Comprehensive Question Preview

Questions	Choices
The deficiency in rain catch due to vertical acceleration of air forced upward over the gauge, is	1. greater for heavy rain 2. greater for lighter rain 3. greater for large drops 4. lesser for small rain drops
If a gauge is installed perpendicular to the slope, its measurement is reduced by multiplying	1. sine of the angle of inclination with vertical 2. cosine of the angle of inclination with vertical 3. tangent of the angle of inclination with vertical 4. calibration coefficient of the gauge.
Under-reamed piles are generally	1. driven piles 2. bored piles 3. precast piles 4. Shallow piles
Back fill with a sloping surface exerts a total active pressure P_a on the wall of height H and acts at	1. $H/4$ above the base parallel to base 2. $H/2$ above the base parallel to base 3. $H/3$ above the base parallel to base 4. $H/5$ above the base parallel to base
The time required by rain water to reach the outlet of drainage basin, is generally called	1. time of concentration 2.

Questions	Choices
	time of overland flow 3. concentration time of overland flow 4. duration of the rainfall
The ratio of the weight of given volume of soil solids to the weight of an equal volume of distilled water at the given temperature, is known	1. porosity 2. specific gravity 3. void ratio 4. water content
An infinite slope represents the inclined face of	1. an earth dam 2. an embankment 3. an excavation 4. a natural high hill slope
the permissable settlement is the maximum in case of	1. isolated footing 2. raft on clay 3. isolated footing on sand 4. raft on sand
For a very dense sand the N value is	1. 30 to 50 2. <30 3. <50 4. >50
The Minimum depth for all foundations below the natural ground level is	1. 500 mm

Questions	Choices
	2. 1200 mm 3. 250 mm 4. 100 mm
The bearing capacity of footing in pure clay soli is independent of	1. Depth of footing 2. Width of footing 3. Shape of footing 4. Water table
Maximum efficiency of transmission of power through a pipe, is	1. 25% 2. 33.3% 3. 50% 4. 66.67%.
An ideal flow of a liquid obeys	1. Continuity equation 2. Newton's law of viscosity 3. Newton's second law of motion 4. dynamic viscosity law
Euler's equation for motion of liquids, is given by	1. 2. 3. 4. $\rho dp + gdz + vdv = 0$
Reynold number is the ratio of initial force and	1.

Questions	Choices
	viscosity 2. elasticity 3. gravitational force 4. surface tension
The horizontal component of the force on a curved surface is equal to	1. weight of liquid vertically below the curved surface 2. force on a vetical projection of the curved surface 3. product of pressure at its centroid and the area 4. weight of liquid retained by the curved area
The factor of safety	1.depends on the composition of the material 2.for steel is higher than that for concrete 3.for steel and concrete are same 4.for steel is lower than that for concrete
A pipe consisting of several pipes of varying diameters and lengths, may be replaced by an equivalent pipe of diameter *D* of length	1. 2. 3. 4.
The diameter (d) of a nozzle fixed at the end of a pipe (diameter D, length L) for maximum energy, is	1. 2. 3. 4.

Questions	Choices
The Empirical formula for discharge over large rectangular weirs, is known as	1. Francis formula 2. Bazin formula 3. Rehbook formula 4. Kutter's formula
Differential manometers are used to measure	1. pressure in water channels, pipes, etc. 2. difference in pressure at two points 3. atmospheric pressure 4. very low pressure
The continuity equation	1. expresses the relationship between work and energy 2. relates the momentum per unit volume between two points on a stream line 3. relates mass rate of flow along a stream line 4. requires that Newton's second law of motion be satisfied at every point in fluid
Total head of a liquid particle in motion is the sum of	1. potential head and kinetic head 2. kinetic head and pressure head 3. potential head and pressure head 4. potential head, kinetic head and pressure head
The velocity distribution of viscous fluid through a circular/pipe is	1. hyperbolic

Questions	Choices
	2. circular 3. parabolic 4. elliptical
For evaporation and measurement of settlable solids, the apparatus used, is	1. a jar 2. a breaker 3. a test tube 4. an Imhoff cone.
Pick up the correct statement from the following :	1. Yield of a drainage basin is the run off at any time 2. Yield of a drainage basin is the run off over long periods 3. Yield of a drainage basin is expressed as surface run off per year 4. Run off is expressed as total volume per day
Compared to a level surface, on a descending gradient the stopping sight distance is	1. less 2. more 3. same 4. dependent on the speed
A runoff rive plant is	1. a low head scheme 2. a medium head scheme 3. a high head scheme 4. uses pelton wheel turbin

Questions	Choices
Which one of the following can fix atmospheric nitrogen?	1. Green algae 2. Red algae 3. Blue green algae 4. Brown algae
Function of canal outlet is to	1. Control flow depth 2. Control discharge 3. Control full supply level 4. Control bed grade
If the design speed is 80kmph, total reaction time is 3 seconds and the coefficient of friction is 0.5, the safe stopping sight distance is	1. 50m 2. 167m 3. 117m 4. 106m
The relationship between Moment and deflection is	1. EI d2y/dx2 2. EI dy/dx 3. EI d4y/dx4 4. EI d3y/dx3
In a pipe network	1. the algebraic sum of discharges around each elementary circuit must be zero 2. the head at each node must be the same 3. the algebraic sum of the piezometric head drops around each elementary circuit is zero 4. the piezometric head loss in each line of a circuit is the same
The permissible settlement is maximum in the case of	1.Isolated footing on clay 2.Raft on clay 3.Isolated footing on sand 4.raft on sand
Coefficient of consolidation depends on	1. Unit weight of water 2. permeability, coefficient of vol. change, unit weight of water 3. Coefficient of volume change 4. Permeability
The maximum value of effective stress in the past divided by the present value, is defined as over consolidation ratio (OCR). The O.C.R. of an over consolidated clay is	1. less than 1 2. 1 3. more than 1 4. Zero

Questions	Choices
The standard height of a standard rain gauge is	1. 10 cm 2. 20 cm 3. 30 cm 4. 40 cm
In India, rain fall is generally recorded at	1. 8 AM 2. 12 Noon 3. 4 PM 4. 8 PM
If Nf, Nd and H are total number flow channels, total number of potential drops and total hydraulic head differences respectively, the discharge q through the complete flow is given by (where K is a constant)	1. 2. 3. 4.
Bituminous materials are used in highway construction primarily because of their	1. Cementing and water proofing properties 2. load bearing capacity 3.high specific gravity 4. black colour which facilitates road marking
A single lane unidirectional highway has a design speed of 65kmph. At capacity, vehicles space themselves at safe stopping distance. Average vehicle length is 5m. Perception-reaction time is 2.5 sec. Coefficient of longitudinal friction of pavement is 0.4. The capacity of this road in terms of vehicles per hour is:	1. 1440 2. 750 3. 710 4. 680

Questions	Choices
Residual soils are formed from	1. glaciers, wind, water 2. Wind 3. Glaciers 4. Water
Which one of the following phenoemenon in a pipe flow is termed as water hammer	1. The sudden rise of pressure in a long pipe due to sudden closure of valve 2. the rise of pressure in a pipe flow due to gradual closure of valve 3. the rise of negative pressure 4. The zero pressure in a pipe flow
Modulus of elasticity of concrete is calculated (as per IS456) by	1. Final Tangent modulus 2.depends on the size of the specimen 3. Tangent Modulus 4. Secant modulus
Find the neutral axis content of balance RCC rectangular beam section under ultimate moment condition with high strength steel and M15 grade concrete	1. 0.28 2. 0.38 3. 0.40 4. 0.30
Plate load test used to find	1.Loads 2.settlement 3.Ultimate bearing cpacity 4.both ultimate bearing capacity and settlement
According to IS : 456-2000, the column or the strut is the member whose effective length is greater than	1. 2 times the least lateral dimension 2. the least lateral dimension 3. 3 times the least lateral dimension 4. 4 times the least lateral dimension
Function of canal escape is to	1. Control of bed grade 2. Control of full supply level 3. Control of discharge 4. Control of flow depth
A check dam is	1. flood control structure 2. river training structure 3. soil conservation structure 4. water storage structure
The external wind pressure acting on a roof depends on	1. degree of permeability of roof 2. slope of roof 3. both (a) and (b) 4. none of the above
The ratio of strengths of solid to hollow shafts, both having outside diameter D and hollow having inside diameter D/2, in torsion, is	1. 3/8 2. 1/16 3. 1/4 4. 15/16
In case of hand mixing of concrete, the extra cement to be added is	1. 5% 2. 10% 3. 15% 4. 20%
Blue haze in forest area is produced because of	1. Aerosols 2. PAN 3. Alkenes

Questions	Choices
	4. Lead
The maximum dissolved oxygen may be present in water at 20°C at 1 bar pressure is	1. 13.5 mg/L 2. 1.9 mg/L 3. 7.5 mg/L 4. 9.1 mg/L
Select from the answer choices the word/words to make the sentence grammatically correct. Now that the stress of the examination and interviews _____ over, we can all relax for a while.	1.is 2.are 3.have 4.were
As per IS 6403, shape factor for square footing is	1.1.2 2.2 3.1.3 4.1
Select from the answer choices the word/words to make the sentence grammatically correct. We missed the first part of the film because it _____ by the time we got to the cinema.	1.Was starting 2.Had started 3.started 4.starts
Select from the answer choices the word/words to make the sentence grammatically correct. I felt nervous because I _____ a speech in public before.	1.Have never given 2.Never gave 3.Had never given 4.Never given
Select from the answer choices the word/words to make the sentence grammatically correct. One of the sentences is incorrect. Identify the incorrect sentence.	1.I spoke to Jack and he said he wasn't doing anything special this weekend.2.I wasn't knowing how to fix the problem, so I phoned the technical helpline. 3.How did he react when he heard the news? 4. I am afraid Mr. Ravi doesn't work here anymore. He retired last year.
Select from the answer choices the word/words to make the sentence grammatically correct. He has been laying _____ bed for three days now.	1.On 2.In 3.At 4.Over
Select from the answer choices the word/words to make the sentence grammatically correct. Shashank passed the exam first time, _____ I had to retake it three times.	1.As 2.While 3.Because 4.Where
Select from the answer choices the word/words to make the sentence grammatically correct. He didn't want help, _____ did he ask for it.	1.But 2.For 3.As 4.Nor
Read the questions on Preparing Questionnaire and choose the appropriate answer from the options given: In a questionnaire, the order of questions should start from:	1.Factual to particular 2.Factual to difficult 3.General to factual 4.General to abstract
Read the questions on Transcoding and choose the appropriate answer from the options given: As a technical illustration, a pie chart is acceptable, if the_____.	1.Data does not add to 100 2.Data adds to 100 3.Data adds to nearly 1004.Data adds to more than 100

Questions	Choices
Read the questions on Transcoding and choose the appropriate answer from the options given: Computer programmers are usually familiar with _____ charts.	1.Area 2.Bar 3.Flow 4.Line
Read the questions on business correspondence and choose the appropriate answer from the options given: _____ is used within organizations to communicate everything from routine details to complete proposals and reports.	1.Dairy 2.Memorandum 3.Letter 4.Chit
Read the questions on business correspondence and choose the appropriate answer from the options given: Create a draft of the meeting minutes within _____, when the information is fresh in your mind.	1.a week 2.two days' time 3.a single day 4.a month
Maximum quantity of water needed per 50 kg of cement for M 15 grade of concrete is	1. 34 liters 2. 32 liters 3. 30 liters 4. 28 liters
N value is the number blows required for ---------- penetration	1.600mm 2.150mm 3.300mm 4.450mm
Factor of safety against sliding of a slope, is the ratio of	1.height of slope to the depth of failure plane 2.shear strength to shear stress along the surface 3.actual cohesion to that of frictional angle of soil4.water content in soil to the pore water pressure generted
Back fill with a sloping surface exerts a total active pressure Pa on the wall of height H and acts at	1.H/4 above the base parallel to base 2.H/2 above the base parallel to base3.H/3 above the base parallel to base 4.H/5 above the base parallel to base.
The main function of diversion headworks provided at the off-take of canal from a river is	1. to control floods 2. to raise the water level in the river 3. to store water 4. to control silt entry into the canal
Which of the following types of riveted joint is free from bending stresses ?	1. lap joint 2. butt joint with single cover plate 3. butt joint with double cover plates 4.none of the above
A cantilever beam 5 m long carries a point load of W at its free end. If the deflection at the free end of the beam is 58.2 mm, find the slope (degrees).	1. 1.0 2. 1.3 3. 1.7 4. 1.5

Questions	Choices
For predicting floods of a given frequency, the best reliable method is	1. Unit hydrograph method 2. Gumbel's analytical method 3. California method 4. Richard's method
In column analogy method, the area of an analogous column for a fixed beam of span L and flexural rigidity El is taken as	1. L/EI 2. L/2EI 3. L/3EI 4. L/4EI
As per direction of IS 456:2000, mimimum size of longitudinal reinforced bar should be provided in a reinforced column is	1. 16mm 2. 12mm 3. 10 mm 4. 8mm
The average mean velocity of a stream having depth h, may be obtained by taking the average of the readings of a current meter at a depth of	1. 0.4 h and 0.6 h. 2. 0.2 h and 0.8 h 3. 0.3 h and 0.7 h 4. 0.1 h and 0.9 h
A turbine is called reaction turbine if at the inlet of the turbine the total energy	1. Pressure energy and Kinetic energy 2. Kinetic energy only 3. Pressure energy + Kinetic energy + datum energy 4. Pressure energy only
The maximum slenderness ratio of a steel column, the design of which is governed by wind or seismic forces is	1. 350 2. 180 3. 250 4. 150
As the percentage of steel increases	1. Lever arm increases 2. Depth of neutral axis increases 3. Depth of neutral axis decreases 4. None of the above
Two identical pipes of length L, diameter D and friction factor f, are connected in parallel between two reservoirs. The size of a pipe of length L and of the same friction factor f, equivalent to the above pipes, is	1. 0.5D 2. 0.87D 3. 2.0D 4. 1.40D
The negative skin friction on a pile develops when	1. The ground water table rises 2. The soil surrounding it settles more than the pile 3. The soil near the tip is clay 4. The soil in which it is driven is sandy soil
Which of the following is not components of diversion head work	1. Sluice gate 2. Scouring sluice 3. Weir 4. Marginal bund

Questions	Choices
When most of the ponding of water is done by gates and small or nil part is done by crest level it is called as	1. Barrage 2. Sluice gate 3. Weir 4. Scouring sluice
Principle of superposition is applicable when	1. deflections are linear functions of applied forces 2. material obeys Hooke's law 3. the action of applied forces will be affected by small deformations of the structure 4. deflections are non-linear
A diagram which shows the variations of the axial load for all sections of the span of a beam, is called	1. bending moment diagram 2. stress diagram 3. thrust diagram 4. shear force diagram
The Standard method of determining water content is	1. Alchol method 2. Pycnometer method 3. Oven drying method 4. Calcium carbide method
For a cantilever of effective depth of 0.5m, the maximum span to satisfy vertical deflection limit is	1. 4.5 m 2. 3.5 m 3. 5 m 4. 4 m
The load at which the column just buckles is known as	1. Tensile load 2. Compressive load 3. Bending Load 4. Crippling Load
The degree of static indeterminacy up to which column analogy method can be used is	1. 2 2. 3 3. 4 4. unrestricted
The following assumption is not true in the theory of pure torsion:	1. Cross-section of the shaft, which is plane before twist remains plane after twist 2. All radii get twisted due to torsion 3. The twist along the shaft is uniform 4. The shaft is of uniform circular section throughout
A member of a structure, which is not vertical and whose ends are pin joined subjected to axial compressive stress is known as	1. strut 2. column 3. Beam 4. Tie
Bending moment at any section in a conjugate beam gives in the actual beam	1. slope 2. bending moment 3. curvature 4. deflection
In the slope deflection equations, the deformations are considered to be caused by	1. (i)and(ii) 2. only (i)

Questions	Choices
i) bending moment (ii) shear (iii) axial (iv) Torsion	3. (ii) and (iii) 4. (i), (ii) and (iii)
The effective length of the column for both ends hinged is	1. 2L 2. L 3. L/2 4. L/1.414
Determine the change in breadth of the steel bar which is 4m long, 30mm wide and 20mm thick and is subjected to an axial tensile load of 30 kN in the direction of its length. Take E = 200 GPa and Poisson's ratio = 0.30	1. 1 mm 2. 0.0015 mm 3. 0.00225 mm 4. 0.000225 mm
The algebraic sum of moments of the forces forming couple about any point in their plane is	1. equal to the moment of the couple 2. constant 3. both of above are correct 4. both of above are wrong
For a two-hinged arch, if one of the supports settles down vertically, then the horizontal thrust	1. is decreased 2. becomes zero 3. remains unchanged 4. is increased
In reinforced concrete footing on soil, the minimum thickness at edge should not be less than	1. 250 mm 2. 200 mm 3. 100 mm 4. 150 mm
A uniform girder simply supported at its ends is subjected to a uniformly distributed load over its entire length and is propped at the centre so as to neutralise the deflection. The net B.M. at the centre will be	1. WL 2. WL/24 3. WL/8 4. WL/32
The maximum twisting moment a shaft can resist, is the product of the permissible shear stress and	1. moment of inertia 2. modulus of rigidly 3. polar modulus 4. polar moment of inertia
Back washing is required in	1. Rotating Biological Contractor 2. Rapid sand filter 3. Pressure sand filter 4. Slow sand filter
For a slab supported on its four edges with corners held down and loaded uniformly, the Marcus correction factor to the moments obtained by Grashoff Rankine's theory	1. is always less than 1 2. is always greater than 1 3. can be more than 1 4. can be less than 1
The Castigliano's second theorem can be used to compute deflections	1. at the point under the load only 2. for any type of structure 3. in statically determinate structures only 4. for beams and frames only

Questions	Choices
In a sample of water an increase of pressure by 18 MN/m2 caused 1% reduction in the volume. The bulk modulus of elasticity of this sample, in MN/m2 is	1. 1.8 2. 180 3. 0.18 4. 1800
The slab is designed as one way if the ratio of long span to short span is	1. between 1.5 and 2 2. between 1 and 1.5 3. less than 1 4. greater than 2
A higher modular ratio shows	1. higher tensile strength of steel 2. lower tensile strength of steel 3. lower compressive strength of concrete 4. higher compressive strength of concrete
The average permissible stress in bond for plain bars in tension is	1. increased by 25% for bars in compression 2. increased by 10% for bars in compression 3. decreased by 25% for bars in compression 4. decreased by 10% for bars in compression
In working stress design, permissible bond stress in the case of deformed bars is more than that in plain bars by	1. 10% 2. 30% 3. 40% 4. 20%
When shear stress exceeds the permissible limit in a slab, then it is reduced by	1. using thinner bars but more in number 2. using high strength steel 3. increasing the depth 4. providing shear reinforcement
If the size of panel in a flat slab is 6m x 6m, then as per Indian Standard Code, the widths of column strip and middle strip are	1. 3.0 m and 1.5 m 2. 1.5 m and 3.0 m 3. 1.5 m and 1.5 m 4. 3.0 m and 3.0 m
Side face reinforcement is provided when the depth of beam exceeds	1. 750 mm 2. 550 mm 3. 250 mm 4. 450 mm
When a series of wheel loads crosses a simply supported girder, the maximum bending moment under any given wheel load occurs when	1. the wheel load under consideration is midway between the center of span and the center of gravity of the load system 2. the center of gravity of the load system is midway between the center of span and wheel load under consduration 3. the wheel load under consideration is centre

