National Testing Agency

Question Paper Name :	Civil Structural and Transport Engineering 17th March 2026 Shift 1
Subject Name :	Civil Structural and Transport Engineering
Creation Date :	2026-03-17 19:10:55
Duration :	90
Total Marks :	300
Display Marks:	Yes

Civil Structural and Transport Engineering

Group Number :	1
Group Id :	432449265
Group Maximum Duration :	0
Group Minimum Duration :	90
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300

Civil Structural and Transport Engineering

Section Id :	432449359
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	75
Number of Questions to be attempted :	75
Section Marks :	300
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	432449761
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 43244927128 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The method for disposal of biodegradable component of solid waste is :

(1) Gasification

(2) Pyrolysis

(3) Vermicomposting

(4) Recycling

Options :

432449106901. 1

432449106902. 2

432449106903. 3

432449106904. 4

Question Number : 2 Question Id : 43244927129 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A clay sample has a void ratio of 0.5 in dry state. The specific gravity of soil solids is 2.5. What is the shrinkage limit of the soil ?

(1) 15%

(2) 20%

(3) 12%

(4) 2%

Options :

432449106905. 1

432449106906. 2

432449106907. 3

432449106908. 4

Question Number : 3 Question Id : 43244927130 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Proctor's compaction test for the maximum dry density of a certain soil gave the results as 1.8 gm/cc and Optimum Moisture Content (OMC) is 15%. The specific gravity of the clay soil grain was 2.7. What was the saturation degree for this soil ?

(1) 61%

(2) 71%

(3) 81%

(4) 51%

Options :

432449106909. 1

432449106910. 2

432449106911. 3

432449106912. 4

Question Number : 4 Question Id : 43244927131 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The load carrying capacity of an individual friction pile is 300 kN. What is the total load carrying capacity of group of 10 such piles with a group efficiency factor of 0.8 ?

(1) 240 kN

(2) 2400 kN

(3) 3000 kN

(4) 300 kN

Options :

432449106913. 1

432449106914. 2

432449106915. 3

432449106916. 4

Question Number : 5 Question Id : 43244927132 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In a clayey soil having 100 kN/m^2 as unit cohesion and 15kN/m^3 as unit weight, an excavation is made with a vertical face. Taking Taylor's stability number as 0.3, what is the maximum depth of excavation so that the vertical face remains stable ?

(1) 22.22 m

(2) 7.41 m

(3) 11.11 m

(4) 44.44 m

Options :

432449106917. 1

432449106918. 2

432449106919. 3

432449106920. 4

Question Number : 6 Question Id : 43244927133 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No

Option Orientation : Vertical

A strata of 3 m thick fine sand has a void ratio of 0.5 and specific gravity of 2.5. For a quick sand condition to develop in this strata, the flowing in upward direction would require a head of :

(1) 7 m

(2) 3 m

(3) 3.5 m

(4) 4.5 m

Options :

432449106921. 1

432449106922. 2

432449106923. 3

432449106924. 4

Question Number : 7 Question Id : 43244927134 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The probability that a student passes only in Hindi is $\frac{1}{4}$. The probability of the student passes only in English is $\frac{5}{9}$. The probability that the student passes in both of these subjects is $\frac{1}{9}$. The probability that the student will pass in at least one of these two subjects is :

(1) $\frac{9}{12}$

(2) $\frac{11}{12}$

(3) $\frac{7}{12}$

(4) $\frac{5}{12}$

Options :

432449106925. 1

432449106926. 2

432449106927. 3

432449106928. 4

Question Number : 8 Question Id : 43244927135 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

By using Cauchy integral theorem, the value of an integral (integration being taken in counter clock wise direction) $\oint \frac{Z^3-4}{3Z-i} dZ$ is :

(1) 1

(2) 0

(3) $\frac{2\pi}{81} - \frac{4\pi i}{3}$

(4) $\frac{2\pi}{81} - \frac{8\pi i}{3}$

Options :

432449106929. 1

432449106930. 2

432449106931. 3

432449106932. 4

Question Number : 9 Question Id : 43244927136 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A steel plate is 400 mm wide and 10 mm thick. A rivet of nominal diameter 20 mm is driven. The net sectional area of the plate is :

