Dr. B.R.Ambedkar Institute of Technology

Recruitment for the Post of Instructor (Civil) / Lab Technician (Civil) - Shift 1

Date of Examination: 15/05/2025 **Exam Time: 10:00 AM - 11:00 AM** **Exam Slot: A1**

#	Question ID	Question	Answer Key
1	4967	Which of the following includes in a project construction cost estimation? a. Equipment and over head cost b. Labour and material cost c. Profit of the contractor d. All of the options	
2	4996	Torsion balance method is used in soil mechanics to determine _____ a. Water content of a soil sample b. Specific gravity of a soil sample c. Bulk mass density of a soil sample d. Shear strength of a soil sample	
3	5007	Consolidation of soil is the process of ____ a. Expulsion of water from voids b. Expulsion of air due to rolling c. Expulsion of air due to tamping d. None of the above	
4	4939	The ultimate BOD for a waste sample a. Increases with temperature b. Constant at all temperature c. Decreases with temperature d. Doubles for every 10 degrees	
5	4950	Ruling gradient on highways as per IRC in plain terrain is a. 1 in 30 b. 1 in 100 c. 1 in 60 d. 1 in 200	
6	5003	Which among the following is a characteristic feature of desert soils? a. High plasticity b. Alternating layers of sand, silt, and clay c. Both (A) and (B) d. Non-plastic	

7	4985	What is the flow of concrete if the spread diameter is 0.55 m in the flow table? a. 120 % b. 220 % c. 55 % d. 30 %	
8	4948	Calculate Safe stopping distance if the design speed is 90kmph, reaction time is 3s and the coefficient of friction is 0.5 a. 75.0 m b. 63.7 m c. 138.7 m d. 183.1m	
9	4991	What is meant by soundness of aggregate? a. Ability of aggregates to resist excessive changes in volume as a result of changes in physical conditions b. A measure of impurities in aggregates c. Ability of aggregates to absorb moisture depending on porosity d. The free moisture content in fine aggregates that increases total volume	
10	4926	Piezometric head is the sum of _____ a. Elevation head and Pressure head b. Pressure head and velocity head c. Velocity head and Elevation head d. Elevation, pressure and velocity head	
11	4978	What is the ratio of Fe_2O_3 to Al_2O_3 on an excellent quality ordinary Portland cement clinker? a. 4 b. 0.98 c. 0.25 d. 0.9	
12	5006	Proctor test is used to assess the amount of compaction in ____ a. Bitumen b. Cement c. Soil d. All of the above	

13	4927	Reynolds number of flow is the ratio of a. Inertial forces to pressure forces b. gravity forces to viscous forces c. Gravitational forces to pressure forces d. Inertial force to viscous force	
14	4952	Bitumen grade 80/100 indicates that under the standard test conditions, penetration value of bitumen would vary from _____ a. 0.8 mm to 1 mm b. 8 cm to 10 cm c. 8 mm to 10 mm d. 0.08 mm to 0.1 mm	
15	4966	The magnitude of superelevation provided for Indian Railways on the broad gauge (in cm) is a.0.415 $\frac{v^2}{R}$ b.0.485 $\frac{v^2}{R}$ c.0.685 $\frac{v^2}{R}$ d.1.315 $\frac{v^2}{R}$	
16	4997	The gas formed when water reacts with calcium carbide is _____ a. Carbon dioxide b. Methane c. Ethane d. Ethyne	
17	4983	A 14 kg hammer is raised to a height of 380 mm above the upper surface of the 2 kg oven-dried aggregates in a cup and allowed to fall freely on the aggregate 15 times. If the weight of the crushed fraction retained on the 2.36 mm I.S. sieve is 1.5 kg, then what is the aggregate impact value? a. 75 b. 7 c. 28 d. 25	

18	5020	What is the effective depth of a beam? a. The distance between the centroid of the area of tension reinforcement and the maximum compression fibre, including the thickness of finishing material not placed monolithically with the member and the thickness of any concrete provided to allow for wear. b. The distance between the centre of mass of the area of tension reinforcement and the maximum compression fibre, including the thickness of finishing material not placed monolithically with the member and the thickness of any concrete provided to allow for wear. c. The distance between the centroid of the area of tension reinforcement and the maximum compression fibre, excluding the thickness of finishing material not placed monolithically with the member and the thickness of any concrete provided to allow for wear. d. The distance between the centre of mass of the area of tension reinforcement and the maximum compression fibre, excluding the thickness of finishing material not placed monolithically with the member and the thickness of any concrete provided to allow for wear.	
19	4970	The estimate of 20 cm thick walls for a room of 5 m × 4 m, all around by central line method will be ____ a. 20 m b. 18.8 m c. 15.6 m d. 25 m	
20	4981	According to IS 456:2000, nominal mix concrete may be used for concrete of ____ a. M25 b. M20 c. M35 d. M40	
21	4965	The rail gauge is the distance between a.Outer faces of rail b.Running faces of rail c.Center to center of the rail d.Inner faces of rail	
22	4986	Which among the following is not a method to manage slump loss? a. Using retarders b. By keeping temperature of the concrete high c. Initial high slump d. By using compatible superplasticizer with cement	