Questions	Choices
	4. the center of span is midway between the center of gravity of the load system and the wheel load under consideration
Generally the purlins are placed at the panel points so as to avoid	1. bending moment in rafter 2. deflection of rafter 3. axial force in rafter 4. shear force in rafter
The forces, which meet at one point, but their lines of action do not lie in a plane, are called	1. intersecting forces 2. non-coplanar non-concurrent forces 3. coplanar non-concurrent forces 4. non-coplanar concurrent forces
The effective length of a battened strut effectively held in position at both ends but not restrained in direction is taken as	1. 1.5L 2. 1.1L 3. 1.8L 4. L
Shape factor is a property which depends	1. only on the geometry of the section 2. only on the yield stress of the material 3. only on the ultimate stress of the material 4. both on the yield stress and ultimate stress of material
A member which does not regain its original shape after removed of load producing deformation is said	1. elasto-plastic 2. plastic 3. Elastic 4. rigid
The angle which an inclined plane makes with the horizontal when a body placed on it is about to move down is known as angle of	1. friction 2. repose 3. repose force 4. kinematic friction
The section of a reinforced beam where most distant concrete fiber in compression and tension in steel attains permissible stresses simultaneously is called	1. under reinforced section 2. Critical section 3. Balanced section 4. Economic section
As per 1S: 456-2000, minimum grade of reinforced concrete in sea water constructions is	1. M20 2. M25 3. M30 4. M50
The value of Poisson's ratio always remains	1. zero 2. greater than one 3. less than one 4. equal to one
The fixed support in a real beam becomes in the conjugate beam a	1. hinged support 2. roller support 3. fixed support 4. free end
Independent displacement components at each joint of a rigid-jointed plane frame are	1. three linear movements 2. two linear movements and one rotation

Questions	Choices
	3. three rotations 4. one linear movement and two rotations
To determine the modulus of rupture, the size of test specimen used is	1. 150 x150 x500 mm 2. 100 x100 x700 mm 3. 150 x150 x700 mm 4. 100 x100 x500 mm
For a single point load W moving on a symmetrical three hinged parabolic arch of span L, the maximum sagging moment occurs at a distance x from ends. The value of x is	1. 0.5 L 2. 0.234 L 3. 0.25 L 4. 0.211 L
The width of the analogous column in the method of column analogy is	1. 2/EI 2. 1/4 EI 3. 1/EI 4. 1/2 EI
The bending moment is maximum on a section where shearing force	1. is minimum 2. is equal 3. changes sign. 4. is maximum
Which of the following factors are checked under serviceability limit state?	1. stability 2. cracking 3. deflection, cracking and stability 4. deflection
Effect of a force on a body depends upon	1. direction 2. magnitude 3. position or line of action 4. all of the above
A redundant truss is defined by the truss satisfying the equation	1. m > 2j + 3 2. m > 2j - 3 3. m < 2j + 3 4. m = 2j - 3
A pin-jointed plane frame is unstable if, where m is number of members, r is reaction components and j is number of joints	1. (m+r)+2j 2. m + r = 2j 3. (m + r)>2j 4. (m + r)<2j
When the axis of load lies in the plane of rivet group, then the rivets are subjected to	1. only tensile stresses 2. only shear stresses 3.Both tensile and shear stresses 4.no stresses
A rigid-jointed plane frame is stable and statically determinate if, where m is number of members, r is reaction components and j is number of joints	1. (m + r) = 2j 2. (m + r) = 3j 3. (3m + r) = 3j 4. (m + 3r) = 3j
The cost of a project is more than..... is consider as a major project	1. 200000 2. 100000 3. 400000 4. 300000

Questions	Choices
The most commonly used admixture which prolongs the setting and hardening time is	1. gypsum 2. calcium chloride 3. sodium silicate 4. all of the above
The percentage of voids in cement is approximately	1. 80% 2. 25% 3. 40% 4. 60%
1% of voids in a concrete mix would reduce its strength by about	1. 15% 2. 10 % 3. 5% 4. 20%
A heavy ladder resting on floor and against a vertical wall may not be in equilibrium, if	1. the floor is rough, the wall is smooth 2. the floor is smooth, the wall is rough 3. the floor and wall both are smooth surfaces 4. the floor and wall both are rough surfaces
The effective length of a battened strut effectively held in position at both ends but not restrained in direction is taken as	1. 200 2. 250 3. 350 4. 180
If there are m unknown member forces, r unknown reaction components and j number of joints, then the degree of static indeterminacy of a pin-jointed plane frame is given by	1. m + r + 2j 2. m + r - 3j 3. m + r - 2j 4. m - r + 2j
For a longitudinal reinforcing bar in a column, the minimum cover shall neither be less than the diameter of bar nor less than	1. 15 mm 2. 25 mm 3. 30 mm 4. 40 mm
If nominal shear stress tv exceeds the design shear strength of concrete xc, the nominal shear reinforcement as per IS : 456-1978 shall be provided for carrying a shear stress equal to	1. xv - TC 2. xc 3. xv 4. Tv + Tc
The number of independent displacement components at each joint of a rigid-jointed space frame is	1. 3 2. 1 3. 2 4. 6
If the depth of actual neutral axis in a beam is more than the depth of critical neutral axis, then the beam is called	1. balanced beam 2. under-reinforced beam 3. over-reinforced beam 4. none of the above
According to IS: 456-2000, the maximum cement content exclusive of admixtures is	1. 300 kg/m3 2. 550 kg/m3 3. 450 kg/m3 4. 200 kg/m3

Questions	Choices
A single force and a couple acting in the same plane upon a rigid body	1. balance each other 2. cannot balance each other 3. produce moment of a couple 4. are equivalent
Bulk modulus is defined as the ratio of direct stress to	1. volumetric strain 2. Strain 3. Shear strain 4. lateral strain
If the depth of neutral axis for a singly reinforced rectangular section is represented by kd in working stress design, then the value of k for balanced section	1. depends on stresses in steel only 2. depends on stresses in concrete only 3. is independent of both stress in concrete and steel 4. depends on both concrete and steel stresses
The degree of kinematic indeterminacy of a pin-jointed space frame is	1. j-2r 2. 3j-r 3. 2j-r 4. j-3r
If the permissible stress in steel in tension is 140 N/mm2, then the depth of neutral axis for a singly reinforced rectangular balanced section will be	1. 0.40 d 2. 0.35 d 3. dependent on grade of concrete also 4. 0.45 d
If in a rigid-jointed space frame, (6m + r) < 6j, then the frame is	1. unstable 2. stable and statically determinate 3. stable and statically indeterminate 4. stable
Environmental impact assessment includes	1. Environmental statement 2. Environmental management plan 3. Risk and hazard assessment and mitigation 4. All of the above
All short columns fail due to	1. Buckling and Crushing 2. Buckling 3. Bending 4. Crushing
The centre of buoyancy of a submerged body	1. is always above the centroid of the displaced volume of liquid 2. is always below the centre of gravity of the body 3. coincides with the centroid of the displaced volume of the fluid 4. coincides with the centre of gravity of the body
Nalgonda technique is used to remove _____from water.	1. Arsenic 2. Nitrate 3. Chromium 4. Fluoride

Questions	Choices
In case of summit curves, the deviation angle will be maximum when	1. an ascending gradient meets with a descending gradient 2. an ascending gradient meets with another ascending gradient 3. an ascending gradient meets with a level surface 4. a descending gradient meets with another descending gradient
Infiltration rate is always	1. more than the infiltration capacity 2. equal to or more than the infiltation capacity 3. equal to or less than the infiltration capacity 4. less than the infiltration capacity
The first stage of a construction, is	1. preparation of estimate 2. initiation of proposal 3. preparation of tender 4. survey of the site
Which one of the following heavy metal may contaminate water sources.	1. Mg 2. Ca 3. Na 4. Cr
Conflict which may occur in a rotary inter-section is	1.crossing and merging 2.crossing, merging, and diverging 3.crossing and diverging 4.merging and diverging
The biggest size of clay particle is	1. 0.002mm 2. 0.02mm 3. 0.075mm 4. 0.0002mm
The linear momentum equation is based on	1. Newton's law of viscosity 2. Newton's first law 3. Newton's third law 4. Newton's second law
The structure constructed to allow drainage water to flow under pressure	1. Syphon 2. Superpassage 3. Syphon aqueduct 4. Super aqueduct
The meandering of river is due to	1. load of streams 2. Discharge of stream 3. High flood in the river 4. erodibility of the bed and banks of streams
Minor losses in a pipe flow are those losses	1. caused by local disturbance due to pipe fittings 2. caused by frictional resistance 3. which can be neglected always 4. which are insignificantly small

Questions	Choices
In the group index method of flexible pavement design, which one of the following factors decides the thickness of base and surface course?	1. Percentage of sub-grade soil passing 75 micron sieve 2. Percentage of liquid limit of subgrade soil 3. Daily volume of commercial vehicles 4. Type of surface and base course materials
Pick up the PERT event from the following	1. Laying of concrete started 2. Digging of foundation completed 3. Laying of concrete completed 4. All
According to IS:456-2000, the following type of environments are considered for durability of concrete	1. two 2. four 3. five 4. six
For carrying out bituminous patch work during the rainy season, the most suitable binder is	1. road tar 2. cutback bitumen 3. hot bitumen 4. bituminous emulsion
A dummy activity	1. is artificially introduced 2. all 3. does not consume time 4. is represented by a dotted line
Permissible value of COD concentration of the effluent discharged into the inland water as per CPCB is	1. 500 mg/L 2. 200 mg/L 3. 250 mg/L 4. 100 mg/L
For a standard 45° fillet, the ratio of size of fillet to throat thickness is	1. V2 : 1 2. 1 : V2 3. 1:1 4. 2: 1
When the path travelled along the road surface is more than the circumferential movement of the wheels due to rotation, then it results in	1. slipping 2. skidding 3. turning 4. revolving
A critical ratio scheduling	1. is a dynamic system 2. none of these 3. determines the status of each activity 4. adjusts automatically changes in activity progress
The number of seismic zones in which the country has been divided are	1. 7 2. 6 3. 5 4. 3
The ultimate bearing capacity of a soil, is	1. total load on the bearing area 2. safe load on the bearing area 3. load at which soil fails 4. load at which soil consolidate

Questions	Choices
Pressure drag results due to	1. formation of wake 2. high Reynolds number 3. existence of stagnation point in the front of a body 4. turbulence in the wake
As compared to field rivets, the shop rivets are	1. stronger 2. weaker 3. equally strong 4. very less
Working stress method of design results in ---------- percentages of compression steel than that of a limit state method of design	1. Equal 2. Smaller 3. Larger 4. Half of the
The depth of neutral axis for over reinforced section is ---------- the depth of critical neutral axis	1. Equal to 2. Greater than 3. Less than 4. None of the above
The best arrangement to provide unified behaviour in built up steel columns is by	1. perforated cover plates 2. tie plates 3. lacing 4. battening
According to IS:800, in the Merchant Rankine formula the value of imperfection index (n) is	1. 1.8 2. 2 3. 1.4 4. 1
The statical method of plastic analysis satisfies	1. equilibrium condition only 2. equilibrium and mechanism conditions 3. mechanism and plastic moment conditions 4. equilibrium and plastic moment conditions
As per IS: 456, permissible bond stress for plain bars in tension, in working stress method, where M20, is the grade of concrete	1. 0.6 N/mm2 2. 1.0 N/mm2 3. 1.2 N/mm2 4. 0.8 N/mm2
Increase in the moisture content in concrete	1. increases the strength 2.Will not be known 3. does not change the strength 4. reduces the strength
When speed of traffic flow becomes zero, then traffic density	1. becomes zero whereas traffic volume attains maximum value 2. and traffic volume both becomes zero 3. and traffic volume both attain maximum value 4. attains maximum value whereas traffic volume becomes zero

Questions	Choices
The degree of static indeterminacy of a pin-jointed space frame is given by, where m is number of unknown member forces, r is unknown reaction components and j is number of joints	1. m + r - 2j 2. m + r - 3j 3. m + r + 3j 4. 3m + r - 3j
If the dew point is greater than 0°C	1. dew will be formed 2. frost will be formed 3. vapours will be formed 4. does not change the state
The amount to be deposited by the contractor while submitting the tender is	1. guarantee fund 2. fixed deposit 3. security deposit 4. earnest money deposit
Maximum dissolved oxygen is available in which layer of a lake?	1. Thermocline 2. Hypolimnion 3. Metalimnion 4. Epilimnion
The stock of a division should be inspected and checked at least once in	1. a month 2. a threee month 3. a year 4. a half year
What is the COD of the sample for following observation? Wastewater sample used for digestion = 50 ml Volume of FAS used for blank and sample are 12 ml and 7.5 ml respectively. The molarity of FAS is 0.24 .	1. 210 2. 450 3. 380 4. 173
Humidity refers to	1. c) moisture content of the air 2. d) volume of the air 3. b) pressure of the air 4. a) temperature of the air
Below which diamter the coagulation is required for the particles to settle	1. 1 - 0.1 micron 2. 1 -10 micron 3. 100 - 300 micron 4. < 100 micron
Modulus of rupture of concrete is a measure of	1. flexural tensile strength 2. direct tensile strength 3. split tensile strength 4. compressive strength
Which one of the following items of hill road construction does not help in the prevention of landslides in the monsoon season?	1. Retaining walls 2. Catch water drains 3. Hair-pin bends 4. Breast walls
A machine having an efficiency less than 50%, is known as	1. ideal machine 2. non-reversible machine

Questions	Choices
	3. reversible machine 4. neither reversible nor non-reversible machine
In which one of the following grades of a highway is an emergency escape ramp provided?	1. 1 to 20 2. Zero grade 3. Down grade 4. Up grade
The design speed recommended by IRC for National highways passing through rolling terrain is in the range of	1. 50-40 2. 120-100 3. 80-65 4. 100-80
According to IS:456-2000, the following type of environments are considered for durability of concrete	1. two 2. four 3. five 4. six
With referance to the Marshall mix design criteria for highways, which of the following pairs is NOT correctly matched	1. Stability value ..... 340 min 2. % Air voids ..... 3 - 5 3. VFB .....75 - 85 4. Flow value 8-16
Consider the following pairs with reference to highway geometric design. 1. Camber for CC pavement (1 in 33) to (1 in 40) 2. Roadway formation width for two lane national highway in plain terrain 12 m 3. Height of the object while calculating stopping sight distance 0.15 m 4. Reaction time of driver in the calculation of overtaking sight distance is 2.5 sec Which of these pairs are correct?	1. 2 and 3 2. 1 and 3 3. 1 and 4 4. 2 and 4
The Acceptable limit of sulphates in drinking water as per IS: 10500:2012 is	1. 400 mg/L 2. 5 mg/L 3. 200 mg/L 4. 100 mg/L
In a BOD determination, 6 ml of wastewater containing no dissolved oxygen is mixed with 294 ml of dilution water containing 8.5 mg/l of dissolved oxygen. After a 5-day incubation at 20°C, the dissolved oxygen content of the mixture is 5.5 mg/l, then the BOD of the wastewater will be	1. 250 mg/l 2. 150 mg/l 3. 50 mg/l 4. 350 mg/l
A pumped storage plant is a	1. Peak load plant 2. Run off river plant 3. Base load plant 4. High head plant
When two roads with two-lane, two-way traffic cross at an uncontrolled inter-section, the total number of potential major conflict points would be	1. 32 2. 24 3. 16 4. 4

Questions	Choices
To give gudgement upon the disputes of national importance the Central Government has sets up	1. Work man compensation 2. National Tribunals 3. Works Committee 4. Industrial Tribunals
The final selection of a construction site, is done by	1. representative of engineer authority 2. representative of administration 3. all 4. local civil authority representative
What is the approximate range of BOD of the raw domestic wastewater if COD is 350 mg/L	1. 65 - 135 mg/L 2. 600 - 800 mg/L 3. 105 - 180 mg/L 4. 160 - 350 mg/L
A real fluids is any fluid which	1. has zero shear stress 2. has constant viscosity and density 3. has density 4. has surface tension and is incompressible
Critical path	1. may be shortest 2. is always longest 3. is always shortest 4. may be longest
Giardia Lambia is a pathogenic	1. Viruses 2. Protozoa 3. Bacteria 4. Algae
The relationship between shear force and deflection is	1. EI d4y/dx4 2. EI dy/dx 3. EI d2y/dx2 4. EI d3y/dx3
Permissible value of BOD concentration of the effluent discharged into the inland water as per CPCB is	1. 25 mg/L 2. 30 mg/L 3. 10 mg/L 4. 42 mg/L
Which is the best suited population forecasting method for big and developed cities?	1. Arithmetic mean method 2. Incremental increase method 3. Geometric mean method 4. Logistic curve method
Which combination of surface water quality parameters will indicate sweep coagulation as the preferred method of coagulation?	1. High turbidity-low alkalinity 2. High turbidity-high alkalinity 3. Low turbidity-low alkalinity 4. Low turbidity-high alkalinity
A CPM family includes	1. CPS (Critical Path Scheduling) 2. all 3. CPP (Critical Path Plotted) 4. MCE (Minimum Cost Expenditure)
The main function of prime coat is to	1. provide bond between old and new surfacing 2. improve riding quality of pavement

Questions	Choices
	3. provide bond between the existing base and surfacing of new construction 4. control dust nuisance
If the width of carriage way is 5.5 m , then what is it called	1. multi lane 2. two lanes 3. intermediate lane 4. Single lane
On right angle road inter-section with two way traffic, the total number of conflict points is	1. 6 2. 18 3. 24 4. 11
In India, rain fall is generally recorded at	1. 8 A.M. 2. 12 Noon 3. 4 P.M. 4. 8 P.M.
Dispersion air into water types of aerater is	1. Spray type aerator 2. Air diffuser 3. Coke tray aerator 4. Cascade aerator
Among the following which one is not a coagulant	1. $CuSO_4$ 2. $MgCl_2$ 3. FeCl3 4. $A1_2(SO4)_3.14H_20$
Length of transition curve for design speed 65 kmph and radius of curve 325 m using IRC formula is	1. 44.1m 2. 54.1m 3. 34.1m 4. 74.1m
What is not the characteristic of colloidal particles?	1. scatter light 2. acquire an electric charge 3. contribute to turbidity 4. attract each other
What is the minimum length of overtaking zone for a design speed of 96 kmph assuming acceleration as 0.69 m/s2 and reaction time as 2 sec and traffic road as one way	1. 342m 2. 684m 3. 1026m 4. 1710m
The officer responsible for the preparation and revision of schedule of rates in P.W.D is the	1. Superintending Engineer 2. Chief Engineer 3. Executive Engineer 4. Asst. Executive Engineer
The mechanism of filtration by which the particles can not follow the altered flow path due to their mass and hence settle is known as	1. Mechanical straining 2. Impaction 3. Flocculation 4. Interception
If in a Dorry abrasion test, loss in weight is 21 gms, then coefficient of hardness is	1. 9.5 2. 13 3. 17 4. 21

Questions	Choices
Benefit of using anthracite as dual media filter	1. Less backwashing 2. Better filter water quality 3. Increased filtration rate 4. All the above
Which of the following shapes is preferred in a valley curve ?	1. spiral 2. lemniscate 3. simple parabola 4. cubic parabola
The study of the transportation system that meets the travel need of several people by sharing a vehicle is	1. Mass transportation 2. None of the above 3. Passenger transport 4. Intelligent transport system
If average centre to centre spacing of vehicle is 20 metre, then basic capacity of a traffic lane at a speed of 50 kmph is	1. 2500 vehicles per day 2. 1000 vehicles per hour 3. 2500 vehicles per hour 4. 2000 vehicles per day
The term 'Refuse? generally does not include	1. Putrescible solid waste 2. Excreta 3. Non-putrescible solid waste 4. Ashes
The most popular type of organisation used for Civil Engineering Constructions, is	1. effective organisation 2. line and staff organisation 3. line organisation 4. functional organisation
The compensated gradient provided at the curve of radius 60 m with a ruling gradient of 6 percent is	1. 3.75% 2. 5.25% 3. 4.75% 4. 4.5%
Zeta potential between two particles increases with _____ of their distance.	1. Increase 2. Decrease 3. Not related 4. Both
Pick up the incorrect statement from the following	1. The tail of the arrow indicates the start of the activity 2. An activity of a project is denoted by an arrow on the net work 3. The arrows are drawn to scale from left to right 4. The head of the arrow indicates the end of the activity
Which one of the following causes ravelling in bituminous pavement?	1. Use of soft bitumen 2. Excessive bitumen content 3. Low bitumen content 4. Use of open graded aggregates
The object of technical planning, is	1. initiating the procurement action of resources 2. preparation of estimates 3. all