(1) 3800 mm^2

(2) 3780 mm^2

(3) 3785 mm^2

(4) 4215 mm^2

Options :

432449106933. 1

432449106934. 2

432449106935. 3

432449106936. 4

Question Number : 10 Question Id : 43244927137 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The Centre to Centre maximum distance between rivets in tension member of thickness 12 mm is :

(1) 192 mm

(2) 200 mm

(3) 100 mm

(4) 160 mm

Options :

432449106937. 1

432449106938. 2

432449106939. 3

432449106940. 4

Question Number : 11 Question Id : 43244927138 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Horizontal stiffener in a plate girder is provided to safeguard against :

(1) Yielding

(2) Compression buckling of web plate

(3) Shear buckling of web plate

(4) Prevent excessive deflection

Options :

432449106941. 1

432449106942. 2

432449106943. 3

432449106944. 4

Question Number : 12 Question Id : 43244927139 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The three phases involved in the management of large projects are :

(1) Planning, scheduling, evaluating

(2) Planning, scheduling, controlling

(3) Scheduling, designing, operating

(4) Scheduling, operating, evaluating

Options :

432449106945. 1

432449106946. 2

432449106947. 3

432449106948. 4

Question Number : 13 Question Id : 43244927140 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In PERT technique, the time estimate of activities and probability of their occurrence follows :

(1) Gumbel distribution

(2) Beta distribution

(3) Poisson distribution

(4) Normal distribution

Options :

432449106949. 1

432449106950. 2

432449106951. 3

432449106952. 4

Question Number : 14 Question Id : 43244927141 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The minimum strain at failure in tension steel having yield stress $\sigma_y = 415MPa$ and Young's Modulus Es = 200 GPa as per Limit State Method of design is :

(1) 0.005

(2) 0.0038

(3) 0.0045

(4) 0.0025

Options :

432449106953. 1

432449106954. 2

432449106955. 3

432449106956. 4

Question Number : 15 Question Id : 43244927142 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Design strength for M25 concrete in direct compression, bending compression and flexural tension are, respectively :

(1) 25 MPa, 11.15 MPa and 2.57 MPa

(2) 10 MPa, 11.15 MPa and 3.5 MPa

(3) 25 MPa, 11.15 MPa and 3.0 MPa

(4) 10 MPa, 12.5 MPa and 3.5 MPa

Options :

432449106957. 1

432449106958. 2

432449106959. 3

432449106960. 4

Question Number : 16 Question Id : 43244927143 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A simply supported prestressed concrete beam of span 30 m. The initial stress is 1000 MPa. The slip in the jack during tensioning has been 3 mm. If Es = 200 GPa, the loss of prestress due to anchorage is :

(1) 10%

(2) 2%

(3) 12%

(4) 6%

Options :

432449106961. 1

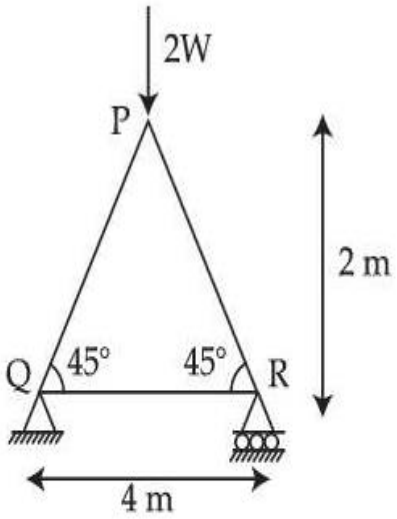
432449106962. 2

432449106963. 3

432449106964. 4

Question Number : 17 Question Id : 43244927144 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The axial force in the member PQ of the plane truss shown in figure below is :



(1) $\sqrt{3}\,W$

(2) $\sqrt{2}\,W$

(3) W

(4) $\frac{\sqrt{3}}{2}W$

Options :

