio will be (1) 0.25 (2) 0.30 (3) 0.33 (4) 0.35
76	In a particular material, if modulus of rigidity is equal to bulk modulus, then Poisson's ratio will be (1) 1/8 (2) 1/4 (3) 1/2 (4) 1
77	A simply supported beam A carries a concentrated load at its mid span. Another identical beam B carries the same load but uniformly distributed over the whole span. The ratio of maximum deflection of beam A to beam B will be (1) 5/3 (2) 3/5 (3) 8/5 (4) 5/8
78	If deflection at the free end of a uniformly loaded cantilever beam is 15 mm and slope of the deflection curve at the free end is 0.02 radians, then length of beam is (1) 0.8 m (2) 1 m (3) 1.2 m (4) 1.5 m
79	A column has maximum crippling load when its (1) both ends are hinged (2) both ends are fixed (3) one end is fixed and the other end is hinged (4) one end is fixed and the other end is free
80	A short column of external diameter 250 mm and internal diameter 150 mm carries an eccentric load of 1000 kN. The greatest eccentricity which the load can have without producing tension any where is (1) 20 mm (2) 31.25 mm (3) 37.5 mm (4) 42.5 mm
81	A shaft turns at 150 rpm under a torque of 1500 Nm. The power transmitted in kW is 5π (2) 7.5π (3) 10π (4) 15π
82	Slump test can be used for (1) comparing mixes of different proportions (2) lean dry mixes where water-cement ratio is low (3) measuring consistency of successive batches (4) All of these
83	The main purpose of a retarder in concrete is (1) to increase the initial setting time of cement in concrete (2) to decrease the initial setting time of cement in concrete (3) to make the concrete more water tight (4) to improve the workability of concrete
84	Water cement ratio by weight as compared to water cement ratio by volume is_____. (1) greater (2) less (3) equal (4) not equal
85	In a singly reinforced beam, if stress in concrete reaches its permissible value later than the steel reaches its permissible value, the beam section is said to be (1) under reinforced (2) balanced (3) over reinforced (4) critically balanced

86	A higher modular ratio means (1) higher compressive strength of concrete (2) lower compressive strength of concrete (3) higher tensile strength of steel (4) lower tensile strength of steel
87	The ratio of tensile strength to compressive strength of concrete (1) increases with age (2) decreases with age (3) remains constant (4) None of these
88	Minimum clear cover (in mm) to the main steel bars in slab, beam, column, footing, respectively are (1) 10, 15, 20, 25 (2) 15, 25, 40, 75 (3) 20, 25, 30, 40 (4) 20, 35, 40, 75
89	Side face reinforcement in RCC beam is provided if its depth is more than (1) 300 mm (2) 500 mm (3) 700 mm (4) 750 mm
90	The reduction coefficient of a reinforced concrete column of size 250 × 300 mm and effective length 4.8 m is (1) 0.80 (2) 0.85 (3) 0.90 (4) 0.95
91	For a continuous slab of dimensions 3 m × 3.5 m, the minimum overall depth of slab to satisfy vertical deflection limit is (1) 120 mm (2) 100 mm (3) 75 mm (4) 50 mm
92	The sum of tread and rise in a stair must lie between (1) 300 to 350 mm (2) 400 to 450 mm (3) 500 to 550 mm (4) 600 to 650 mm
93	In the design of retaining walls, the minimum factor of safety against overturning is taken as (1) 1.5 (2) 2 (3) 2.5 (4) 3
94	A beam curved in plan is designed for (1) bending moment and shear (2) bending moment and torsion (3) shear and torsion (4) bending moment, shear and torsion
95	In limit state design, the limiting value of depth of neural axis is taken as (d is the effective depth of section) (1) 0.43d (2) 0.45d (3) 0.48d (4) 0.53d
96	In limit state design, permissible bond stress in case of deformed bars is more than that in plain bars by 25% (2) 40% (3) 45% (4) 60%
97	The effective length of fillet weld is taken as (1) (Total length – 2 × throat size) (2) (Total length – 2 × weld size) (3) (0.7 × Total length) (4) (Total length – √2 × throat size)
98	An I-section steel beam has overall depth of 300 mm. If flanges stresses developed at the top and bottom of the beam are 1.2 N/m2 and 0.3 N/m2, respectively, then depth of neutral axis from the top of beam will be (1) 250 mm (2) 240 mm (3) 200 mm (4) 180 mm
99	The relation between intensity of wind pressure p and wind velocity V on a roof truss is considered as: (1) p ∝ V (2) p ∝ V2 (3) p ∝ 1/V (4) p ∝ V1/2
100	The numbers of seismic zones in which the country has been divided are (1) 3 (2) 5 (3) 6 (4) 7