Questions	Choices
	4. taking remedial action for likely bottleneck in the execution
Effect of impact on the design of rigid pavement is accounted for by	1. increasing thickness as would be calculated with static wheel load 2. prevailing a base course 3. adopting an increased stress relative to that produced by static wheel road 4. adopting a reduced flexural strength of concrete through a factor of safety
Tie Bar in cement concrete pavements are at	1. expansion joints 2. contraction joints 3. warping joints 4. longitudinal joints
What is the repulsion force act between colloidal particles?	1. Van det wals force 2. Gravitational force 3. Electrostatic potential 4. Centrifugal force
Which one of the following toxic gas has physiological action as asphyxiant?	1. SO_2 2. CO 3. NO_2 4. Cl_2
The area of a certain district in India is 13,400 sq.km. and there are 12 towns as per 1981 census. The length of National highways to be provided in the district by the year 2001 are	1. 168 km 2. 536 km 3. 482 km 4. 1072 km
The Act, the aim of which is the prevention and settlement of strikes and lockout, is the	1. Industrial Disputes Act 2. Indian Trade Union Act 3. Factories Act 4. Payment of Wages Act
What is the normal loading rate range of rapid sand filter in m/hr	1. 5 - 15 2. 15 - 50 3. 2 - 5 4. 0.5 - 2.0
Select the correct statement.	1.Psychological extra widening depends on the number of traffic lanes.2.Mechanical extra widening depends on the speed of vehicle3.Psychological extra widening depends on the length of wheel base4.Psychological extra widening depends on the speed of vehicle
Which is the best suited population forecasting method for rapidly growing city?	1. Geometric mean method 2. Logistic curve method 3. Incremental increase method 4. Arithmetic mean method
30th highest hour volume is	1.average of the 30 peak hour volumes in a month 2.average of the 30 highest hourly volumes in a year 3.hourly

Questions	Choices
	volume which is exceeded by only 29 hours in a year 4.hourly volume which is exceeded by only 30 hours in a year
On a horizontal curve if the pavement is kept horizontal across the alignment, then the pressure on the outer wheels will be	1.more than the pressure on inner wheels 2.less than the pressure on inner wheels 3.equal to the pressure on inner wheels 4.zero
Chlorides from water are removed effectively by	1. Reverse osmosis 2. Cation exchange process 3. Chemical coagulation 4. Lime soda process
For a constant value of coefficient of lateral friction, the value of required super-elevation increases with	1.decrease in both speed and radius of curve 2.increase in both speed and radius of curve 3.increase in speed and with decrease in radius of curve4.decrease in speed and with increase in radius of curve
What is blackwater?	1. Wastewater from toilet flush 2. Wastewater from the washing of clothes 3. Wastewater from the kitchen 4. Wastewater from bathroom
If the stopping distance is 60 meters, then the minimum stopping sight distance for two lane, two way traffic is	1.30m 2.120m 3.60m 4.180m
What is the standard percentile value used for geometric elements design?	1.85th percentile 2.15th percentile 3.95th percentile 4.98th percentile
For water bound macadam roads in localities of heavy rainfall, the recommended value of camber is	1.1 in 30 2.1 in 36 3.1 in 48 4.1 in 60
What is the most common mechanism adopted for coagulation during water treatment?	1. Adsorption and inter-particle bridging 2. Enmeshment in a precipitate (sweep flocculation) 3. Adsorption and charge neutralization 4. Double layer compression (Ionic layer compression)
When the path travelled along the road surface is more than the circumferential movement of the wheels due to rotation, then it results in	1.slipping 2.skidding 3.revolving 4.turning
The ideal percentage of CH_4 in the biaogas from anaerobic digestion is	1. 90% 2. 30% 3. 20% 4. 70%
In case of hill roads, the extra widening is generally provided	1. one-fourth on inner side and three-fourth on outer side of the curve 2. fully on the outer side of the curve 3. equally on inner and outer sides of the curve

Questions	Choices
	4. fully on the inner side of the curve
Which one of the following binders is recommended for a wet and cold climate?	1. 80/100 penetration asphalt 2. Cutback 3. Emulsion 4. Tar
What is the ratio of BOD and COD in treated wastewater?	1. 0.1 - 0.3 2. 2 - 3 3. 1.2 - 1.8 4. 0.4 - 0.6
What is the chlorine demand of water if the chlorine dose and free chlorine after reaction are 2.4 mg/L and 0.8 mg/L respectively?	1. 2.4 mg/L 2. 0 mg/L 3. 0.8 mg/L 4. 1.6 mg/L
Bitumen of grade 80/100 means	1.its penetration value is 8 mm 2.its penetration value is 10 mm 3.its penetration value is 8 to 10mm 4.its penetration value is 8 to 10 cm
The BOD_5 of a wastewater is determined to be 275mg/L at 25°C. The k_1 value is 0.27 /day. What is the BOD @ 8 days if the test is run at 15°C	1. 245 mg/L 2. 180 mg/L 3. 130 mg/L 4. 276 mg/L
Factory act and Workmen compensation Act have been enacted to meet the principles of	1. Workmen compensation Act 2. minimum Wages Act 3. payment of Wages Act 4. Industrial Act
If free mean speed on a roadway is found to be 80 kmph under stopped condition and average spacing between vehicles is 6.9m, then capacity flow will be	1.1500 vehicle / h / lane 2.2000 vehicle / h / lane 3.3200 vehicle / h / lane4.2900 vehicle / h / lane
Gravity model is used in transportation planning process for	1.model split 2.trip distribution 3.trip generation 4.trip assignment
What is the normal filtration rate of slow sand filter in m/hr?	1. 5 - 10 2. 0.1 - 0.2 3. 1 - 5 4. None of the above
The entrance and exit curves of a rotary have	1.equal pavement widths but radius is more at entrance curve than at exit curve 2.equal radii but pavement width is more at entrance than at exit curve 3.equal radii and equal width of pavement 4.different radii and different widths of pavements
What is the range of Reynold's number for C_D = 24/R in Type I settling?	1. < 2.0 2. 1 - 10 3. > 2.0 4. > 50

Questions	Choices
As per IRC - recommendations, average level of illumination on important roads carrying fast traffic is	1.15 lux 2.20 lux 3.30 lux 4.10 lux
The critical activity has	1. zero float 2. minimum float 3. maximum float 4. none
Expansion joints in cement concrete pavements are provided at an intervel of	1.18 m to 20 m 2.10 m 3.15 m 4.25 m to 30 m
In the revised CBR design method recommended by the IRC for the design of flexible pavement, total thickness depends upon	1.CBR value of soil only 2.CBR value of soil and magnitude of wheel load3.CBR value of soil and number of commercial vehicles per day 4.CBR value of soil and cumulative standard axle loads
As per IRC, maximum load of axle of a vehicle should not exceed	1.8165 kg 2.7500 kg 3.9500 kg 4.800 kg
The critical condition of loading for combination of stresses in cement concrete roads for corner region is	1.load stress + frictional stress 2.load stress + warping stress 3.load stress + warping stress + frictional stress 4.load stress + warping stress -frictional stress
The percentage of reinforcement in case of slabs, when high strength deformed bars are used is not less than	1. 1.00 2. 0.30 3. 0.15 4. 0.12
Which of the following represents a carpet of sand-bitumen mix without coarse aggregates?	1.Mastic asphalt 2.Bituminous carpet 3.Sheet asphalt 4.Bituminous concrete
Non-recording rain gauges	1. are cylindrical in shape 2. are generally used in hilly terrain 3. collect the rain whose volume is measured by means of graduated cylinders 4. collect the rain which is directly measured by means of graduated cylinders in centimetres of water depth
The function of an expansion joint in rigid pavements is to	1.resist stresses due to expansion 2.relieve shrinkage stresses 3.relieve warping stresses 4.allow free expansion
Spacing between contraction joints for 3.5 meter slab width having thickness of 20 cm and f = 1.5 for reinforcement cement concrete, 1.0 cm diameter bars at 0.30 m spacing will be	1.8.72 m 2.7.12 m 3.6.51 m 4.9.35 m

Questions	Choices
The layer of the lake which is extreme resistent to mixing is	1. Benthic 2. Epilimnion 3. Hypolimnion 4. Metalimnion
A construction schedule indicates	1. the rate of progress for each operation 2. the actual progress of work 3. both the actual progress and the rate of progress 4. none of these
If t is the duration of an activity, t1 is the latest finish possible moment of its preceding activity and t2 is the earliest start possible moment, the	1. t + (t1 - t2) 2. (t1- t2) - t 3. t - (t1 - t2) 4. (t1 + t2) - t
In which of the following types of bituminous constructions is proportionating of materials determined from laboratory tests?	1.Grouted macadam 2.Premix carpet 3.Bituminous or asphaltic concrete4.Bituminous macadam
Bankelman beam deflection method is used for design of	1.rigid overlay on rigid pavement 2.flexible overlay on rigid pavement3.flexible overlay on flexible pavement 4.rigid overlay on flexible pavement
Critical Path Net Work helps an engineer	1. to divert the resources from non-critical advanced activities to critical activities 2. all 3. to be cautious for avoiding any delay in the critical activities to avoid delay of the whole project 4. to concentrate his attention on critical activities
The effect of grade on safe overtaking sight distance is	1. to decrease it on both descending and ascending grades 2. to increase it on both descending and ascending grades 3. to decrease it on descending grades and to increase it on ascending grades 4. to increase it on descending grades and to decrease it on ascending grades
The plasticity Index of the fraction passing 425 mivron I.S.sieve in case of sub base/base course would be	1.Between 15 and 30 2.Less than 6 3.Greater than 6 4.Greater than 9
The absolute minimum radius for a horizontal curve designed for a speed of 100 kmph given the permissible values of super elevation 0.08 and coefficient of friction 0.12 will be	1. 252 m 2. 295 m 3. 394 m 4. 364 m
Pick the odd one in the following organizations	1.Central Road Research Institute 2.Central Road Fund 3.Indian Road Congress 4.Highway Research Board

Questions	Choices
In case of orginal and major works, the piece work contract	1. can be adopted 2. cannot be adopted 3. in the form of postal orders 4. in form of document
A road improvement has a capital cost of Rs. 10,000. Estimates indicate a constant beneficial cash flow of Rs. 600 per year for the next 30 years. The annual rate of return by the investment over that period will be	1.4.3 % 2.5.3 % 3.3.3 % 4.6.3 %
Select the correct statement	1.Nagpur road plan formula take into account the towns with very large population 2.Second 20-year plan has provided 1600 km of expressways out of the proposed National highway 3.Nagpur road plan has a target road length of 32 km per 100 square km 4.Second 20-year plan allowed deduction of length of railway track in the area while calculating the length of roads
Copying the measurement from a note book is	1. strictly not permitted 2. permitted under special case 3. some times its permitted 4. permitted
Which one of the following statement is correct? (Notations have their usual meaning)	1.To avoid both skidding and overturning P/W < b/2h < f 2.Allowable maximum super elevation in plain region 0.15 3.Allowable coefficient of lateral friction 0.07 4.Attainment of super-elevation (nl2/2R)
A pathline is the	1. path traced by continuously injected tracer at a point 2. trace made by a single particle over a period of time 3. mean direction of a number of particles at the same instant of time 4. instantaneous picture of positions of all particles in the flow which passed a given point
The time which results in the least, possible construction cost of an activity, is known	1. crash time 2. slow time 3. normal time 4. standard time.
Final technical authority of a project lies with	1. Superintending Engineer 2. Chief Engineer 3. Executive Engineer 4. Assistant Engineer

Questions	Choices
A Milestone chart	1. shows the interdependencies of various jobs 2. depicts the delay of jobs, if any 3. points outgoing ahead of schedule of jobs, if any 4. none of these
An Executive Engineer may have powers upto	1. Rs. 100,000 2. Rs. 200,000 3. Rs. 25,000 4. Rs. 50,000
Minimum wages Act passed by Indian Government by the year	1. 1948 2. 1947 3. 1936 4. 1949
Objective of Industrial Psychology is	1. to promote their health and welfare 2. to get leave with wages 3. to increase the efficiency of employee 4. to fix the minimum wages
Payment wages Act was passed by goverment of India in the year	1. 1952 2. 1947 3. 1948 4. 1963
The person responsible to work out the correct quantities of measurements and enter the figures in the column of the measurement book is	1. the officer recording the measurement 2. the head clerk in the sub dicisional office 3. the sub divisional officer 4. the section officer
If TL is the latest allowable event occurrence time, total activity slack(s), is equal to	1. all 2. LST-EST 3. TL-EFT 4. LFT-EFT
Which of the following methods of applying water may be used on rolling land?	1. border flooding 2. free flooding 3. furrow flooding 4. check flooding
The yield of a retaining wall required to reach plastic equilibrium in active case is	1. equal to that in passive case 2. less than that in passive case 3. more than that in passive case 4. zero
Which one of the following chemical is employed for de-chlorination of water?	1. Sodium bicarbonate 2. Hydrogen peroxide 3. Calcium carbonate 4. Sodium sulphite
The D_{10} and D_{60} of stack sand is 0.64 mm and 0.84 mm respectively. The Uniformity coeffiecient of the stack is	1. 1.3 2. 0.7 3. 1.9 4. 2.4

Questions	Choices
The piezometric head of a flow is	1. the sum of the pressure head and velocity head 2. the sum of the velocity head, pressure head and datum head 3. the sum of the pressure head and datum head 4. the sum of the velocity head and datum head
A differential pulley block has larger and smaller diameters of 100 mm and 80 mm respectively. Its velocity ratio is	1. 10 2. 40 3. 5 4. 20
Three pipes are connected in series. Then	1. the total discharge is the sum of the discharges in the individual pipes 2. the head loss in each pipe is the same 3. the Reynolds number for each pipe is the same 4. the discharge through each pipe is the same
A streamlined body with a round nose and a tapering back is generally best suited for	1. laminar flow with low Reynolds number 2. supersonic flow 3. turbulent sub-sonic flow 4. creeping motion
If the intensity of rainfall is more than the infiltration capacity of soil, then the infiltration rate will be	1. equal to infiltration capacity 2. equal to rate of rainfall 3. more than rate of rainfall 4. more than infiltration capacity
Infiltration is the	1. movement of water through the soil 2. absorption of water by soil surface 3. evaporation from the soil 4. flow over the soil
Water logging is eliminated by	1. Providing tile drains 2. Shallow ploughing 3. Deep ploughing 4. Irrigation
The earthen embankments constructed parallel to the river banks at some suitable distance for flood control, are known as	1. floods walls 2. escape walls 3. Retaining Wall 4. levees
The ratio of the diameter of reinforcing bars and the slab thickness is	1. 1/6 2. 1/5 3. 1/4

Questions	Choices
	4. 1/8
Lap length in compression shall not be less than where (j) is diameter of bar	1. 24 (j) 2. 20 (j) 3. 30 (j) 4. 15 (j)
Preliminary estimate is prepared	1. for getting the technical sanction 2. for getting the budget sanction 3. after getting the administrative approval 4. for getting the administrative approval
Indian Trade Union Act was passed in 1926 for registration and protection of India trade union and was last amended in	1. 1949 2. 1948 3. 1947 4. 1946
The technique for establishing and maintaining priorities among the various jobs of a project, is known	1. Event flow scheduling technique 2. Short interval scheduling 3. Critical ratio scheduling 4. Slotting technique for scheduling
Pick up the incorrect statement from the following	1. Logically and sequentially connected activities and events form a network 2. The activity which consumes maximum time, is called a node 3. The activity is the time consuming part of a project 4. The beginning and end of a job, are called events
What is the price elasticity for an individual firm in a perfect market	1.infinite 2.0 3.1 4.inelastic
What does a firm reach equilibrium point	1.Revenue is equal to cost 2.When there is abnormal profit 3.marginal revenue is equal to marginal cost 4.Normal profit
A construction schedule is prepared after collecting	1. quantity of various items 2. output of labour 3. all 4. output of machinery
The officer who is directly incharge of work in the field is	1. Circle engineer 2. Section Engineer 3. Sub-division Engineer 4. Division Engineer
Critical path lies along the activities having total float	1. zero 2. same 3. positive 4. negative
The officer who is responsible for the preparation of projects, design and estimate in the P.W.D is	1. Superintending Engineer 2. Executive Engineer 3. Asst. Executive Engineer 4. Chief Engineer

Questions	Choices
Site order book is used for recording	1. instructions by the executive engineers 2. construction measurements 3. names of the casual labour 4. issue of store equipments
The estimated time required to perform an activity, is known as	1. dummy 2. event 3. float 4. duration
Works costing less than Rs. 20,000 are treated as	1. all 2. minor projects 3. projects 4. major projects
The head of the Public Work Department is	1. The Governor 2. The P.W.D Secretary to Government 3. The minister of Public Work 4. The Chief Engineer
According to Lami's theorem	1.if three forces acting upon a particle are represented in magnitude and direction by the sides of a triangle, taken in order, they will be in equilibrium 2. three forces acting at a point can be represented by a triangle, each side being proportional to force 3. three forces acting at a point will be in equilibrium 4. if three forces acting upon a particle are represented in direction by the sides of a triangle, taken in order, they will be in equilibrium
While using three moments equation, a fixed end of a continuous beam is replaced by an additional span of	1. constant length 2. zero length 3. zero moment of inertia 4. infinite length
All long columns fail due to	1. Crushing and Buckling 2. Bending 3. Buckling 4. Crushing
A cantilever beam 5 m long carries a point load of W at its free end. If the slope at the free end of the beam is not to exceed 1 degree, find the deflection at the free end of the beam.	1. 58.18 mm 2. 49.17 mm 3. 29.33 mm 4. 38.45 mm
The carryover factor in a prismatic member whose far end is fixed is	1. 1 2. 1/2 3. 3/4 4. 0
As compared to uniaxial tension or compression, the strain energy stored in bending is only	1. 1/2 2. 1/4

Questions	Choices
	3. 1/8 4. 1/3
When a uniformly distributed load, shorter than the span of the girder, moves from left to right, then the conditions for maximum bending moment at a section is that	1. the tail of the load reaches the section 2. the load position should be such that the section divides the load in the same ratio as it divides the span 3. the head of the load reaches the section 4. the load position should be such that the section divides it equally on both sides
When trying to turn a key into a lock, following is applied	1. couple. 2. coplanar force 3. non-coplanar forces 4. momen
The units of moment of inertia of an area are	1. kg m2 2. m3 3. kg/m2 4. m4
A bar which is subjected to principal stresses (major and minor) 100 MPa and -30 MPa. What is the maximum shear stress in any plane?	1. 65 MPa 2. 130 MPa 3. 70 MPa 4. 35 MPa
Minimum pitch provided in riveted steel tanks is	1. 1.5d 2. 2d 3. 3d where d is diameter of rivets 4. 2.5d
The amount of mechanical energy imposed on the aggregate during the aggregate impact test is of the order of	1. 7980 kg-cm 2. 6750 kg-cm 3. 5320kg-cm 4. 11400 kg-cm
As compared to ordinary portland cement, high alumina cement has	1. higher initial setting time but lower final setting time 2. lower initial setting time but higher final setting time 3. lower initial and final setting times 4. higher initial and final setting times
A 60 cm square bearing plate settles by 1.5 cm in plate loading test on a cohesion-less soil under an intensity of loading 2 kg/cm^2. The settlement of a prototype shallow footing 1m square under the same intensity of loading is	1. greater than 2.5 cm 2. 2.5 cm 3. between 1.5 and 2.5cm 4. 1.5cm
The maximum pressure which a soil can carry without shear failure, is called	1. ultimate bearing capacity 2. net ultimate bearing capacity 3. net safe bearing capacity 4. safe bearing capacity