23	**5004**	How are colluvial soils transported? a. Wind b. Snow c. Gravity d. Water	
24	**4935**	The ratio of the percentage error in the discharge and percentage error in the measurement of head, over rectangular notch, is a. 1/3 b. 2/3 c. 3/2 d. 3/4	
25	**5000**	If the average coefficient of permeability in the horizontal direction for a 4.5 m deposit consisting of two isotropic layers having coefficients of permeability of 1 x 10^{-1} cm/sec and 1 x 10^{-4} cm/sec is 0.556 mm/sec, what is the height of each layer? a. 4.496 m and 0.004 m b. 3 m and 1.5 m c. 2.5 m and 2 m d. 3.857 m and 0.643 m	
26	**4957**	A vehicle of width 2.4 m has its center of gravity located at 0.75 m. It is passing around a curve with a coefficient of lateral friction is 0.1. The vehicle is a.Safe in overturning and skidding b.Not safe in skidding c.Not safe in overturing d.Not safe in skidding and overturning	
27	**4929**	What is the percentage error in computing discharge in the rectangular notch, if the error in measurement of the water surface above the crest is 4 %? a. 2 % b. 3 % c. 4 % d. 6 %	
28	**5010**	How many independent elastic constants are required to characterize an anisotropic material? a. 2 b. 9 c. 21 d. 19	

29	**4999**	What is the type of soil if the liquid limit is 40% and the plastic limit is 20%? a. Organic silts of low plasticity b. Inorganic silts of low plasticity c. Inorganic clays of high plasticity d. Inorganic clays of low to medium plasticity	
30	**4964**	The mix design for pavement concrete is based on the a.The flexural strength b.The characteristic compressive strength c.The shear strength d.The bond strength	
31	**5005**	What is thixotropy? a. Any change that occurs due to the action of water b. Any change that occurs by touch c. Any change that occurs due to the action of wind d. Any change that occurs by temperature change	
32	**4930**	The critical depth is the depth of flow at which _____ a. Froude number is less than unity b. Specific energy is maximum c. Specific energy is minimum d. unit discharge is maximum	
33	**5019**	What is the design load for limit state design? a. Characteristic load b. Characteristic load with appropriate partial safety factors c. A combination of dead load, imposed load, wind load and snow load d. A combination of dead load and wind load	
34	**4984**	The average value of the linear thermal coefficient of concrete expansion may be 9.9×10^{-x} per °C. What is the value of x? a. 12 b. 6 c. 9 d. 23	
35	**4962**	The road geometric in India are designed for a.98^{th} highest hourly traffic volume b.95^{th} highest hourly traffic volume c.50^{th} highest hourly traffic volume d.30^{th} highest hourly traffic volume	

36	**4987**	Which among the following is a false statement in the process of manufacturing concrete? a. Chutes are used to mix the concrete b. Weigh batching is the best method of measuring materials compared to volume batching c. Retempering of concrete is the process of remixing concrete with additional cement and water d. The lower the workability, the higher the amount of air entrapped in concrete	
37	**4994**	What is Loam? a. A type of soil that contains gravel, sand, and silt b. A type of clay with a high percentage of clay mineral montmorillonite c. A mixture of sand, silt, and clay d. A fine-grained soil composed of very small particles ejected from volcanoes	
38	**4963**	Name the traffic survey data that is plotted by means of “desire lines” a.Accident b.Classified volume c.Origin and destination d.Speed and delay	
39	**4938**	Particles of approximately 1 micron size are best removed by which method? a. plain sedimentation b. filtration c. chemical coagulation d. chemical precipitation	
40	**4932**	A pump is a device which converts _____ a. Kinetic energy to Mechanical energy b. Hydraulic energy to Mechanical energy c. Mechanical energy to Hydraulic energy d. Mechanical energy to Electrical energy	
41	**5011**	A material has Young’s modulus equal to 2.0×10^{11} N/m^2 and Bulk modulus equal to 2.5×10^{11} N/m^2. Determine the Poisson’s Ratio of the material (rounded to nearest 1 decimal place). a. 0.6 b. 0.4 c. 0.8 d. 0.1	