432449106965. 1

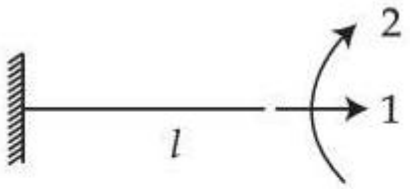
432449106966. 2

432449106967. 3

432449106968. 4

Question Number : 18 Question Id : 43244927145 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What is the stiffness matrix for a beam shown in figure below :



(1) $\begin{bmatrix} \frac{AE}{l} & \frac{4EI}{l} \\ 0 & 0 \end{bmatrix}$

(2) $\begin{bmatrix} \frac{AE}{l} & 0 \\ \frac{3EI}{l} & 0 \end{bmatrix}$

(3) $\begin{bmatrix} \frac{AE}{l} & 0 \\ 0 & \frac{4EI}{l} \end{bmatrix}$

(4) $\begin{bmatrix} 0 & \frac{4EI}{l} \\ 0 & \frac{AE}{l} \end{bmatrix}$

Options :

432449106969. 1

432449106970. 2

432449106971. 3

432449106972. 4

Question Number : 19 Question Id : 43244927146 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In a single degree of freedom undamped spring-mass damper system, an additional damper is added in parallel such that the system remains underdamped. Which one of the following statement is always true ?

(1) Transmissibility will decrease.

(2) Transmissibility will increase.

(3) Time period of free oscillation will decrease.

(4) Time period of free oscillation will increase.

Options :

432449106973. 1

432449106974. 2

432449106975. 3

432449106976. 4

Question Number : 20 Question Id : 43244927147 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The point on an extended massive object attached to a pivot where a perpendicular impact will produce no reactive shock at the pivot is known as :

(1) Centre of gravity
(2) Centre of mass
(3) Moment of inertia
(4) Centre of percussion

Options :

432449106977. 1

432449106978. 2

432449106979. 3

432449106980. 4

Question Number : 21 Question Id : 43244927148 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Shake 2000 software is mainly used for :

(1) Structural design
(2) Liquefaction assessment
(3) Ground response analysis
(4) Bridge modelling

Options :

432449106981. 1

432449106982. 2

432449106983. 3

432449106984. 4

Question Number : 22 Question Id : 43244927149 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A hydraulic jump occurs where there is a break in grade from a :

(1) Mild slope to steep slope
(2) Steep slope to mild slope
(3) Steep slope to steeper slope
(4) Mild slope to milder slope

Options :

432449106985. 1

432449106986. 2

432449106987. 3

432449106988. 4

Question Number : 23 Question Id : 43244927150 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

It is the velocity distribution of a viscous liquid ($\mu = 0.9\ N-s/m^2$) over a fixed boundary is given by $u = 0.68y - y^2$ in which u is the velocity in m/s at a distance y meter above the boundary surface, determine the shear stress at the surface.

(1) $0.512\ N/m^2$

(2) $0.0\ N/m^2$

(3) $0.6\ N/m^2$

(4) $0.612\ N/m^2$

Options :

432449106989. 1

432449106990. 2

432449106991. 3

432449106992. 4

Question Number : 24 Question Id : 43244927151 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Find the delta (Δ) for a crop if the duty for a base period of 110 days is 1400 hectares/cumec.

(1) 0.68 m

(2) 0.08 m

(3) 0.86 m

(4) 0.98 m

Options :

432449106993. 1

432449106994. 2

432449106995. 3

432449106996. 4

Question Number : 25 Question Id : 43244927152 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The load carrying capacity of a column designed by working stress method is 1000 kN. The ultimate collapse load of the column is :

(1) 1000 kN

(2) 1500 kN

(3) 3000 kN

(4) 662.5 kN

Options :

432449106997. 1

432449106998. 2

432449106999. 3

432449107000. 4

Question Number : 26 Question Id : 43244927153 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Temporary hardness of water is mainly due to the presence of :

(1) Nitrates of calcium and magnesium

(2) Bicarbonates of calcium and magnesium

(3) Sulphates

(4) Chlorides

Options :

432449107001. 1

432449107002. 2

432449107003. 3

432449107004. 4

Question Number : 27 Question Id : 43244927154 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The natural rain is specifically termed as an acid rain when its pH value is :