Questions	Choices
Soil with largest void ratio have_____ permeability	1. Less 2. Equal 3. More 4. Zero
For the estimate of high floods in fan-shaped catchment, the formula used is	1. Dicken's formula 2. Ryve's formula 3. Inglis formula 4. Chezy's formula
Two identical pipes of length L, diameter D and friction factor f, are connected in series between two reservoirs. The size of a pipe of length L and of the same friction factor f, equivalent to the above pipes, is	1.0.87D 2.1.40D 3.1.15D 4.0.5D
Horizontal acceleration due to earthquake results in	1. inertia force into the body of the dam 2. partial increase in water pressure 3. hydrohynamic pressure 4. partial decrease in water pressure
Local atmospheric pressure is measured by	1. Barometer 2. Hydrometer 3. Hygrometer 4. Altimeter
Normal stresses are of the same magnitude in all directions at a point in a fluid	1. only when the fluid is frictionless 2. only when the fluid is at rest 3. only when there is no shear stress 4. in all cases of fluid motion
The difference between the total head line and the hydraulic grade line represents	1. the pressure head 2. the piezometric head 3. the velocity head 4. the elevation head
The net head H on the turbine is given by	1. H= gross head-head lost due to friction 2. H = Gross head+ Kinetic head - head loss due to friction 3. H = Gross head+ Kinetic head + head loss due to friction 4. H= gross head +head lost due to friction
In a pipeline the hydraulic grade line is above the pipe centre line is the longitudinal section at point A and below the pipe centre line at another point B. From this it can be inferred that	1. vaccum pressure prevail at B 2. vaccum pressure prevail at A 3. the flow is from A to B 4. the flow is from B to A
In calculating the drag force using CD the area used is	1. the planform area when the body is bluff like a sphere 2. the planform area when the body is flat like an airfoil 3. always the frontal area 4. always the planform area

Questions	Choices
Which of the following conditions is to be satisfied both in elastic and plastic analysis	1. equilibrium condition 2. yield condition 3. plastic moment condition 4. mechanism condition
Which of the following is a dimensionless number:	1. Manning?s coefficient n 2. Pipe friction factor f 3. Chezy coefficient C 4. Hazen-William coefficient CH
According to IS: 456-2000, limiting value of yield strain for Fe415 grade steel is	1. 0.031 2. 0.0031 3. 0.038 4. 0.0038
In case of plastic design, the calculated maximum shear capacity of a beam as per IS:800 shall be	1. 0.85 Awfy where, Aw = effective cross-sectional area resisting shear fy = yield stress of the steel 2. 0.75 Awfy 3. 0.55 Awfy 4. 0.65 Awfy
The strength of concrete after one year as compared to 28 days strength is about	1. 10 to 15% more 2. 15 to 20% more 3. 20 to 25% more 4. 25 to 50% more
A circular column section is generally not used in actual practice because	1. it is uneconomical 2. it cannot carry the load safely 3. it is difficult to connect beams to the round sections 4. all of the above
The maximum frictional force which comes into play when a body just begins to slide over another surface is called	1. sliding friction 2. kinematic friction 3. rolling friction 4. limiting friction
The ratio of elongations of a conical bar due to its own weight and that of a prismatic bar of the same length, is	1. 1/5 2. 1/4 3. 1/3 4. 1/2
Which of the following is a scalar quantity?	1. centre of percussion 2. Velocity 3. Force 4. Acceleration
Concurrent forces are those forces whose lines of action	1. meet on the same plane 2. meet at one point 3. lie on the same line 4. none
The necessary condition for forces to be in equilibrium is that these should be	1.coplanar 2.meet at one point 3.both (a) and (b) 4.all be equal
Two non-colinear parallell forces acting in opposite direction	1.balance each other 2.constitutes a couple 3.constitutes a moment of a couple 4.constitutes a moment

Questions	Choices
Gantry girders are designed to resist	1. lateral loads 2. longitudinal loads and vertical loads 3. lateral, longitudinal and vertical loads 4. lateral and longitudinal loads
The partial safety factors for steel and concrete used in limit state method of design is	1. 1.15 and 1.5 2. 1.5 and 1.5 3. 1.5 and 1.15 4. None of the above
The tensile strength of concrete is about _____ of its compressive strength	1. 60% to 75% 2. 50% 3. 10% to 15% 4. 30% to 40%
Hydrology is the science which deals with	1. rain water 2. river water 3. sea water 4. surface and underground water
According to IS : 456 -2000, the modulus of elasticity of concrete Ec (in N/mm^2) can be taken as	1. Ec = = 5000fck 2. Ec = = 5700 3. Ec = where fck N/mm2 = 700 is the characteristic strength 4. Ec = = 570
To generate the j th column of the flexibility matrix	1. a unit force is applied at coordinate j and the displacements are calculated at all coordinates 2. a unit displacement is applied at co-ordinate j and the forces are calculated at all coordinates 3. a unit displacement is applied at co-ordinate j and the displacements are calculated at all co-ordinates 4. a unit force is applied at coordinate j and the forces are calculated at all coordinates
1% of voids in a concrete mix would reduce its strength by about	1. 5% 2. 15% 3. 10 % 4. 20%
The amount of irrigation water required to meet the evapotranspiration needs of the crop during its full growth is called	1. consumptive use 2. consumptive irrigation requirement 3. net irrigation requirement 4. effective rainfall
The ratio between the Modulus of elasticity of steel and Modulus of elasticity of concrete is called	1.No constant name 2. Young's modulus 3. modular ratio 4. modulus ratio
If two equal forces of magnitude P act at an angle 9°, their resultant will be	1. IP cos 9/2 2. 2P tan 9/2 3. IP sin 9/2

Questions	Choices
	4. P/2 cos 9/2
Tangent of angle of friction is equal to	1.kinetic friction 2.angle of repose 3.limiting friction 4.coefficient of friction
The minimum force required to slide a body of weight W on a rough horizontal plane is	1.Depends on the friction of the rough surface 2. W cos ¿ 3. W tan ¿ 4. W sin ¿
Dynamic friction as compared to static friction is	1.same 2.more 3.less 4.may be less of more depending on nature of surfaces and velocity
Lining of irrigation channels	1. used for recharging groundwater 2. does not change the water logging area 3. decreases the water logging area 4. increases the water logging area
Lacing bars in a steel column should be designed to resist	1. bending moment due to 2.5% of the column load 2. 2.5% of the column load 3. 2.5% of the torsional load 4. shear force due to 2.5% of the column load
One of the criteria for the effective width of flange of T-beam is bf =(l_0)/6+ bw +6Df In above formula, l_0 signifies	1. distance between points of zero moments in the beam 2. clear span of the T-beam 3. distance between points of maximum moments in the beam 4. effective span of T-beam
The minimum and maximum percentage of longitudinal reinforcement for reinforced concrete column subjected to compressive load,	1. 0.8 2. 0.8 and 6 3. 0.6 and 8 4. 6
The pitch of the transverse reinforcement concrete column shall not be more than the least for	1. 16 times of the smallest reinforcing bar and 0.75D 2. 16 times of the smallest reinforcing bar 3. 300 4. Least lateral dimension of column
In working stress method, the shape concrete stress block is assumed to be	1. rectangular 2. triangular 3. Combination of rectangular and prabolic 4. parabolic
The worst condition of uplift on the floor of a siphon aqueduct occurs when there is	1. water is at drainage bed and canal is dry 2. High flood flow in the drainage with canal running full

Questions	Choices
	3. High flood flow in the drainage with canal dry 4. Full supply flow in the canal with drainage dry
For a continuous slab of 3 m x 3.5 m size, the minimum overall depth of slab to satisfy vertical deflection limits is	1. 50 mm 2. 100 mm 3. 75 mm 4. 120 mm
In a singly reinforced beam, if the permissible stress in steel reaches earlier than that of concrete, the beam section as called	1. Under reinforced section 2. Over reinforced section 3. Balanced section 4. Critical section
Poisson's ratio for concrete	1. vary randomly 2. decreases with richer mixes 3. remains constant 4. increases with richer mixes
Moment of resistance for a under reinforced section --------- that of a critical section	1. Is less than 2. Is always greater than 3. Is equal to 4. May be sometimes greater than
A force is completely defined when we specify	1. point of application 2. direction 3. magnitude 4. magnitude, direction, point of application
Pick up the incorrect statement from the following :	1. The C.G. of a circle is at its center 2. The C.G. of a triangle is at the intersection of its medians 3. The C.G. of a rectangle is at the inter-section of its diagonals 4. The C.G. of a semicircle is at a distance of r/2 from the center
The minimum cover in a slab should neither be less than the diameter of bar nor less than	1. 25 mm 2. 13 mm 3. 10 mm 4. 15 mm
Shear resistance of reinforced concrete beam is depend on	1. Tension reinforcement in the beam 2. Shear reinforcement in the beam 3. Distribution reinforcement in the beam 4. Compression reinforcement in the beam
The two criteria for the determination of allowable bearing capacity of a foundation are	1.bond and shear failure 2.tensile failure and settlement 3.tensile and compressive failure 4.shear failure and settlement
Best suitable shape of the camber for cement concrete pavements is	1. combination of straight line and parabolic 2. elliptical

Questions	Choices
	3. Straight line 4. parabolic
The vertical stress at some depth below the corner of a 2 m x 3 m rectangular footing due to certain load intensity is 150 kN/m2. What will be the vertical stress in kN/m2 below the centre of a 4 m x 6 m rectangular footing at the same depth and same load intensity?	1.150 2.450 3.300 4.600
The action of negative skin friction on the pile is to	1.maintain the working load on the pile 2.reduce the allowable load on the pile 3.increase the ultimate load on the pile 4.reduce the settlement of the pile
Under-reamed piles are generally	1. all the above 2. precast piles 3. bored piles 4. driven piles
A liquid undergoing a rigid body rotation in a container is said to have	1. forced vertex motion 2. circulation 3. circulatory flow 4. free vortex motion
If ultimate load carrying capacity of a 4 x 4 pile group in clayey soil is 1400 t and ultimate load carrying capacity of a single pile is 100 t, estimate the efficiency of the pile group.	1. 50% 2. 7.1% 3. 87.5% 4. 114.2%
If the grain size of soil increases	1. surface area decreases 2. specific retention increases 3. Capillary rise of groundwater decreases 4. void ratio decreases
Dialatancy correction is required when a strata is	1.gravel and not saturated and also has SPT N value > 15 2.saturated silt/fine sand and SPT N value > 10 after overburden correction 3.saturated silt/fine sand and SPT N value > 15 after overburden correction 4.clayey with SPT N value < 30
The driving power which forces the water in a soil sample is	1. Hydraulic head 2. Energy head 3. Energy height 4. Hydraulic difference
The standard penetration test is usefull to measure	1.Shear strength of soft clay 2.Shear strength of sand 3.None of the above4.Consistency of clay

Questions	Choices
Pick the true statement (a) Routine pile load tests are conducted to find ultimate load carrying capacity of pile (b) Initial load tests are conducted on working piles (c) Piles in major projects need to be tested for compression, tension and uplift capacities (d) In a Routine test in vertical compression mode, maximum settlement of pile under application 1.5 times the working load should not exceed 12 mm.	1.b, c true 2.d, a true 3.c, d true 4.a, b true
Landslides occur in India predominantly during monsoon periods, because	1.shaking of soil 2.traffic 3.decrease in pore water pressure in soil4.increase in pore water pressure in soil
If the actual value of the standard penetration number (N) is greater than 15 for fine sands below water table, The corrected value of N is	1.15 + 0.5 (N'-15) 2.15 + 0.5 (N'+15) 3.15 - 0.5 (N'-15) 4.15 - 0.5 (N'+15)
If the actual value of the standard penetration number (N) is greater than 15 for coarse sand, The corrected value of N is	1.15 + 0.5 (N'-15) 2.15 + 0.5 (N'+15) 3.15 - 0.5 (N'-15) 4.correction not required
The bearing capacity of a rectangular footing of plan dimensions 1.5 m × 3 m resting on the surface of a sand deposit was estimated as 600 kN/m2 when the water table is far below the base of the footing. The bearing capacities in kN/m2when the water level rises to depths of 3 m, 1.5 m and 0.5 m below the base of the footing are	1.600, 600, 400 2.600, 400, 250 3.600, 500, 250 4.600, 450, 350
A pile is being driven with a drop hammer weighing 1800 kg and having a free fall of 1.00 m. If the penetration with last blow is 5 mm, the safe load carrying capacity of the pile, -according to the Engineering News formula, is	1.100 tonnes 2.50 tonnes 3.20 tonnes 4.10 tonnes
The maximum load carried by a pile, beyond which pile continues to sink without further increase of load, is known as	1.allowable load carrying capacity 2.ultimate bearing capacity 3.safe bearing capacity 4.safe bearing presure
If the back fill is having a uniform surcharge of intensity q per unit area, the lateral pressure will be	1.q times the lateral pressure within the surface 2.1/q times the lateral pressure within the surface 3.none of these. 4.equal to a fill of height Z equal to q/r, where r is the density of the backfill
Negative skin friction on piles	1.is caused due to relative settlement of the soil 2.increases the pile capacity 3.is caused in dense soils 4.due to presence of water table
The friction factor f in a laminar pipe flow was found to be 0.04.The Reynolds number of the flow was	1. 1600 2. 800 3. 1000 4. 2000
A 15 cm diameter pipe carries a flow of 70 lit/s of an oil (RD=0.75). At a section 12 cm above the	1. 0.557 2. 0.728

Questions	Choices
datum the pressure is vaccum of 2 cm of mercury. If the kinetic energy correction factor for this section is 1.1,the total head at the section in meters of oil is	3. 0.637 4. 0.648
The unconfined compressive strength of a saturated clay sample is 54 KPa the value of cohension for the clay is	1. 54 KPa 2. Zero 3. 13.5 KPa 4. 27 KPa
For determining the ultimate bearing capacity of soil, the recommended size of a square bearing plate to be used in load plate test should be 30 to 75 cm square with a minimum thickness of	1. 5 mm 2. 10 mm 3. 15 mm 4. 25 mm
Uniform flow in a channel is characterised by the following statement:	1. The total energy line either rises or falls depending upon the Froude number 2. Gradient of the total energy is parallel to the channel bed 3. Specific energy decreases along the channel 4. Total energy remains constant along the channel
Hydraulic grade line for flow in a pipe of constant diameter is	1. always above the centreline of the pipe 2. always above the energy grade line 3. always sloping downwards in the direction of the flow 4. coincides with the pipe centreline
An apparatus produces water droplets of size $70X10^{-6}$m. If the coefficient of surface tension of water in air is 0.07N/m, the diameter of a tube that can be used to keep the capillary height between 1.80 cm to 2.00 cm is,	1. 1.65 mm 2. 3.33 cm 3. 1.65 cm 4. 1.40 cm
When the barometer reads 740.00mm of mercury, a pressure of 10kPa suction at that location is equivalent to	1. 9.87 m of water (abs) 2. 88.53 kPa (abs) 3. 0.043 kPa (abs) 4. 10.02 m of water (abs)
In a rectangular channel 3m wide the depth of flow is 1.3m and the velocity is 1.6m/s. At a hydraulic structure 1.24 m3/s of discharge is withdrawn and the canal width is reduced to 2.5m. The depth of flow in this section at a velocity of 1.5 m/s is	1. 1.21m 2. 1.66m 3. 1.33m 4. 1.00m
At a liquid-air-solid interface the contact angle ¿ measured in the liquid is less than 90deg.. The liquid is,	1. Wetting 2. Non-wetting 3. Ideal 4. Does not form a stable bubble
Which of the following is not the component of Coarse grained soil.	1. Sand 2. silt 3. Cobbles 4. Gravel

Questions	Choices
When a block of ice floating on water in a container melts, the level of water in the container	1.remains the same 2.first falls and then rises 3.rises 4.falls
When a ship enters sea from a river one can expect it	1.to remain at the same level of draft 2.to sink a little 3.to rise a little 4.to rise or fall depending on whether it is of wood or steel
The best instrument for measuring the velocity of a stream flow is	1. Price's current meter 2. surface float 3. sub-surface float 4. pitot tube
The minor loss due to sudden contraction is due to	1. flow contraction 2. cavitation 3. boundary friction 4. expansion of flow after sudden contraction
A barometer at a given location	1. shows the local atmospheric pressure which is variant with time 2. always shows the local atmospheric pressure which may change with time 3. shows the local temperature if it of mercury column type 4. shows the standard atmospheric pressure, if it is of aneroid type
A two-dimensional jet strikes a fixed two-dimensional plane at 45 deg. To the normal to the plane. This causes the jet to split into two streams whose discharges are in the ratio	1.2.41 2.5.83 3.1.414 4.1.0
A semi-circular disc rests on a horizontal surface with its top flat surface horizontal and circular portion touching down. The coefficient of friction between semi-cricular disc and horizontal surface is \i. This disc is to be pulled by a horizontal force applied at one edge and it always remains horizontal. When the disc is about to start moving, its top horizontal force will	1.remain horizontal 2.slant up towards direction of pull 3.slant down towards direction of pull 4.unpredictable
Broadly speaking, water is	1. 10 times more compressible than steel 2. 80 times more compressible than steel 3. 80 times less compressible than steel 4. 800 times less compressible than steel
Due to compaction the parameters which increase in magnitude is	1. Percentage of air voids 2. permeability 3. Shear strength 4. Porosity
A pump delivers 50 L/s of water and delivers 7.5 kW of power to the system. The head developed by the pump is	1. 15.32m 2. 1.53m 3. 5.0m 4. 7.5m

Questions	Choices
Lacustrine soils are	1. Marine soils 2. Desert soils 3. Lake deposited 4. River deposited
If a capillary rise of water is a 2mm diameter tube is 1.5cm, the height of capillary rise in a 0.5mm diameter tube, in cm, will be	1. 24.0 2. 10.0 3. 1.5 4. 6.0
If the surface tension of water-air interface is 0.073 N/m, the guage pressure inside a rain drop of 1mm diameter is,	1. 292.0 N/m2 2. 73.0 N/m2 3. 146.0 N/m2 4. 0.146 N/m2
The standard atmospheric pressure is 760 mm of mercury. At a certain location the barometer reads 710 mm of mercury. At this place an absolute pressure of 360mm of mercury corresponds to a gauge pressure, in mm of mercury	1. 400 mm of vaccum 2. 350 mm of vaccum 3. 760 mm of vaccum 4. 710 mm
A 30 cm square bearing plate settles by 1.5 cm in plate loading test on a cohesion-less soil under an intensity of loading 2 kg/cm^2. The settlement of a prototype shallow footing 1m square under the same intensity of loading is	1. 2.0cm 2. 1.5cm 3. 3.00cm 4. 5cm
The excess pressure (above atmospheric) inside a soap bubble of diameter 1cm, by assuming the surface tension of soap solution to be 0.04 N/m, is	1. 32.0 N/m2 2. 16.0 N/m2 3. 0.32 N/m2 4. 160.0 N/m2
Bourdon gauge measures	1. local atmospheric pressure 2. gauge pressure 3. absolute pressure 4. standard atmospheric pressure
The net ultimate bearing capacity of a purely cohesive soil	1. is independent of both depth and width of footing 2. depends on width of footing and is independent of depth of footing 3. depends on width of footing and is independent of width of footing 4. depends on both width and depth of footing
A cylindrical tank of 2m diameter is laid with its axis horizontal and is filled with water just to its top. The force on one of its end plates is kN, is	1. 123.0 2. 30.76 3. 19.58 4. 61.51
A U-tube manometer measures	1. absolute pressure at a point 2. difference in total energy between two points 3. local atmospheric pressure 4. difference in pressure between two points