42	**4998**	According to the Indian Standards, what is the particle size range of fine gravel? a. 4.75 mm to 2.0 mm IS sieve b. 20 mm to 4.75 mm IS sieve c. 80 mm to 20 mm IS sieve d. 300 mm to 80 mm IS sieve	
43	**4941**	Which of the following is the process of removal of permanent hardness of water? a. Boiling of water b. Filtration process c. Chlorination d. Zeolite process	
44	**4937**	5-day BOD at 20^0C for a sample is 300 mg/L. For the same sample 5-day BOD at 30^0C will be a. greater than 300 mg/L b. less than 300mg/L c. 300 mg/L d. zero as bacteria cannot survive at high temperature	
45	**4959**	In a 600 g sample of coarse aggregate, there are 120 g flaky particles and 90 g elongate particles. What are the flakiness and elongation indices (total) as per I.S.? a.20% b.15% c.35% d.5%	
46	**4951**	From cumulative speed distribution, at which percentile is the design speed selected for the geometric design of highway? a. 85th percentile b. 100th percentile c. 95th percentile d. 98th percentile	
47	**4993**	What among the following is not a method of chemical weathering of rocks? a. Hydrolysis b. Temperature changes c. Oxidation d. Solution	

48	**4977**	What is the error in computing the area of a square land given the side of the land as 300 m measured at an error of 0.2 m? a. 40 m^2 b. 60 m^2 c. 90 m^2 d. 120 m^2	
49	**4946**	A water sample has a total alkalinity of 200 mg/L as $CaCO_3$ and a total hardness of 300 mg/L as $CaCO_3$. Water sample has a. 300 mg/L of carbonate hardness and zero non-carbonate hardness. b. 300 mg/L of non-carbonate hardness and zero carbonate hardness. c. 200 mg/L of carbonate hardness and 100 mg/L non-carbonate hardness. d. 200 mg/L of non-carbonate hardness and 300 mg/L carbonate hardness.	
50	**4953**	Which among the following machine is used to test abrasion for the aggregate? a. Aggregate impact apparatus b. Los Angeles machine c. Compressive testing machine d. None of the above	
51	**4972**	The Magnetic bearing of line AB is S19°40'E. If the declination is 5°40'W, the true bearing of AB is _____ a. S14°00'E b. S25°20'E c. S19°40'E d. S25°40'E	
52	**4931**	What is the ratio of normal depth to width for a best hydraulic rectangular section? a. 0.5 b. 1.0 c. $\sqrt{2}$ d. 2.0	
53	**4995**	The dry mass of a soil sample is 1 kg, and the total volume of the sample is 500 mL. If the specific gravity of solids is 2.70, what is the porosity (rounded to the nearest)? a. 26% b. 35% c. 74% d. 65%	

54	**4960**	The modulus of subgrade reaction is evaluated from which one of the following? a.Plate bearing test b.CBR test c.Direct shear test d.Triaxial test	
55	**4973**	The elevation of a bench mark is 100.00m. The back sight taken on a staff held vertically is 2.150 m. If the foresight is taken at a point A is 2.300 m, then the RL of point A is ____ a. 100.150 m b. 99.850 m c. 95.250 m d. 104.750 m	
56	**4924**	What is the atmospheric pressure if the barometric reading is 740mm of Hg (density of mercury = 13600 kg/m^3, g = 9.81 m/sec^2) a. 105.5 kPa b. 98.7 kPa c. 95.6 kPa d. 99.8 kPa	
57	**4976**	A 30 m chain is found to be 0.2 m too short throughout the measurement of a line. If line AB is recorded as 300 m, what is the actual length of the line AB? a. 299.0 m b. 298.0 m c. 302.0 m d. 300.0 m	
58	**4969**	Which one of the following is taken into consideration for computing traffic capacity per lane of the highway? a. Passenger cars and light vehicles b. Trucks and buses c. Two-wheelers d. Equivalent of passenger cars	
59	**4979**	Kelly Ball Test is used to determine the ____ of concrete a. air content b. bleeding c. Modulus of elasticity d. workability	

60	**4974**	The correct sequence of temporary adjustment of a theodolite is _____ a. Levelling, Setting, Centering b. Setting. Levelling. Centering c. Setting, Centering, Levelling d. Levelling, Centering, Setting	

Post of Lab Technician/ Instructor (CIVIL) Answer Key

Date of Exam: 15/05/2025 (Shift1)

S.No.	QID	Answer Key
1	4967	D
2	4996	A
3	5007	A
4	4939	B
5	4950	A
6	5003	D
7	4985	A
8	4948	C
9	4991	A
10	4926	D
11	4978	B
12	5006	C
13	4927	D
14	4952	C
15	4966	D
16	4997	D
17	4983	D
18	5020	D
19	4970	B
20	4981	B
21	4965	D
22	4986	B
23	5004	C
24	4935	C
25	5000	C
26	4957	B
27	4929	D
28	5010	C
29	4999	D
30	4964	A
31	5005	D
32	4930	C
33	5019	B
34	4984	B
35	4962	D
36	4987	A
37	4994	C
38	4963	C
39	4938	B
40	4932	C
41	5011	B

S.No.	QID	Answer Key
43	4941	D
44	4937	A
45	4959	C
46	4951	D
47	4993	B
48	4977	D
49	4946	C
50	4953	B
51	4972	B
52	4931	A
53	4995	A
54	4960	A
55	4973	B
56	4924	B
57	4976	B
58	4969	D
59	4979	D
60	4974	C

42	4998	B