(1) 7

(2) 4

(3) 10

(4) 8

Options :

432449107005. 1

432449107006. 2

432449107007. 3

432449107008. 4

Question Number : 28 Question Id : 43244927155 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The braking distance for a vehicle moving on a positive 3% grade at an initial speed of 50 Km/hr and final speed of 20 Km/hr would be :

(1) 14.48 m

(2) 15.58 m

(3) 16.68 m

(4) 17.78 m

Options :

432449107009. 1

432449107010. 2

432449107011. 3

432449107012. 4

Question Number : 29 Question Id : 43244927156 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The extra widening required for a National highway curve in a plain terrain with a radius of 220 m and 7 m wheel base is :

(1) 0.62 m

(2) 0.72 m

(3) 0.82 m

(4) 0.92 m

Options :

432449107013. 1

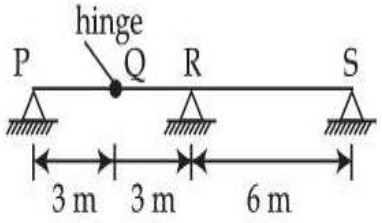
432449107014. 2

432449107015. 3

432449107016. 4

Question Number : 30 Question Id : 43244927157 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What is the ordinate of influence line at Q for reaction at S as shown in figure given below ?



(1) 0.0
(2) 2.0
(3) 0.5
(4) 0.2

Options :

432449107017. 1

432449107018. 2

432449107019. 3

432449107020. 4

Question Number : 31 Question Id : 43244927158 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Parameter)		**List - II (Relatable)**
A.	Rainfall intensity	I.	Isohyets
B.	Rainfall excess	II.	Cumulative rainfall
C.	Rainfall averaging	III.	Hyetograph
D.	Mass curve	IV.	Direct runoff hydrograph

Choose the **correct** answer from the options given below :

(1) A-III, B-I, C-II, D-IV
(2) A-III, B-IV, C-I, D-II
(3) A-IV, B-I, C-II, D-III
(4) A-II, B-IV, C-III, D-I

Options :

432449107021. 1

432449107022. 2

432449107023. 3

432449107024. 4

Question Number : 32 Question Id : 43244927159 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I		**List - II**
A.	Doubly reinforced section	I.	Serviceability
B.	Limit state design	II.	Durability
C.	Minimum cover	III.	Reduction in sectional depth
D.	Span-depth ratio	IV.	Ultimate moment capacity

Choose the **correct** answer from the options given below :

(1) A-IV, B-III, C-II, D-I

(2) A-II, B-I, C-IV, D-III

(3) A-I, B-II, C-III, D-IV

(4) A-III, B-IV, C-I, D-II

Options :

432449107025. 1

432449107026. 2

432449107027. 3

432449107028. 4

Question Number : 33 Question Id : 43244927160 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Item)		**List - II (Characteristics)**
A.	Activity	I.	Resourceless Element
B.	Event	II.	Resource consuming elements
C.	Dummy	III.	Spare time
D.	Float	IV.	Instantaneous stage

Choose the **correct** answer from the options given below :

(1) A-III, B-IV, C-II, D-I

(2) A-IV, B-III, C-I, D-II

(3) A-II, B-I, C-IV, D-III

(4) A-II, B-IV, C-I, D-III

Options :

432449107029. 1

432449107030. 2

432449107031. 3

432449107032. 4

Question Number : 34 Question Id : 43244927161 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Beam Variable)		**List - II (Design Provision)**
A.	Flexure	I.	Minimum depth of section
B.	Shear	II.	Longitudinal steel reinforcement
C.	Bond	III.	Stirrups
D.	Deflection	IV.	Anchorage support

Choose the **correct** answer from the options given below :

(1) A-I, B-IV, C-III, D-II

(2) A-IV, B-II, C-III, D-I

(3) A-II, B-III, C-IV, D-I

(4) A-III, B-IV, C-II, D-I

Options :

432449107033. 1

432449107034. 2

432449107035. 3

432449107036. 4

Question Number : 35 Question Id : 43244927162 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Terms)		**List - II (Effect)**
A.	Serviceability	I.	Sliding
B.	Shear key	II.	Deflection
C.	Shrinkage	III.	Cracking
D.	Concrete spalling	IV.	Corrosion