Questions	Choices
The method of the slices is applicable to	1.homogenous soils 2.stratified soils 3.non-uniform slopes 4.saturated soils
Pick up the incorrect statement from the following	1. The term 'transmissibility' was introduced by Meinzer 2. The rate of flow of water through a vertical strip of the acquifer of unit width and full depth under a unit hydraulic gradient, is called coefficient of transmissibility 3. The flow of water through acquifers, is governed by the Darcy's law 4. The ratio of coefficient of transmissibility and coefficient of permeability, is equal to the depth of acquifer through which water flows
The intensity of active earth pressure at a depth of 10 metres in dry cohesionless sand with an angle of internal friction of 30° and with a weight of 1.8 t/m3, is	1.4 t/m2 2.5 t/m2 3.7 t/m2 4.6 t/m2
Failure of a slope occurs only when total shear force is	1.equal to total shearing strength 2.greater than total shearing strength3.less than total shearing strength 4.none of these.
If the velocities of flow of a stream of 10 m depth recorded by a current meter at depths of 2 m and 8 m are 0.7 m and 0.3 m respectively, the discharge per unit width of the stream in cubic metres, is	1. 2 2. 3 3. 4 4. 5
Pick the true sentence (a) Precast concrete piles require less reinforcement (area of steel) compared to cast-in-situ piles (b) Slip layers are possible in precast piles (c) Contiguous piles can be installed in case of driven piles (d) Driven piles result in higher capacity in sandy soils and low capacity in sensitive clays	1. c,d true 2. b,c true 3. a,b true 4. b,d true
Significant depth of exploration for ioslated footing is	1.2m 2.10 to 30m 3.1.5 B 4.3B
If the gross bearing capacity of strip footing 1.50m wide located at the depth of 1.00m in clay is 400 kN/m2, its net bearing capacity for unit weight = 20 kN/m3 is	1.370 kN/m2 2.380 kN/m2 3.360 kN/m2 4.390 kN/m2
If angle of internal friction =0°, then Nc value is	1.4.15 2.5.24 3.5.14 4.4.24
The sum of external angles of an n-sided traverse is	1. 2n* right angle 2. (2n-4) right angles 3. (2n+4) right angles

Questions	Choices
	4. n* right angle
A slope of infinite extent is made in dense sand layer at an angle of 30 degree to horizontal. The factor of safety of the slope against shear failure, if the angle of internal friction of the sand is 36 degree , is	1.1 2.1.26 3.1.45 4.1.5
A strip footing of width 1.00m is resting on soft clay strata at a depth of 1.00m. The angle of internal friction is zero, and cohesion is 20 kN/m2. The water table is at a great depth. The ultimate bearing capacity according to Terzaghi's equation is	1.120 kN/m2 2.114 kN/m2 3.157 kN/m2 4.none of the above
A raingauge should preferably be fixed	1. in an open space 2. in a close space 3. under the tree 4. near the building
In a steady flow	1. streamlines and pathlines are identical but are different from streakline 2. streakline and pathlines are identical but are different from streamlines 3. streamline, streakline and pathline can all be different from each other 4. none of the above
The bearing capacity of a strip footing on a saturated clay is 120 kN/m2. The bearing capacity of a circular footing (diameter = width) will be	1.more than 120 kN/m2 2.equal to 120 kN/m2 3.less than 120 kN/m2 4.any one of the above
Infiltration Capacity	1. changes with location 2. changes with time 3. is a constant factor 4. changes with both time and location
The respective storm totals at three surrounding stations A, B and C are 110, 90 and 70 mm. If the normal annual precipitation amounts at stations X, A, B and C are respectively 1000, 1100, 1200 and 1250 mm, the estimated storm precipitation at X is	1. b) 77 mm 2. a) 75 mm 3. b) 77 mm 4. d) 81 mm
The shape of the clay particle is usually	1. Tubular 2. Flaky 3. Angular 4. Rounded
S-hydrograph is used to obtain unit hydrograph of	1. Peak time is greater than the rainfall duration 2. peak time is shorter than the rainfall duration

Questions	Choices
	3. longer duration from shorter duration 4. shorter duration from longer duration
The form factor of a drainage basin is obtained by dividing	1. area of the basin by the average slope of the basin 2. average slope of the basin by the axial basin 3. area of the basin by the axial length 4. area of the basin by the square of the axial length
The bearing capacity of soil supporting a footing of size 3m x 3m will not be affected by the presence of water tableis located at a depth ----------m below the base of the footing	1. 1.00m 2. 1.50m 3. 3.00m 4. 2.00m
The area of a drainage basin whose axial length is 100 km is 2500 sq. km. Its form factor is	1. 0.25 2. 0.35 3. 0.15 4. 0.30
A well penetrates to 30 m below the static water table. After 24 hours of pumping at 31.40 litres/minute, the water level in a test well at a distance of 80 m is lowered by 0.5 m and in a well 20 m away water is lowered by 1.0 m. The transmissibility of the aquifer, is	1. 1.485 sq.m/minute 2. 1.185 sq.m/minute 3. 1.285 sq.m/minute 4. 1.385 sq.m/minute
The water content of clays are generally_____ sand and silts	1. less than or equal to 2. Greater than 3. Less than 4. Equal to
A pipeline connecting two reservoirs has its diameter reduced by 10% over a length of time due to chemical deposit action. If the friction factor remains unaltered, for a given head difference in the reservoirs this would reflect in a reduction in discharge of	1.31.6% 2.10% 3.14.6% 4.23.2%
The Flow of a liquid at a constant rate in a conically tapered pipe is classified as	1. steady, uniform flow 2. steady, non-uniform flow 3. unsteady, uniform flow 4. unsteady, non-uniform flow
Atterberg limits are useful for	1. Coarse grained soil 2. only sands 3. only clay 4. Fine grained soil
In a circular pipe of certain length carrying oil at a Reynolds number 100, it is proposed to triple the discharge. If the viscosity remains unchanged, the power input will have to be	1. decreased to 1/3 its original value 2. increased by 100% 3. increased to 3 times the original value 4. increased to 9 times its original value

Questions	Choices
The unit cohesion of saturated clay is 1 kg/cm2. The net ultimate bearing capacity of a square footing in this clay will be approximately	1.2 t/m2 2.10 t/m2 3.15 t/m2 4.20 t/m2
In a group of piles with pile diameter 20cm and centre to centre spacing 1.00m and length of each pile 10.00m. The value of load carrying capacity of pile group if C=20 kN/m2 will be	1.1600 kN/m2 2.1760 kN/m2 3.1800 kN/m2 4.2000 kN/m2
A pile having cross-sectional area of one square-metre is embedded quite deep in a clay stratum. The clay has cohesion of 4.0 t/m2. The ultimate point resistance of the pile will be	1.51.2 t/m2 2.62.3 t/m2 3.36 t/m2 4.66.5 t/m2
A 2.00m wide strip footing rests at a depth of 2.00m below the ground surface where the water table is at the ground surface. The ultimate load which the strip can carry according to Terzaghi's theory when sat unit weight = 20 kN/m3 and C = 30 kN/m2 is about	1.171 kN/m 2.342 kN/m 3.262 kN/m 4.422 kN/m
If the soil is dried beyond its shrinkage limit, it will show	1. Large volume change 2. Low volume change 3. No volume change 4. Moderate volume change
Which one of the following processes of water softening requires re-carbonation?	1. Lime soda ash process 2. Sodium- cation exchange process 3. Hydrogen- cation exchange process 4. Demineralization
A SPT is conducted in fine sand below water table and a value of N corrected for overburden pressure is 25. What is the corrected value of N?	1. 20 2. 25 3. 30 4. 45
The Indian Standard classification of soils is	1. Highway research board classification 2. Particle size classification 3. Textural classification 4. Modified unified classification
Estimate the recirculation factor of a trickling filter by NRC equation having recirculation rate of 1.8	1. 3.25 2. 0.85 3. 1.84 4. 2.01
What is the unit process which is required to kill pathogens in water?	1. Disinfection 2. Aeration 3. Filtration 4. Coagulation
Which of the following below contribute temporary hardness	1. $MgSO_4$ 2. $CaCl_2$ 3. $MgCl_2$ 4. $CaCO_3$
The plate load test conducted on a 400 mm square plate in clayey soil gives ultimate bearing capacity	1. 60 t/m2 2. 15 t/m2

Questions	Choices
of plate as 15 t/m2. The ultimate bearing capacity of 1.6 m square footing on same soil will be	3. 3.75 t/m2 4. 100 t/m2
In cohesion less soil deposit having a unit weight of 1.5 t/m^2 and an angle of internal friction of 30°, The active and passive lateral earth pressure intensities (in t/m^2) at a depth of 10 m will, respectively be	1. 15 and 5 2. 5 and 45 3. 10 and 20 4. 20 and 10
The Settling velocity of inorganic discrete particles varies with the dia (d), in proportion to	1. d^{-2} 2. d 3. d^2 4. d^3
The direct shear test is ideally suitable for conducting drained tests on	1. Clayey soils 2. Any soil 3. Cohesive soils 4. Cohesionless soils
Isohytes are the imaginary lines joining the points of equal	1. pressure 2. humidity 3. rainfall 4. height
Example of Detention dam	1. Spill way 2. Debris dam . 3. Gravity dam 4. Sluice
To minimise the effect of differential settlement, the area of a footing should be designed for	1. dead load + fraction of live load 2. dead load + live load 3. dead load only 4. live load + fraction of dead load
The drag force on a body	1. is the component of the resultant force in the direction of the relative velocity 2. is the net pressure force on the body 3. is the net frictional force on the body 4. is the component of the resultant force in a direction perpendicular to the direction of gravity
For an undisturbed sample of soft clay, area ratio should be	1. More than 20% 2. 10% to 20% 3. 10% or less 4. Zero
Canal aligned roughly at right angles to the contours of the country and is neither on the water shed nor in the valley is	1. Perpendicular canal 2. Side slope canal 3. Ridge canal 4. Contour canal
Example of an over flow dam	1. Sluice . 2. Debris dam 3. Spill way 4. Gravity dam
A pile of 0.50 m diameter and length 10 m is embedded in a deposit of clay. The undrained	1. 106 2. 283

Questions	Choices
strength parameters of the clay are cohesion = 60 kN/m2 and the angle in internal friction = 0. The skin friction capacity (kN) of the pile for an adhesion factor of 0.6, is	3. 565 4. 671
The width and depth of a footing are 2.5 m and 1.5 m respetively. The water is at a depth of 2.75 m below the ground level. The water table correction factor for calculation of bearing capacity is	1. 0.5 2. 0.75 3. 0.25 4. 1.00
When a retaining wall moves towards the backfill, the pressure exerted on the wall is termed as	1. active earth pressure 2. swell pressure 3. at rest earth pressure 4. passive earth pressure
With increase in temperature	1.Viscosity of gas decreases 2.Viscosity of gases remains same 3.Viscosity of gas increases 4.Viscosity of gas decreases and then increases
If B=centre of buoyancy, G=is the centre of gravity and M=metacentre of a floating body, the body will be in stable equilibrium if	1. BG=0 2. M is below G 3. MG=0 4. M is above G
The equations of motion for laminar flow of a real fluid are known as	1. Euler's equation 2. Navier-Stokes equation 3. Bernoulli equation 4. Hagen-Poiseuille equation
The stream which does not have any base flow contribution is called	1. perennial stream 2. intermittent stream 3. meandearing stream 4. ephemeral stream
Typical example of a non-Newtonian fluid of pseudoplastic variety is	1. Air 2. Water 3. Blood 4. Printing ink
The following parameters relate to the design of weirs of permeable foundations	1. Unbalanced head 2. Uplift pressure 3. Scour depth 4. Exit gradient
Water content affects	1. Sensitivity 2. Relative density 3. Strength and settlement of soils 4. Thixotrophy
Constant head method of determining permeability is suitable for_____ type of soils	1. Fine grained soils 2. Coarse grained soils 3. Cohensionless soils 4. Cohesive soils

Questions	Choices
A nozzle direct a liquid jet at an angle of elevation 45 degree. The hydraulic grade line for the jet	1. coincides with the centre line of the jet 2. will be horizontal at the level of the jet 3. will be horizontal at the level of the energy line 4. coincides with the energy line
For an undisturbed sample in stiff clays area ratio should be	1. 10% or less 2. Zero 3. 20% or less 4. More than 20%
The linear momentum equation is	1. scalar relation 2. an approximate relation for engineering analysis 3. a vector relation 4. a relation applicable to incompressible fluids only
The deficiency in rain catch due to vertical acceleration of air forced upward over the gauge, is	1. greater for heavy rain 2. greater for lighter rain 3. greater for large drops 4. lesser for small rain drops
In standard penetration test, the split spoon sampler is penetrated into the soil stratum iby giving blows from a drop weight, whose weight (in kg) and free fall (in cm) are respectively	1. 65 and 75 2. 75 and 65 3. 30 and 50 4. 60 and 30
The construction of impounding reservoir is required when	1. The rate of flow in the stream in dry season is less than demand 2. The rate of flow in the stream in dry season is more than demand 3. The average annual flow in the stream is lower than average demand 4. The rate of flow in the stream in dry season is equal to demand
The soil which are formed by transportation of the wheathered rock materials by wind are called	1. marine soil 2. aeolian soils 3. lacustrine soil 4. glacial soil
Functions of canal drop is to	1. control of flow depth 2. Control of full supply level 3. Control of discharge 4. control of bed grade
Influence factor for imediate settlement of footing depends on its	1. location and size 2. size, shape, rigidity and location 3. rigidity alone 4. size, shape and rgidity
Levees and flood walls	1. are never provided with free-boards 2. are means of controlling floods

Questions	Choices
	3. are designed with adequate dimensions 4. are designed to carry unbalanced water load
Precipitation caused by lifting of an air mass due to the pressure difference, is called	1. cyclonic precipitation 2. convective precipitation 3. orographic precipitation 4. hail
Dialatancy correction is required when a strata is	1. saturated silt/fine sand and SPT N value > 10 after overburden correction 2. clayey with SPT N value < 30 3. gravel and not saturated and also has SPT N value > 15 4. saturated silt/fine sand and SPT N value > 15 after overburden correction
The ultimate load capacity of a 10 m long concrete pile of square cross section 500 mm x 500 mm driven into a homogeneous clay layer having undrained cohesion of 40 kPa is 700 kN. If the cross section of the pile is reduced to 250 x 250 mm and length of the pile is increased to 20 m, the ultimate capacity will be	1. 1400 kN 2. 722.5 kN 3. 350 kN 4. 632.5 kN
The standard height of a standard rain gauge is	1. 30 cm 2. 20 cm 3. 10 cm 4. 50 cm
The two criteria for the determination of allowable bearing capacity of a foundation are	1. shear failure and settlement 2. bond and shear failure 3. tensile and compressive failure 4. tensile failure and settlement
A water jet 0.015 sq.m in area has a velocity of 15 m/s. If this jet impinges normally on a plate which is moving at a velocity of 5 m/s in the direction of the jet, the force on the plate due to this impact is	1. 14686 N 2. 3368 N 3. 2246 N 4. 14907 N
The vertical stress at some depth below the corner of a 2 m x 3 m rectangular footing due to certain load intensity is 150 kN/m2. What will be the vertical stress in kN/m2 below the centre of a 4 m x 6 m rectangular footing at the same depth and same load intensity?	1. 300 2. 600 3. 450 4. 150
If y is the depth of water at any section, then the mean velocity is	1. 0.2 y 2. 0.3 y 3. 0.5 y 4. 0.6 y
The inclination of the failure plane behind a vertical wall in the passive pressure case is inclined to the horizontal at	1. 45° - φ/2 2. 45° - φ 3. 45° + φ

Questions	Choices
	4. 45° + φ/2
In India the recording type rain gauge generally used, is	1. tipping type 2. float recording type 3. rain recording sensor 4. weighing type
If a uniform surcharge (due to construction of a building) of 150 kN/m2 is placed on the cohesionless backfill with φ = 30°, the increase in active pressure on retaining wall is	1. 300 kN/m2 2. 75 kN/m2 3. 50 kN/m2 4. 150 kN/m2
Inorganic matter in the domestic wastewater consist of	1. 10% of wastewater solid 2. 70% of wastewater solid 3. 50% of wastewater solid 4. 30% of wastewater solid
A flow has parallel curved streamlines and is steady. This flow has	1. normal convective as well as local acceleration 2. local acceleration 3. tangential convective acceleration 4. normal convective acceleration
In the derivation of Thiem's formula , the following assumption is not applicable	1. The well has been sunk up to the surface of the unconfined aquifer 2. The slope of the water surface is too small 3. Flow lines are radial and horizontal 4. The aquifer is homogeneous and isotropic
The efficiency of a pump may be taken as	1. 0.65 2. 0.55 3. 0.85 4. 0.5
If a stream function exists it implies that	1. the potential function also exists 2. the flow is steady, incompressible 3. the stream function represent a possible flow field 4. the flow is irrotational
Modified proctor test is used for	1.foundations 2. Embankments 3. Runways 4. low volume roads
Pick up the correct statement from the following :	1. Run off is expressed as total volume per day 2. Yield of a drainage basin is expressed as surface run off per year 3. Yield of a drainage basin is the run off at any time 4. Yield of a drainage basin is the run off over long periods

Questions	Choices
What is the Permissible value of Fluoride in drinking water as per IS 10500:2012	1. 1.5 mg/L 2. 2.0 mg/L 3. 1.0 mg/L 4. 0.5 mg/L
Which one of the following sewage treatment units usually has a parshall flume?	1. Grit chamber 2. Aerated lagoon 3. Oxidation ditch 4. Trickling filter
What is the per capita domestic water consumption in India?	1. 150 L/day 2. 180 L/day 3. 100 L/day 4. 135 L/day
What is the most common cause of acidity in water?	1. Carbon monoxide 2. Carbon dioxide 3. Hydrogen 4. Nitrogen
Absolute humidity in air	1. decreases at higher altitudes 2. increases at higher altitudes 3. remains constant at all altitudes 4. humidity is not a function of altitudes
Major constituents of organic compound in wastewater is	1. Fat 2. Salts 3. Protein 4. Carbohydrate
What is the process in which bacteria increases their population during consumption of organic matter in the wastewater?	1. Respiration 2. Oxidation 3. Synthesis 4. Endogenous respiration
Which of secondary wastewater treatment doesnot require clarifier?	1. Rotating Biological Contractor 2. Biological aerated filter 3. Activated sludge process 4. Trickling filter
Which one of the following secondary wastewater treatment doesnot require primary sedimentation tank?	1. Activated sludge process 2. Extended aeration process 3. Trickling filter 4. Biological aerated filter
Detention period adopted for oxidation (aerobic) ponds is of the order of	1. 10-15 days 2. 12-36 hrs 3. 4-8 hrs 4. 2-6 hrs
DAF thickening is efficient for	1. Disinfection 2. Inorganic solid 3. Secondary sludge 4. Primary sludge
Construction team means	1. A contractor 2. Owner, Architect and Contractor 3. An architect 4. An Owner

Questions	Choices
Two straight lines intersect at chainage (375 +12) using 20 m chain, the tangent length is 571.26 m. Chainage of P.C. is	1. 7502.40 m 2. (150., -350.91) 3. (405.91, 385) 4. (-285.,405.91)
If the latitude and departures of a line AB are +108 and +2 respectively, the corresponding area is equal to	1. 21.6 sq.m 2. 17.6 sq.m 3. 432 sq unit 4. 8.8 sq.m
Magnetic bearing of a line is found as 35° 45'. If the declination is 3° 45' E, the true bearing is	1. 35° 45' 2. 3° 45' 3. 39° 30' 4. 32° 00'
An alidade used with the plane table is used for	1. levelling the plane table 2. determining distance of objects 3. centring the plane table 4. sighting object
In a right angled triangle (ABC), the angle B is 90° and fore bearing of the line (side) AC is 140°, then the angle C is equal to	1. 40° 2. 30° 3. 120° 4. 50°
In a level section, if b is the constant formation width and h is the depth of cutting on the centre line with 1 in n side slope, the area of the level section is given by	1. A = (b+nh)2h 2. A = (b+nh)h 3. A = (b+nh)/h 4. 2A = (b+nh)h
The length of a survey line was measured with a 30 m - chain and was found to be 300.4 m. When the chain was compared with a standard, it was found to be 0.2 m too short. Find the correct length of the line	1. 295.9 m 2. 298.4 m 3. 302.4 m 4. 303.4 m
Vertical angles were measured to vanes fixed at the 1-m and 4-m marks of a staff held at a station Q from the instrument kept at a station P. The vertical angles were 3°30’ and 6°15’. The reading at a BM of RL 985.55 m from P was 2.345 m. Find the RL of Q . If V= 3.794 m with reference to 3°30’	1. 990.689m 2. 991.689m 3. 987.689m 4. 994.689m
In a tachometer observation the following data were collected. The distance between instrument and staff station was 64.5 m. The vertical circle reading being zero. The instrument constants were 100 and 0.5. The “s” is equal to	1. 6.4 m 2. 0.645 m 3. 0.64 m 4. 64 m
W C B of a line is 359° , then the R B is equal to	1. 1° 2. N1°E 3. N1°W 4. S1°W
A circular curve has a 200 m radius and 65 degrees deflection angle, then length of curve is	1. 127.41 m 2. 987.689m 3. 991.689m

Questions	Choices
	4. 994.689m
The whole circle bearing of a line is 220°, and then the quadrantal bearing is equal to	1.S40E 2.S40W 3.N40W 4.N40E
A 30m- metric chain used to find the length of a line and end of the job the chain was too short by one link but it was correct before the commencement of the work, then the change of length of chain is	1. 29.80 m 2. 29.90 m 3. 30.20 m 4. 30 m
A scale of 1 cm = 3 km is represented as a representative fraction is	1. 1:3000 2. 1:300000 3. 1:3 4. 1:30000
The prismatic compass gives the	1. quadrantal bearing of lines 2. angle with horizontal 3. whole circle bearing of lines 4. angle between the lines
One link of a chain for 30 m-chain is equal to	1.0.2 m 2.0.1m 3.0.25 m 4.0.5m
In a compass traverse A, B, and C, the fore bearing of AB is 70° and the fore bearing of BC is 50° then the angle of ABC is	1. 150° 2. 120° 3.160° 4. 130°
In a triangle no angle is less than 30° or more than 120°, is called	1. Plane triangle 2. ill – conditioned triangle 3. Well-conditioned triangle 4. Geodetic triangle
The whole circle bearing of side AB of an equilateral triangle ABC is 38° 45'. Then, the bearing of the third side CA of the triangle is	1. 98° 45' 2. 178° 45' 3. 278° 45' 4. 218° 45'
In reduction of levels using the height of instrument method, height of instrument refers to	1. height of the line of sight over the instrument station 2. height of the centre of telescope from the plane of foot screws 3. the reading on the staff from the instrument 4. the reduced level of the line of sight
If the slope of a ground is 3°, the gradient can be represented as	1. 1:9 2. 1:19 3. 1:29 4. 1:3
If a 30 m tape is 0.3% too short, then the correction per tape length is	1. 0.03 m 2. 0.06 m 3. 0.09 m 4. 0.1 m

Questions	Choices
The time by which activity completion time can be delayed without affecting the start of succeeding activities, is known as	1. duration 2. free float 3. total flat 4. interfering float
The terrain may be classified as rolling terrain if the cross slope of land is	1.between 10% and 25% 2.more than 60% 3.between 25% and 60% 4.upto 10%
If b is the wheel track of a vehicle and h is the height of centre of gravity above road surface, then to avoid overturning and lateral skidding on a horizontal curve, the centrifugal ratio should always be	1.greater than b/2h and less than co-efficient of lateral friction 2.less than b/2h and also less than co-efficient of lateral friction 3.less than b/2h and greater than co-efficient of lateral friction 4.greater than b/2h and also greater than coefficient of lateral friction
The individual variation between test strength of sample should not be more than	1. ± 5% of average 2. ± 10% of average 3. ± 20% of average 4. ± 15% of average
Payment to bill to contractor are made	1. always by the executive engineer 2. always by section engineer 3. some times by section engineer 4. always by sub divisional officer
In the lever of third order, load W, effort P and fulcrum F are oriented as follows	1. P between W and F 2. F between W and P 3. W between P and F 4. W, P and F all on one side
Fresh sludge has moisture content of 99% and after thickening its moisture content is reduced to 96%. The reduction in volume of sludge is	1. 75% 2. 90% 3. 5% 4. 3%
Nagpur road plan formulae were prepared by assuming	1. radial or star and circular road pattern 2. radial or star and block road pattern 3. radial or star and grid road pattern 4. rectangular or block road pattern
Main function of conditioning of the sludge is	1. Kill the pathogens in the sludge 2. None 3. Reduce the water content of the sludge 4. Increases the drainability of the sludge
For design speed of 80 kmph, if the deviation angle of a valley curve is 1/20, then the length of a curve for comfort consideration is nearly	1.30 m 2.61 m 3.101 m 4.122 m
Stopping Sight Distance (SSD) for a descending gradient of 2% for V = 80 kmph is	1. 112 m 2. 142 m 3. 132 m 4. 122 m

Questions	Choices
A traffic rotary is justified where	1.number of interesting roads is between 4 and 7 2.when traffic volume is more than 5000 vehicles per hour 3.space is limited and costly 4.when traffic volume is less than 500 vehicles per hour
What type of cross drainage work is provided when the canal runs below the drain, with FSL of canal well below the bed of the drain	1. Aqueduct 2. Super passage 3. Level crossing 4. Siphon aqueduct
Which one of the following represents an activity	1. curing of concrete 2. setting of question paper 3. preparation of breakfast 4. all
Traffic volume is equal to	1.traffic density x traffic speed 2.traffic density / traffic speed 3.traffic speed / traffic density 4.None of these
While scheduling a project by C.P.M.	1. required time for each activity is established 2. all 3. sequence of various activities is made according to their importance 4. net work is drawn by connecting the activities and the events
The Overall in-charge of an organisation at the site responsible for the execution of the works, is	1. Superintending Engineer 2. Executive Engineer 3. Section Engineer 4. Assistant Executive Engineer
Frederick W. Taylor introduced a system of working known as	1. line organisation 2. effective organisation 3. functional organisation 4. line and staff organisation
The first method invented for planning projects, was	1. Critical path method (CPM) 2. Milestone chart 3. Bar chart method 4. Programme Evaluation and Review Technique (PERT)
When a load crosses a through type Pratt truss in the direction left to right, the nature of force in any diagonal member in the left half of the span would	1. always be compression 2. always be tension 3. change from tension to compression 4. change from compression to tension
The force of resistance offered per unit area against deformation is called	1. strength 2. Modulus of elasticity 3. strain 4. Stress
The rate of change of momentum is directly proportional to the impressed force, and takes place in the same direction in which the force acts. This statement is known as	1.cannot be said 2. Newton's first law of motion 3. Newton's second law of motion 4. Newton's third law of motion

Questions	Choices
A circular rod of diameter 16mm and 500mm long is subjected to a tensile force of 40 kN. The elongation of steel may be taken as 0.5mm. Find the modulus of elasticity.	1. 200 GPa 2. 100 GPa 3. 150 GPa 4. 80 GPa
If the 20 mm rivets are used in lacing bars, then the minimum width of lacing bar should be	1. 80 mm 2. 60 mm 3. 40 mm 4. 100 mm
At 28 days of curing concrete attains strength of	1. 20 to 25% 2. 60 to 70% 3. 65 to 80% 4. 90 to 95%
The center of gravity of a uniform lamina lies at	1.Cannot be known without the full details 2. the mid point of its axis 3. the bottom surface 4. the center of heavy portion
The compressive strength of 100 mm cube as compared to 150 mm cube is always	1.cannot be related 2. equal 3. more 4. less
A simply supported beam deflects by 5 mm when it is subjected to a concentrated load of 10 kN at its centre. What will be deflection in a 1/10 model of the beam if the model is subjected to a 1 kN load at its centre ?	1. 5 mm 2. 0.005mm 3. 0.05 mm 4. 0.5 mm
According to IS: 456-2000, the maximum reinforcement in a column is	1. 6 % 2. 4% 3. 2 % 4. 8 %
A simply supported beam of span 5m having dimension 300 mm x 500 mm is subjected to an udl of 20 kN/m. What is the value of bending stress at 100mm above neutral axis?	1. 2 MPa 2. 1 MPa 3. zero 4. 5 MPa
The property of the ingredients to separate from each other while placing the concrete is called	1. shrinkage 2. bulking 3. compaction 4. segregation
Find the effective width of the isolated T- beam. The beam is having the breath of web is 230mm and depth of the flange is 125mm. The assumed distance between points of zero moments in the beam is 3.25m.	1. 1521.667 mm 2. 1409.25 mm 3. 1365.833 mm 4. 1319.628 mm
The fineness modulus of fine aggregate is in the range of	1. 5.0 to 7.0 2. 3.5 to 5.0 3. 2.0 to 3.5 4. 6.0 to 8.5

Questions	Choices
The three moments equation is applicable only when	1. there is no settlement of supports 2. the spans are equal 3. there is no discontinuity such as hinges within the span 4. the beam is prismatic
Which type of soil will be having plastic behaviour upon increasing water content	1. sand 2. gravel 3. silt 4. clay
Time of overland flow, is affected by	1. temperature 2. slope of the basin 3. watershed boundaries 4. groundwater level
Denehy's groyne is a special type of groyne which is	1. Hockey type 2. Pointing downstream 3. Promoting upstream 4. T-headed
In ideal machines, mechanical advantage is _____ velocity ratio.	1. less than 2. none of these 3. greater than 4. equal to
The weight of a body is due to	1. gravitational pull exerted by the earth 2. force of attraction experienced by particles 3. forces experienced by body in atmosphere 4. gravitational force of attraction towards the center of the earth
The lift force on a body	1. is due to buoyant force 2. is always in the direction of the gravity 3. is the component of the resultant force in a direction normal to relative velocity 4. is the component of the resultant force in a vertical directions
A copper alloy wire of 2.5mm diameter 30m long is freely hanging from a tower. What will be its elongation due to self-weight? Take specific weight of the copper and its modulus of elasticity as 89.2 kN/m3 and 90 GPa respectively.	1. 0.25mm 2. 0.35mm 3. 0.55mm 4. 0.45mm
Admixtures which cause early setting, and hardening of concrete are called	1. workability admixtures 2. accelerators 3. air entraining agents 4. retarders
In a loaded beam, the point of contra-flexture occurs at a section where	1. bending moment is zero or changes sign 2. shearing force is zero or changes sign 3. bending moment is minimum

Questions	Choices
	4. shearing force is maximum
Kinetic friction is the	1.tangent of angle between normal reaction and the resultant of normal reaction and the limiting friction 2.ratio of limiting friction and normal reaction 3.the friction force acting when the body is in motion 4.the friction force acting when the body is just about to move
The ratio of shearing stress to shearing strain within elastic limit, is known as	1. bulk modulus of elasticity 2. tangent modulus of elasticity 3. shear modulus of elasticity 4. modulus of elasticity
Function of canal cross regulator is to	1. Control of flow depth 2. Control of bed grade 3. Control of discharge 4. Control of full supply level
The point, through which the whole weight of the body acts, irrespective of its position, is known as	1. centre of gravity 2. centre of percussio 3. moment of inertia 4. centre of mass
Which of the following is a vector quantity	1. mass 2. energy 3. momentum 4. angle
A metal block is thrown into a deep lake. As it sinks deeper in water, the buoyant force acting on it	1.first increases and then decreases 2.decreases 3.remains the same4.increases
Downward drag force is called as	1.Negative skin friction 2.Unit skin friction 3.Frictional resistance 4.None
A runoff rive plant is	1. a low head scheme 2. a medium head scheme 3. a high head scheme 4. uses pelton wheel turbin
The earthen embankments constructed parallel to the river banks at some suitable distance for flood control, are known as	1. floods walls 2. escape walls 3. Retaining Wall 4. levees
Contact pressure beneath a rigid footing resting on a cohesive soil is	1. none of the above 2. uniform throughout 3. more at edge compared to middle 4. less at edge compare to middle
The water content of soil is defined as the ratio of	1. volume of water to volume of given soil

Questions	Choices
	2. volume of water to volume of voids in soil 3. weight of water to weight of total soil mass 4. weight of water to weight of solids of given soil mass
Sharp crested weirs are generally used	1. for large flows 2. for rivers carrying floating debris 3. for streams carrying high sediment loads 4. for small flows
The mechanism of filtration by which the bigger particles can not pass through the smaller pores and hence seperated is known as	1. Interception 2. Impaction 3. Mechanical straining 4. Sedimentation
The failure plane in direct shear test is	1. Inclined 2. Horizontal 3. 30 degrees 4. Vertical
In a two-dimensional, steady, horizontal, uniform laminar flow the shear gradient in the normal direction is equal to	1. the velocity gradient in the normal direction 2. the velocity gradient in the longitudinal direction 3. the pressure gradient in the normal direction 4. the pressure gradient in the direction of flow
A hyetograph is a graphical representation of	1. rainfall intensity and time 2. rainfall depth and time 3. cumulative rainfall and time 4. discharge and time
Unit Hydrograph theory was enunciated by	1. W.W.Horner 2. Robert E. Horten 3. Le-Roy K. Shermen 4. Merril Bernard
The run off a drainage basin is	1. Precipitation + ground water accretion + initial recharge 2. Precipitation - ground water accretion + initial recharge 3. Precipitation - ground water accretion - initial recharge 4. Initial recharge + ground water accretion + precipitation
The ratio of critical velocity of the sedimentation tank and the particle settling velocity is 0.5. How much percentage of the particles of that particular diameter will settle in the tank?	1. 50% 2. 90% 3. 80% 4. 100%

Questions	Choices
Indicate the incorrect statement: A flow net	1. for a given boundary is applicable to one chosen direction of flow; if the flow is reversed the flow net will change 2. for a given boundary is the same whether the flow is in one direction or the other 3. is applicable to irrotational fluid flow 4. will be so constructed that the size of the mesh is inversely proportional to the local velocity
Example of Type IV settling is	1. Fine sand removal 2. Secondary clarifier 3. Sludge thickening 4. Grit removal
Among which of the following represent organic solid in wastewater	1. TFS 2. VSS 3. TS 4. TSS
Recommended grade of tar for grouting purpose is	1. RT - 3 2. RT - 5 3. RT - 2 4. RT - 1
Modular co-ordination of construction means proper	1. all 2. execution 3. planning 4. designing
In a compass surveying, the arithmetic difference between the forward bearing of line and backward bearing of the same line is equal to	1. 0 2. 40 3.180 4. 120
The distance between two points measured along a slope is 518 m. Find the horizontal distance between them if the slope is 1 in 10.	1. 220° 2. 130° 3. 120° 4.515.429 m
In a tangential system, vertical angles were measured to vanes fixed at the 1m and 4m marks of a staff held at a station Q from the instrument kept at a station P. The vertical angles were 3°30' and 6°15'. The horizontal distance is	1. 0.645 m 2.17.577 3. 62.04 m 4. 0.64 m
The cross sectional areas of an embankment are 10 m2, 25 m2, and 10 m2 with an interval of 20 m. Calculate the volume of the embankment, using prismoidal formula	1.500 m3 2.600 m3 3.700 m3 4. 800 m3
If three consecutive ordinates are taken at 2m intervals from a traverse line and measured as 1.8 m, 2.5 m, and 2.0 m, then the area between the traverse line, the first and last ordinates and the boundary, by trapezoidal rule, is	1. 17.6 sq.m 2. 8.8 sq.m 3. 7.6 sq.m 4. 21.6 sq.m

Questions	Choices
Read the questions on writing instructions and choose the appropriate answer from the options given: In order to achieve clarity in writing instructions, which one among the following should be avoided?	1.Define the unfamiliar 2.Use of Jargon 3.Use words efficiently 4.Remove redundancy
Read the questions on writing instructions and choose the appropriate answer from the options given: Which one among the following sentences has key information in the main clause?	1.Despite winning the game, the Pirates made several errors in the first half.2.Despite making several errors in the first half, the Pirates were able to win the game. 3.The Pirates won the game, despite making several errors in the first half. 4.The Pirates made several errors in the first half and won the game.
Select from the answer choices the word/words to make the sentence grammatically correct. She wore a dress to the party that was far more attractive _____ girls.	1.than the other 2.than those of the other 3.than other 4.than those
Select from the answer choices the word/words to make the sentence grammatically correct. He worked hard and succeeded _____ good marks.	1.To secure 2.For securing 3.In securing 4.To get
Select from the answer choices the word/words to make the sentence grammatically correct. When I stopped, my car _____ from behind.	1.Was hit 2.Had been hit 3.Had hit 4.Hit
Read the questions on Preparing Questionnaire and choose the appropriate answer from the options given: The question "What do you like most about this implement?" is an example of _____ question.	1.Closed 2.Open-ended 3.'Yes' or 'No' 4.Dummy
Each item below gives four possible spellings of a word. Read the words and choose the correctly spelt word.	1.occurrence 2.ocurrence 3.occurence 4.occurrance
Read the words and choose the correctly spelt word.	1.seperation 2.saparation 3.separetion 4.separation
To obtain cement dry powder, lime stones and shales or their slurry, is burnt in a rotary kiln at a temperature between	1. 2300° and 2700°C 2. 100° and 300°C 3. 1500° and 1700° 4. 300° and 700°C

Questions	Choices
House connections to the laterals is generally made by	1. R.C.C. 2. P.C.C. 3. Cast iron 4. Glazed stonewares.
Dilution method of disposing off sewage, is not preferred to	1. when sewage is fresh 2. when diluting water has high dissolved oxygen content 3. when diluting water is used for water supply near the point of sewage disposed 4. when the diluting water is having flow currents
For house drainage minimum gradient is	1. 1 in 60 2. 1 in 80 3. 1 in 10 4. 1 in 400
The relation between speed u (in km/h) and density k (number of vehicles / km) for a traffic stream on a road is u = 70 – 0.7k. The capacity on this road is _____ vph (vehicles/hour)	1. 1450 2. 2000 3. 1750 4. 1600

Questions	Choices
The modulus of elasticity most commonly used for concrete is	1. tangent modulus 2. chord modulus 3. secant modulus 4. final tangent modulus
Which material has the higher modulus of elasticity?	1. Steel 2. Aluminium 3. Concrete 4. Copper
If a number of forces are acting simultaneously on a particle, then the resultant of these forces will have the same effect as produced by the all the forces. This is known as	1. Principle of physical independence of forces 2. Principle of transmissibility of forces 3. Principle of resolution of forces 4. None of the above
Gypsum is added to cement for	1. strength 2. controlling setting time 3. Increase workability 4. Color
Approximate 14 days compressive strength of concrete cube is	1. 16% 2. 65% 3. 90% 4.

Questions	Choices
	99%
Quick setting cement contains a higher percentage of	1. lime 2. silicate 3. sulphate 4. alumina
Tricalcium silicate is responsible for	1. progressive strength of cement 2. no change in strength 3. later strength of cement 4. early strength of concrete
In soundness test, the difference between distance between indicator points before and after cooling should not be more than	1. 10 mm 2. 15 mm 3. 5 mm 4. 20 mm
Which material is using as bearing pad in the bridge construction?	1. Neoprene 2. Thermocol 3. Ferro cement 4. PVC
ouple consists of	1. two like parallel forces of same magnitude 2. two like parallel forces of different magnitudes 3.

Questions	Choices
	two unlike parallel forces of same magnitude 4. two unlike parallel forces of different magnitudes
ircular hole of radius (r) is cut out from a circular disc of radius ($2r$) in such a way that the diagonal of the hole is the radius of the disc. The centre of gravity of the section lies at	1. Centre of a disc 2. Centre of the hole 3. Somewhere in the disc 4. 1. Somewhere in the hole
moment of inertia of a triangular section of base (b) and height (h) about an axis passing through its vertex and parallel to the base is ... as that passing through its C.G. and parallel to the base.	1. twelve times 2. nine times 3. six times 4. four times
The force of friction between two bodies in contact	1. Depends upon the area of their contact 2. Depends upon the relative velocity between them 3. Is always normal to the surface of their contact 4. All of the above
The term 'virtual work' refers to	1. actual work done by virtual forces 2. virtual work done by actual forces 3. virtual work done by virtual forces 4. ıal work done by actual forces

Questions	Choices
The relative velocity of *A* with respect to *B* is the velocity with which *A* appears to move to an observer sitting in*B* when it is	1. at rest 2. in motion 3. either (*a*) or (*b*) 4. None of the above
The relationship between linear velocity and angular velocity of a cycle	1. exists under all conditions 2. does not exist under all conditions 3. exists only when it does not slip 4. exists only when it moves on horizontal plane
In a loaded beam, the point of contra flexure occurs at a section where	1. bending moment is minimum 2. bending moment is zero or changes sign 3. bending moment is maximum 4. shearing force is maximum
A rectangular beam 20 cm wide is subjected to a maximum shearing force of 10, 000 kg, the corresponding maximum shearing stress being 30 kg/cm2. The depth of the beam is	1. 15 cm 2. 20 cm 3. 25 cm 4. 30 cm
For a given material Young's modulus is 200 GN/m^2 and modulus of rigidity is 80 GN/m^2. The value of Poisson's ratio is	1. 0.15 2. 0.20 3. 0.25 4.

Questions	Choices
	0.30
The deflection of any rectangular beam simply supported, is	1. directly proportional to its weight 2. inversely proportional to its width 3. inversely proportional to the cube of its depth 4. directly proportional to the cube of its length
If a rectangular beam measuring 10 x 18 x 400 cm carries a uniformly distributed load such that the bending stress developed is 100 kg/cm2. The intensity of the load per metre length, is	1. 240 kg 2. 250 kg 3. 260 kg 4. 270 kg
For the survival of fish in a river stream, the minimum dissolved oxygen is prescribed	1. 3 PPm 2. 4 PPm 3. 5 PPm 4. 10 ppm.
When equal and opposite forces applied to a body, tend to elongate it, the stress so produced, is called	1. shear stress 2. compressive stress 3. tensile stress

Questions	Choices
	4. transverse stress
The tensile force required to cause an elongation of 0.045 mm in a steel rod of 1000 mm length and 12 mm diameter, is (where E = 2 x 10^6 kg/cm^2)	1. 166 kg 2. 102 kg 3. 204 kg 4. 74 kg
The moment diagram for a cantilever carrying a concentrated load at its free end, will be	1. triangle 2. rectangle 3. parabola 4. cubic parabola
In a shaft rotated by a couple, the shear force varies	1. from zero at the centre to a maximum at the circumference 2. from minimum at the centre of maximum at the circumference 3. from maximum at the centre to zero at the circumference 4. equally throughout the section
Aerobic bacterias	1. flourish in the presence of free oxygen 2. consume organic matter as their food 3. oxidise organic matter in sewage 4. All the above
The rate of accumulation of sludge in septic tanks is recommended as	1. 30 litres/person/year 2.

Questions	Choices
	25 litres/person/year 3. 40 litres/person/month 4. 45 litres/person/month.
The minimum recommended diameter of sewers, is	1. 5cm 2. 10cm 3. 15cm 4. 20 cm
If 2% solution of a sewage sample is incubated for 5 days at 20°C and depletion of oxygen was found to be 5 ppm, B.O.D. of the sewage is	1. 200 ppm 2. 225 ppm 3. 250 ppm 4. None of these.
If D is the diameter of upper circular portion, the overall depth of a standard egg shaped section, is	1. D 2. 1.25 D 3. 1.5 D 4. 1.75 D
If the diameter of sewer is 225 mm, the gradient required for generating self cleansing velocity, is	1. 1 in 60 2. 1 in 100 3. 1 in 120 4. None of these
A flow line makes angles θ1 and θ2 with the normal to the interface of the soils having permeabilities k1, k2 before and after deflection. According to the	1.

Questions	Choices
law of deflection of the flow lines at the interface of the dissimilar soils	2. 3. 4.
The non-clog pump which permits solid matter to pass out with the liquid sewage, is	1. centrifugal pump 2. reciprocating pump 3. pneumatic ejector 4. none of these.
A rainfall may be classified as acidic if its pH value is less or equal to	1. 6 2. 7 3. 5 4. 6.5
Assertion (A) : Discharging the effluents from the oxidation ponds just up stream of lakes or reservoirs is undesirable. Reason (R) : The discharged algae get settled in the reservoirs and cause anaerobic decomposition and other water qualities. .	1. Both A and R are true and R is the correct explanation of A 2. Both A and R are true but R is not a correct explanation of A 3. A is true but R is false 4. A is false but R is true.
The width of a rectangular sewer is twice its depth while discharging 1.5 m/sec. The width of the sewer is	1. 0.68 m 2.

Questions	Choices
	0.88 m 3. 1.36 m 4. 1.76 m.
In olden days the type of section adopted in trunk and out fall sewers was	1. parabolic shaped 2. horse shoe shaped 3. egg shaped 4. circular shaped.
In a fully mechanised composting plant, involves	1. mechanized receipt 2. mechanized segregation 3. mechanized pulverising of refuse 4. all of these.
If the side of a square sewer is 1000 mm, the diameter of a hydraulically equivalent circular section, is	1. 1045 mm 2. 1065 mm 3. 1075 mm 4.

Questions	Choices
	1095 mm.
A steel rod of 2 cm diameter and 5 metres long is subjected to an axial pull of 3000 kg. If E = 2.1 10^6 kg/cm^2, the elongation of the rod will be	1. 2.275 mm 2. 0.2275 mm 3. 0.02275 mm 4. 2.02275 mm.
Self-cleansing velocity is	1. velocity at dry weather flow 2. velocity of water at flushing 3. velocity at which no accumulation remains in the drains 4. velocity of water in a pressure filter.
The stress at which extension of a material takes place more quickly as compared to the increase in load, is called	1.elastic point 2.plastic point 3.breaking point 4.yielding point
The stress in the wall of a cylinder in a direction normal to its longitudinal axis, due to a force acting along the circumference, is known as	1. yield stress 2. longitudinal stress 3. hoop stress 4.

Questions	Choices
	circumferential stress
If the over land flow from the critical point to the drain is 8 km and the difference in level is 12.4 m, the inlet time is	1. 2 hours 2. 3 hours 3. 4 hours 4. 5 hours
Along the neutral axis of a simply supported beam	1. fibres do not undergo strain 2. fibres undergo minimum strain 3. fibres undergo maximum strain 4. none of these
An inverted siphon is designed generally for	1. one pipe 2. two pipes 3. three pipes 4. four pipes.
What is the maximum slenderness limit for R.C.C columns	1. 40 2. 60 3. 80 4. 100
What is the maximum permissible shear stress in concrete for M25 grade?	1. 2.5 2. 3.8

Questions	Choices
	3. 3.5 4. 3.1
What is the maximum compressive strain in concrete under bending ?	1.0.0025 2. 0.0030 3. 0.0035 4. 0.0040
span to effective depth ratio for continuous beams and slabs is	1. 7 2. 20 3. 26 4. 35
einforced and plain concrete footings, the thickness at the edge shall not be less than	1. 100 mm 2. 150 mm 3. 200 mm 4. 250 mm
Where do you provide torsional reinforcement in a slab	1. At continuous edge 2. At discontinuous edge 3. At corners of two continuous edge 4. At corners of two discontinuous edge
The maximum diameter of the reinforcing bar in slab shall not exceed _____ of thickness of slab	1. 1/8 2. 1/9 3.

Questions	Choices
	1/10 4. 1/12
A slab which is assume to act as a compression flange of a T-beam or L-beam and having main reinforcement parallel to longitudinal axis of beam should be provided with minimum of _____ % of transverse reinforcement of that of main reinforcement at the mid span of the slab.	1. 35 2. 45 3. 55 4. 60
What is the minimum centre to centre spacing between the fasteners as per IS 800:2007?	1. 1.5 times nominal dia of fastener 2. 2.0 times nominal dia of fastener 3. 2.5 times nominal dia of fastener 4. 3.0 times nominal dia of fastener
A compression flange element has outstanding width to thickness of flange ratio as 11.2. The compression flange is _____ class of section	1. Plastic 2. Compact 3. Semi-compact 4. Slender
What is the recommended effective length of a column having fixed end boundary condition at one end and guided roller at other end.	1. 1.2L 2. 2.0L 3. 0.8L 4. 0.65L
A hot rolled steel channel section is selected as a column section. The design compressive stress has to be calculated based on _____ buckling class.	1. a 2. b

Questions	Choices
	3. c 4. d
A rainfall may be classified as acidic if its pH value is less or equal to	1. 6 2. 7 3. 5 4. 6.5
Chlorination of water is done for the removal of	1. bacterias 2. suspended solids 3. sediments 4. hardness.
IRC has specified the maximum value of stripping value of bitumen not to exceed	1. 2% 2. 3% 3. 4% 4. 5%
In a bolted connection, the blots used are M10.8 grade. What is the yield stress of bolt?	1. 1000 MPa 2. 1080 MPa 3. 800 MPa

Questions	Choices
	4. 108 Mpa
When drainage to sewage ratio is 20, the peak dry weather flow is	1. 20% of the design discharge 2. slightly less than 5% of the design discharge 3. slightly more than 5% of the design discharge 4. none of these.
Shear strain energy theory for the failure of a material at elastic limit, is due to	1. Rankine 2. Guest or Trecas 3. St. Venant 4. Von Mises
In case of a simply supported rectangular beam of span L and loaded with a central load W, the length of elasto-plastic zone of the plastic hinge, is	1. $\frac{L}{2}$ 2. $\frac{L}{3}$ 3. $\frac{L}{4}$ 4. $\frac{L}{8}$
For treating the sewage of a large city, you will recommend	1. a sedimentation tank and an activated sludge treatment plant 2. a plant consisting of Imhoff tanks with low rate trickling filters 3.

Questions	Choices
	sedimentation tanks with high rate trickling filters 4. none of these.
Beams composed of more than one material, rigidly connected together so as to behave as one piece, are known as	1. Compound beams 2. Indeterminate beams 3. Determinate beams 4. Composite beams
A shaft is subjected to bending moment M and a torque T simultaneously. The ratio of the maximum bending stress to maximum shear stress developed in the shaft, is	1. $\frac{M}{T}$ 2. $\frac{T}{M}$ 3. $\frac{2M}{T}$ 4. $\frac{2T}{M}$
The ratio of the deflections of the free end of a cantilever due to an isolated load at l/3rd and 2/3rd of the span, is	1. $\frac{1}{7}$ 2. $\frac{2}{7}$ 3. $\frac{3}{7}$ 4. $\frac{2}{5}$

Questions	Choices
The dimensions of a rectangular settling tank are : length 24 m, width 6 m and depth 3 m. If 2 hour detention period for tanks is recommended, the rate of flow of sewage per hour, is	1. 204 cu m 2. 208 cu m 3. 212 cu m 4. 216 cu m
Pick up the in-correct statement from the following :	1. Manholes are provided in sewer pipes at suitable intervals 2. Catch basins are generally provided in sewers for carrying drainage discharge 3. Inlets are generally provided in all sewers 4. None of these.
Clogging of sewers, is caused due to	1. silting 2. low discharge 3. domestic wastes thrown in manholes 4. all the above.
A sewer pipe contains 1 mm sand particles of specific gravity 2.65 and 5 mm organic particles of specific gravity 1.2, the minimum velocity required for removing the sewerage, is	1. 0.30 m/sec 2. 0.35 m/sec 3. 0.40 m/sec

Questions	Choices
	4. 0.45 m/sec
The coagulant widely used for sewage treatment, is	1. alum 2. ferric chloride 3. ferric sulphate 4. chlorinated copperas.
The ratio of minimum hourly flow to the average flow of sewage is	1. 1/4 2. 1/3 3. 1/2 4. 3/4
In Marshall method of mix design, the coarse aggregate, fine aggregate, fines and bitumen having respective values of specific gravity 2.60, 2.70, 2.65 and 1.01, are mixed in the relative proportions (% by weight) of 55.0, 35.8, 3.7 and 5.5 respectively. The theoretical specific gravity of the mix and the effective specific gravity of the aggregates in the mix respectively are	1. 2.42 and 2.63 2. 2.42 and 2.78 3. 2.42 and 2.93 4. 2.64 and 2.78

Questions	Choices
Bio-chemical oxygen demand (BOD) for the first 20 days in generally referred to	1. initial demand 2. first stage demand 3. carbonaceous demand 4. all of these.
Flocculated particles do not change their	1. size 2. shape 3. weight 4. none of these.
For non-scouring velocity 5 m/sec, the type of sewers generally preferred to, is	1. cast iron sewers 2. cement concrete sewers 3. glazed bricks sewers 4. stone ware sewers.
Disposal to sewage in large cities, is done in	1. irrigation 2. dilution 3. oxidation 4. putrifaction.

Questions	Choices
For the COD test of sewage, organic matter is oxidised by K2Cr207 in the presence of	1. H2SO4 2. HNO3 3. HCl 4. none of these.
Which property of aggregate is tested by conducting aggregate impact test?	1. Durability 2. Hardness 3. Toughness 4. Porosity
In R.C. sewer pipes, the percentage longitudinal reinforcement to the cross-sectional area of concrete is kept	1. 10.0 2. 5.0 3. 2.0 4. 0.25
In SI units the power of sound is represented in	1. kgs 2. joules 3. neutons 4. watts.
A rain sanitary sewer is constructed to carry	1. sanitary sewage 2. surface water

Questions	Choices
	3. ground water 4. storm sewage
The sewage is pumped up	1. from low lying areas 2. from basements 3. across a high ridge 4. all the above.
Removal of oil and grease from sewage, is known	1. screening 2. skimming 3. filtration 4. none of these.
The gas which may cause explosion in sewers, is	1. carbondioxide 2. methane 3. ammonia 4. carbon monoxide.
In sewers the effect of scouring is more on	1. top side 2.

Questions	Choices
	bottom side 3. horizontal side 4. all sides.
Rate of flow of sewage is generally assumed	1. more than the rate of water supply 2. equal to the rate of water supply 3. less than the rate of water supply 4. at 150 litres per capita.
The digested sludge from septic tanks, is removed after a maximum period of	1. 3 years 2. 3.5 years 3. 4 years 4. 5 years.
For providing an Indian type W.C., the R.C.C. slabs in the toilet portion	1. should be sunk by 20 cm 2. should be kept 20 cm above the adjacent portion 3. should be sunk by 50 cm 4. need not be sunk.

Questions	Choices
The gradient of sewers depends upon	1. velocity of flow 2. diameter of the sewer 3. discharge 4. all the above.
In a liquid limit test, the moisture content at 10 blows was 70% and that at 100 blows was 20%. The liquid limit of the soil, is	1. 35% 2. 50% 3. 65% 4. none of these
The settling velocity of the particles larger than 0.06 mm in a settling tank of depth 2.4 is 0.33 m per sec. The detention period recommended for the tank, is	1. 30 minutes 2. 1 hour 3. 1 hour and 30 minutes 4. 2 hours.
The active earth pressure of a soil is proportional to (where φ is the angle of friction of the soil)	1. tan (45° - φ) 2. tan2 (45° + φ/2) 3. tan2 (45° - φ/2) 4. tan (45° + φ)
The drop man holes are generally provided in sewers for	1.

Questions	Choices
	industrial areas 2. large town ships 3. hilly town ships 4. cities in plains.
Highest dam in India, is	1. Bhakra dam 2. Hirakund dam 3. Nagarjuna Sagar dam 4. Iddiki dam
The minimum water content at which the soil just begins to crumble when rolled into threads 3 mm in diameter, is known	1. liquid limit 2. plastic limit 3. shrinkage limit 4. permeability limit
Non-over flow double curvature concrete arch, is provided in	1. Bhakra dam 2. Hirakund dam 3. Nagarjuna Sagar dam 4. Iddiki dam.
The lateral earth pressure on a retaining wall	1. is equal to mass of the soil retained 2. proportional to the depth of the soil 3.

Questions	Choices
	proportional to the square of the depth of the soil 4. proportional to the internal friction of the soil
The theory of infiltration capacity was given by	1. Merrill Bernard 2. W.W. Horner 3. Le-Roy K. Shermen 4. Robert E. Horten.
The internal molecular attraction of a soil, the cohesion	1. decreases as the moisture content increases 2. increases as the moisture content decreases 3. is more in well compacted clays 4. depends upon the external applied load
When drainage is permitted under initially applied normal stress only and full primarily consolidation is allowed to take place, the test is known as	1. quick test 2. drained test 3. consolidated undrained test 4. normal stress test
The surface Run-off is the quantity of water	1. absorbed by soil 2. intercepted by buildings and vegetative cover 3. required to fill surface depressions 4.

Questions	Choices
	that reaches the stream channels
The minimum water content at which the soil retains its liquid state and also possesses a small shearing strength against flowing, is known	1. liquid limit 2. plastic limit 3. shrinkage limit 4. permeability limit
Pick up the correct equation from the following :	1. Run off = Surface run off + Ground water flow 2. Run off = Surface run off - Ground water flow 3. Run off = Surface run off / Ground water flow 4. Run off = Surface run off x Ground water flow
Minimum size of the particles of silt soil, is	1. 0.002 mm 2. 0.04 mm 3. 0.06 mm 4. 0.08 mm
Pick up the clay soil group which does not swell when wet from the following	1. Kaolinite group 2. Mite group 3. Vermiculite group 4. Montrorillonite group
If y is the depth of water at any section, then the mean velocity is	1. 0.1 y 2.

Questions	Choices
	0.2 y 3. 0.3 y 4. 0.6 y
The ratio of the volume of voids to the volume of soil solids in a given soil mass, is known	1. porosity 2. specific gravity 3. void ratio 4. water content
The run off a drainage basin is	1. Initial recharge + ground water accretion + precipitation 2. Precipitation + ground water accretion + initial recharge 3. Precipitation - ground water accretion + initial recharge 4. Precipitation - ground water accretion - initial recharge
A compacted soil sample using 10% moisture content has a weight of 200 g and mass unit weight of 2.0 g/cm3. If the specific gravity of soil particles and water are 2.7 and 1.0, the degree of saturation of the soil is	1. 11.1% 2. 55.6% 3. 69.6% 4. 89.6%
For computing the run off volumes of large areas, number of infiltrations used are	1. 2 2. 3 3. 4 4.

Questions	Choices
	5
If s is the potential infiltration, P is rainfall in cm in a drainage of a soil with fair pasture cover, the direct run off Q in cm is given by	1. 2. 3. 4.
A partially saturated sample of soil has a unit weight of 2.0 g/cm3 and specific gravity of soil particles is 2.6. If the moisture content in the soil is 20%, the degree of saturation is	1. 20% 2. 77% 3. 92% 4. 82%
Minimum depth of a footing carrying a heavy load, is calculated by the formula	1. 2. 3. 4.
The quantity of water retained by the sub-soil against gravity, is known	1. yield 2. porosity 3. specific yield 4. specific retention
According to Coulomb's wedge theory, the active earth pressure slides the wedge	1. down and outwards on a slip surface 2. up and inwards on a slip surface 3. horizontal upward and parallel to base

Questions	Choices
	4. horizontal inward and parallel to base
The coefficient of curvature is defined	1. 2. 3. 4.
Pick up the incorrect statement from the following :	1. The rate of flow of water through a unit cross-sectional area under a unit hydraulic gradient, is called coefficient of permeability 2. The rate of flow of water through a vertical strip of the acquifer of unit width and full depth under a unit hydraulic gradient, is called coefficient of transmissibility 3. The flow of water through acquifers, is governed by the Darcy's law 4. The term 'transmissibility' was introduced by Meinzer
The effective size of particles of soil is denoted by	1. D_{10} 2. D_{20} 3. D_{30} 4. D_{60}
With the usual meanings of letters, the equationis used for determining the velocity of ground water flow in metres per day. It is known as	1. Meinzer's formula 2. Slichter's formula 3. Hazen's formula.

Questions	Choices
	4. Darcy's formula
Degree of saturation of a natural soil deposit having water content 15%, specific gravity 2.50 and void ratio 0.5, is	1. 50% 2. 60% 3. 75% 4. 80%
Indian Meteorological department uses the standard gauges whose collectors have apertures of	1. 50 or 100 sq. cm area 2. 100 or 150 sq. cm area 3. 100 or 200 sq. cm area 4. 250 or 500 sq. cm area
The coefficient of compressibility of soil, is the ratio of	1. stress to strain 2. strain to stress 3. stress to settlement 4. rate of loading to that of settlement
If the failure of a finite slope occurs through the toe, it is known as	1. slope failure 2. face failure 3. base failure 4. toe failure
Symon's rain gauge is	1. tipping-bucket gauge 2. weighing type gauge 3. float recording gauge

Questions	Choices
	4. non-recording gauge
The water content of soil is defined as the ratio of	1. volume of water to volume of given soil 2. volume of water to volume of voids in soil 3. weight of water to weight of air in voids 4. weight of water to weight of solids of given mass of soil
The rainfall cycle period in India is taken as	1. 15 years 2. 20 years 3. 30 years 4. 35 years
Accurate determination of water content, is made by	1. calcium carbide method 2. sand bath method 3. alcohol method 4. oven-drying method
Shrouding is provided in	1. cavity type tube wells 2. slotted type tube wells 3. strainer type tube wells 4. perforated type tube wells
Stoke's law sates that the velocity at which a grain settles out of suspension, the other factors remaining constant, is dependent upon	1. shape of grain 2. weight of grain

Questions	Choices
	3. size of grain 4. shape, size and weight of grain
Isohytes are the imaginary lines joining the points of equal	1. pressure 2. height 3. humidity 4. rainfall
If *S*, *L* and *R* are the arc length, long chord and radius of the sliding circle then the perpendicular distance of the line of the resultant cohesive force, is given by	1. 2. 3. 4.
The best instrument for measuring the velocity of a stream flow is	1. pitot tube 2. Price's current meter 3. surface float 4. sub-surface float
The liquid limit and plastic limit exist in	1. sandy soils 2. silty soils 3. gravel soils 4. clay soils
A soil has bulk density 2.30 g/cm^3 and water content 15 per cent, the dry density of the sample, is	1. 1.0 g/cm^2

Questions	Choices
	2. 1.5 g/cm^3 3. 2.0 g/cm^3 4. 2.5 g/cm^3
A unit hydrograph is a hydrograph of a rain storm of a specified duration resulting from a run-off of	1. 15 mm 2. 20 mm 3. 25 mm 4. 30 mm
The liquidity index is defined as a ratio expressed as percentage of	1. plastic limit minus the natural water content, to its plasticity index 2. natural water content minus its plastic limit to its plasticity index 3. natural water content plus its plastic limit to its plasticity index 4. liquid limit minus the natural water content to the plasticity index
The best unit period of a unit hydrograph, is equal to basin lag divided by	1. 2 2. 3 3. 4 4. 5
A coarse-grained soil has a voids ratio 0.75, and specific gravity as 2.75. The critical gradient at which quick sand condition occurs, is	1. 0.25 2. 0.50 3. 0.75

Questions	Choices
	4. 1.00
In the estimate of design flood, Dickens assumes that high flood in cumecs, is proportional to catchment area raised to the power	1. 1/4 2. 1/2 3. 3/4 4. 2/3
For high flood estimates the average value of the constant C in Dicken's formula $Q = CA^{3/4}$, is	1. 6.5 2. 8.5 3. 10.5 4. 11.5
Pettis formula $Q = C\,(P.B)^{5/4}$ cumecs, is based upon	1. rainfall and drainage area 2. run off and drainage area 3. drainage area and its shape 4. drainage area.
The relationship between void ratio (e) and porosity ratio (n) is :	1. 2. 3. 4.
Run off is measured in	1. cubic metres 2. cubic metres per sec 3.

Questions	Choices
	cubic metres per minute 4. cubic metres per hour
Failure of the stability of slopes, generally occurs along	1. slip plane 2. a horizontal surface 3. a curved surface 4. a vertical surface
If ω is unit weight of water, Q the discharge in cumecs, H the total head lift and η, the efficiency of the pump, the H.P. of the motor is	1. 2. 3. 4.
If h is the loss due to friction in a pipe. Total losses in strainer and bends may be taken as	1. 0.01 h 2. 0.45 h 3. 0.20 h 4. 0.25 h
Geologic cycle for the formation of soil, is	1. Upheavel → transportation → deposition → weathering 2. Weathering → upheaval → transportation → deposition 3. Transportation → upheaval → weathering → deposition 4. Weathering → transportation → deposition → upheaval

Questions	Choices
Dicken's formula for high flood estimate, is useful only for the catchments in	1. Southern India 2. Northern India 3. Eastern India 4. Western India
The weight of a pycnometer containing 400 g sand and water full to the top is 2150 g. The weight of pycnometer full of clean water is 1950 g. If specific gravity of the soil is 2.5, the water content is	1. 5% 2. 10% 3. 15% 4. 20%
Ryve's formula for flood estimate in cumecs, is	1. $Q = CA^{3/4}$ 2. $Q = CA^{2/3}$ 3. $Q = CA^{1/2}$ 4. $Q = CA^{1/4}$
The maximum vertical depth of excavation that can be made in a saturated soft clay, having C=30 kN/m^3 and y=20 kN/m^3 without any lateral support, is	1. 3m 2. 6m 3. 4m 4. 8m
Levees and flood walls	1. are designed to carry unbalanced water load 2. are designed with adequate dimensions 3. are means of controlling floods 4.

Questions	Choices
	are never provided free-boards
Colomb's theory is applicable for	1. homogenous soil only 2. non homogenous soil 3. smooth retaining walls only 4. soils which have angle of internal friction only
Unit of kinematic viscosity is	1. m^2/sec 2. Newton sec/m^2 3. Newton sec/m^3 4. Kg sec/m^2
Cohesion	1. Increases the active pressure and decreases the passive and decreases the passive pressure 2. Decreases the both active and passive resistance 3. Increases both active pressure and passive resistance 4. Decreases active pressure and increases passive resistance
A sandy loam backfill has a cohesion of 14KN/m2 ,friction angle of 18 degrees and Unit weight of 16.5KN/m3. Then the depth of tension crack is	1. 2.00 m 2. 2.33 m 3. 1.98 m 4. 2.63 m

Questions	Choices
The lateral earth pressure coefficient "Ka" are based on	1. total stress 2. neutral stress 3. effective stress 4. elastic properties soil
if μ is Poisson's ratio of a soil, then the coefficient of earth pressure at rest is	1. μ/1-μ 2. 1-μ/μ 3. μ/1+μ 4. 1+μ/μ
Taylor's stability number curves are used for the analysis of stability of slopes. The angle of shearing resistance used in the chart is the	1. effective angle 2. apparent angle 3. mobilised angle 4. weighted angle
Inside pressure in a hollow soap bubble in the air is : (where *d* is the diameter of the bubble)	1. 2. 3. 4.
The momentum correction factor (β) for the viscous flow through a circular pipe is	1. 1.25 2. 1.33 3. 1.50 4.

Questions	Choices
	1.66
A piezometer opening in pipes measures	1. velocity head 2. static pressure 3. total pressure 4. negative static pressure.
The load bearing capacity of foundation if it is backfilled is	1. increased 2. decreased 3. no effect 4. zero
The failure of file foundation is due to	1. general shear 2. local shear 3. mixed shear 4. punching shear
The metho of slices of swedish circle method is applicable in	1. homogenous soils only 2. Uniform slopes only 3. Stratified soils only 4. Non-uniform slopes also
Three gradients are lined up on a highway to be designed. 100 m of 1%, 70m of 0.5%, and 150m of -1%. What is the best combination of curves among the ones given below?	1. 60m crest curve, 10m 0.5% gradient and 60m crest curve 2. 60m crest curve, 80m crest curve 3.

Questions	Choices
	180m crest curve connecting 1% and -1% gradients 4. 30m crest curve, 10m 0.5% gradient and 60m crest curve
Two Pegs A and B were fixed on opposite banks of a 50 m wide river. The level was set up at A and the staff readings on Pegs A and B were observed as 1.350 m and 1.550 m, respectively. Thereafter the instrument was shifted and set up at B. The staff readings on Pegs B and A were observed as 0.750 m and 0.550 m, respectively. If the R.L. of Peg A is 100.200 m, the R.L. (in m) of Peg B is_____.	1. 98.400m. 2. 104.400m. 3. 99.400m. 4. 100.400m.
Speed limit to be posted on a highway section on a horizontal curve with 260m radius is	1. 8/hr 2. 38/hr 3. 65/hr 4. 85/hr
Camber of a road is 3%. Design speed is 80km/hr. What is the minimum radius of horizontal curve which does not require any additional superelevation?	1. 950m 2. 280m 3. 410m 4. 800m
Safe stopping sight distance for a vehicle travelling at 70km/hr speed is close to_____(Assume coefficient friction as 0.36)	1. 100m 2. 870m 3. 160m 4. 55m
The load value on standard crushed stone for 5mm penetration in CBR test is	1. 1370kg 2.

Questions	Choices
	1500 kg 3. 2505 kg 4. 2055 kg
Which of the following is the most acceptable factor for classifying roads?	1. traffic volume they serve 2. tonnage they carry 3. their function and location 4. type of surface of road
Two cars started racing on a race track and raced continuously for two hours. Assume that no other vehicles are using the track during this time. The expressions relating the distance travelled d (km) and time t (in hour) for both the vehicles are given as: P: $d=60t$; Q: $d=60t^2$. hin the first one hour, the maximum space headway would be____	1. 15 km (at t=30 min.) 2. 15 km (at t=15 min.) 3. 30 km (at t=30 min.) 4. 30 km (at t=15 min.)
The purpose of a transition curve is:	1. To increase radius of curvature 2. To facilitate gradual introduction of curvature 3. To counteract centrifugal force developed 4. To prevent vehicle from skidding laterally
On a two way road, overtaking sight distance is d1+d2+d3 where d1 is the distance travelled during deciding to overtake, d2 is the distance travelled during overtaking and d3 is the distance travelled by the opposing vehicle during overtaking manoeuvre. On a one-way road overtaking sight distance is:_____	1. d1+d2+0.8 2. d1+d2+d3+0.5 3. d1+d2+1.5 4.

Questions	Choices
	d1+d2
Design speed of a highway is 80km/hr. In calculating overtaking sight distance required on a two-way road, what are the speeds considered for overtaking and overtaken vehicles?	1. 80 km/hr and 80km/hr 2. 80 km/hr and 64km/hr 3. 100 km/hr and 80 km/hr 4. 96 km/hr and 80 km/hr
The important factor considered in the design of summit curves on highways is	1. comfort to passenger 2. superelevation 3. impact factor 4. sight distance
sag (or valley) curves, the available sight distance is determined based on	1. design speed 2. nighttime driving conditions 3. height of obstacle 4. height of driver eye
ximum allowable grades are lower for railways than for highways because	1. Construction costs become prohibitive for railways at high grades 2. Trains are longer than vehicles which use highways 3. high grades cause discomfort to passengers 4. steel wheels on steel rails have lower frictional coefficient than rubber tyres on pavements
The principle used in design of superelevation is	1.

Questions	Choices
	Full centrifugal force on vehicle at design speed should be counteracted by superelevation and friction 2. Full centrifugal force on vehicle at 100% of design speed should be counteracted by superelevation and friction 3. Full centrifugal force on vehicle at 75% of design speed should be counteracted by super elevation and friction 4. Full centrifugal force on vehicle at design speed should not be counteracted by superelevation alone.
Camber to be provided on a road is decided based on	1. road class 2. pavement type 3. pavement type and rain fall condition 4. road class, pavement type and rain fall condition
Total reaction time (perception +reaction) for calculating of stopping distance may be assumed as	1. 5 sec. 2. 2.5 sec. 3. 0.5 sec. 4. 10.0 sec.
If an ascending gradient of 1 in 50 meets another ascending gradient of 1 in 30 then the deviation angle is	1. 1/50 2. 1/75 3. 1/30

<table>
<tr><th>Questions</th><th>Choices</th></tr>
<tr><td></td><td>4.
8/150</td></tr>
<tr><td>The ruling minimum radius of horizontal curve of a national highway in plane terrain for a ruling design speed of 100 km/hr with e=0.07 and f=0.15 is close to</td><td>1.
250m
2.
360m
3.
36m
4.
300m</td></tr>
<tr><td>A traffic stream in a particular direction of a two lane road is moving with a constant speed of 50kmph, with an average headway of 2.52sec. The longitudinal distance between two consecutive vehicles is</td><td>1.
30m.
2.
38m
3.
35m
4.
42m</td></tr>
<tr><td>Modulus of subgrade reaction is:</td><td>1.
2.
3.
4.</td></tr>
<tr><td>Match the information related to tests on aggregates given in Group-I with that in Group-II.
<table><tr><td>Group-I</td><td>Group-II</td></tr><tr><td>P. Resistance to impact</td><td>1. Hardness</td></tr><tr><td>Q. Resistance to wear</td><td>2. Strength</td></tr><tr><td>R. Resistance to weathering action</td><td>3. Toughness</td></tr><tr><td>S. Resistance to crushing</td><td>4. Soundness</td></tr></table></td><td>1.
P-1, Q-3, R-4, S-2
2.
P-3, Q-1, R-4, S-2
3.
P-4, Q-1, R-3, S-2
4.
P-3, Q-4, R-2, S-1</td></tr>
<tr><td>Closed contours of decreasing values towards their centre, represent</td><td>1.
a hill
2.</td></tr>
</table>

<table>
<tr><th>Questions</th><th>Choices</th></tr>
<tr><td></td><td>a depression
3.
a saddle or pass
4.
a river bed.</td></tr>
<tr><td>The target mean strength for concrete mix design obtained from the characteristic strength fck and standard deviation σ is</td><td>1.
fck + 1.65σ
2.
fck + 1.55σ
3.
fck + 1.35σ
4.
fck + 1.45σ</td></tr>
<tr><td>Le-Chatelier's apparatus is used for testing</td><td>1.
soundness of cement
2.
hardness of cement
3.
strength of cement
4.
durability of cement</td></tr>
<tr><td>What is required nominal cover to be provided in columns of minimum dimension of 200 mm or under, whose reinforcement bars do not exceed 12 mm</td><td>1.
15
2.
20
3.
25
4.
30</td></tr>
<tr><td>Match the information related to tests on bitumen given in Group-I with that in Group-II.
<table><tr><th>Group-I</th><th>Group-II</th></tr><tr><td>P. Resistance to flow</td><td>1. Ductility test</td></tr><tr><td>Q. ability to deform under load</td><td>2. Penetration test</td></tr><tr><td>R. Safety</td><td>3. Flash and fire point test</td></tr></table></td><td>1.
P-2, Q-1, R-3
2.
P-2, Q-3, R-1
3.
P-1, Q-2, R-3
4.
P-3, Q-1, R-2</td></tr>
<tr><td>unit of Modulus of subgrade reaction is</td><td>1.</td></tr>
</table>

Questions	Choices
	kN/m^3 2. kN/m^2 3. kN/m 4. kNm
vel bars in concrete pavement are placed	1. can be placed along any direction 2. perpendicular to the direction of traffic 3. along 45 deg. to the direction of traffic 4. along the direction of traffic
The average daily traffic on a stretch of road is 300 commercial vehicles per lane per day. When vehicle damage factor is 2.5 and the traffic growth rate is 7%, design traffic for 10 years is	1. 3.8 msa 2. 23.5 msa 3. 45.4 msa 4. 16 msa
The following observations were made at an axle load survey on a road: Axle load (kN) repetitions per day 35-45 800 75-85 400 The standard axle load is 80kN. Equivalent daily number of repetitions for the standard axle load are	1. 450 2. 480 3. 800 4. 1200
Select the method of surveying in which field observations and plotting proceed simultaneously from the following	1. chain surveying 2. compass surveying 3. plan table surveying 4. tacheometric surveying

Questions	Choices
Match the list 1 (type of curve) with list 2 (design factor) and select the correct answer: List 1 A) Summit curve B) Sag curve C) Horizontal curve D) Transition curve List 2 1) Rate of super elevation 2) Set back distance 3) Headlight sight distance 4) Right of way 5) Passing sight distance	1. A B C D 5 1 3 2 2. A B C D 4 3 2 1 3. A B C D 5 3 2 1 4. A B C D 4 1 3 2
The average spacing between vehicles in a traffic stream is 25m. Then the density (veh/km) of the stream is:	1. 25 2. 50 3. 40 4. 20
As per IRC: 67-2001, a traffic sign indicating the speed limit on a road should be of	1. circular shape with white background and red border 2. triangular shape with white background and red border 3. triangular shape with red background and white border 4. circular shape with red background and white border
A transport company operates a scheduled daily truck service between city P and city Q. One-way journey time between these two cities is 85 hours. a minimum layover time of 5 hours is to be provided at each city. How many trucks are required to provide this service?	1. 4 2. 6 3.

<table>
<tr><th>Questions</th><th>Choices</th></tr>
<tr><td></td><td>7

4.
8</td></tr>
<tr><td>Which traffic survey results in output that can be presented using desire lines?</td><td>1.
Accident

2.
Classified volume

3.
origin and destination

4.
speed and delay</td></tr>
<tr><td>A cable with a uniformly distributed load per horizontal meter run will take the following shape</td><td>1. hyperbola
2. elliptical
3. parabola
4. straight line</td></tr>
<tr><td>designing a 2-phase fixed type signal at an intersection having North-South and East-West road where only straight traffic is permitted, the following data is available.
<table><tr><td>Parameter</td><td>North</td><td>South</td><td>East</td><td>West</td></tr><tr><td>Design hour flow (PCU/hr)</td><td>1200</td><td>800</td><td>1000</td><td>700</td></tr><tr><td>Saturation flow (PCU/hr)</td><td>2500</td><td>2500</td><td>3000</td><td>3000</td></tr></table>Lost time per phase is 4 sec. Cycle length calculated by Webster’s approach is:</td><td>1.
91 sec.

2.
59 sec.

3.
83 sec.

4.
77 sec.</td></tr>
<tr><td>According to IS : 456- 2000, minimum slenderness ratio for a short column is</td><td>1. less than 12
2. less than 18
3. between 18 and 24
4. more than 24</td></tr>
<tr><td>Minimum DO in the fresh water for the survival of aquatic life is.....</td><td>1. 0 mg/l
2. 2 mg/l</td></tr>
</table>

Questions	Choices
	3. 4 mg/l 4. 8 mg/l
The determination of volatile solids in wastewater gives an idea about	1. The foulness of the sewage 2. Temperature of the sewage 3. Color of the sewage 4. pH of the sewage
Terzaghi's bearing capacity factors Nc, Nq and Ng are functions of	1.Both cohesion and angle of internal friction 2.cohesion only 3.Angle of internal friction only 4.none of the above