Choose the **correct** answer from the options given below :

(1) A-I, B-IV, C-II, D-III

(2) A-II, B-I, C-III, D-IV

(3) A-III, B-II, C-IV, D-I

(4) A-IV, B-II, C-III, D-I

Options :

432449107037. 1

432449107038. 2

432449107039. 3

432449107040. 4

Question Number : 36 Question Id : 43244927163 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Geometry of steel section)		**List - II (Shape factor)**
A.	Rectangle	I.	2.34
B.	Circular	II.	1.5
C.	Triangular	III.	2.0
D.	Diamond	IV.	1.7

Choose the **correct** answer from the options given below :

(1) A-I, B-III, C-IV, D-II

(2) A-III, B-I, C-II, D-IV

(3) A-IV, B-II, C-III, D-I

(4) A-II, B-IV, C-I, D-III

Options :

432449107041. 1

432449107042. 2

432449107043. 3

432449107044. 4

Question Number : 37 Question Id : 43244927164 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match List - I with List - II.

	List - I (Method of Analysis)		List - II (Unknown being evaluated)
A.	Flexibility method	I.	Degree of freedom
B.	Stiffness method	II.	Redundant forces
C.	Kani's method	III.	Rotations by incremental iteration and unknown sway of plane frames
D.	Moment Distribution method	IV.	Displacement, rotations and sway of plane frames

Choose the **correct** answer from the options given below :

(1) A-II, B-I, C-IV, D-III

(2) A-IV, B-II, C-III, D-I

(3) A-III, B-IV, C-II, D-I

(4) A-I, B-IV, C-II, D-III

Options :

432449107045. 1

432449107046. 2

432449107047. 3

432449107048. 4

Question Number : 38 Question Id : 43244927165 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Type of equipment)		**List - II (Purpose)**
A.	Agitating Truck	I.	Quarrying
B.	Hoe	II.	Compacting
C.	Derrick pole	III.	Hoisting
D.	Sheep foot roller	IV.	Transporting

Choose the **correct** answer from the options given below :

(1) A-III, B-IV, C-II, D-I

(2) A-IV, B-I, C-III, D-II

(3) A-IV, B-III, C-II, D-I

(4) A-IV, B-II, C-I, D-III

Options :

432449107049. 1

432449107050. 2

432449107051. 3

432449107052. 4

Question Number : 39 Question Id : 43244927166 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Test)		**List - II (Property)**
A.	Proctor test	I.	Grain size analysis
B.	Vane test	II.	Shear strength
C.	Penetration test	III.	Bearing capacity
D.	Hydrometer test	IV.	Compaction

Choose the **correct** answer from the options given below :

(1) A-III, B-IV, C-II, D-I

(2) A-IV, B-II, C-III, D-I

(3) A-II, B-IV, C-III, D-I

(4) A-IV, B-III, C-I, D-II

Options :

432449107053. 1

432449107054. 2

432449107055. 3

432449107056. 4

Question Number : 40 Question Id : 43244927167 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Terms)		**List - II (Formulae)**
A.	Void ratio	I.	Vv/V
B.	Porosity	II.	Ww/Ws
C.	Degree of saturation	III.	Vw/Vv
D.	Water content	IV.	Vv/Vs

Choose the **correct** answer from the options given below :

(1) A-IV, B-III, C-II, D-I

(2) A-III, B-II, C-IV, D-I

(3) A-I, B-II, C-III, D-IV

(4) A-IV, B-I, C-III, D-II

Options :

432449107057. 1

432449107058. 2

432449107059. 3

432449107060. 4

Question Number : 41 Question Id : 43244927168 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Water quality)		**List - II (Method of determination)**
A.	Hardness	I.	Winkler's method
B.	Chlorine	II.	EDTA method
C.	Dissolved Oxygen (D.O)	III.	Orthotodoline test
D.	Chloride	IV.	Mohr's method

Choose the **correct** answer from the options given below :

(1) A-IV, B-II, C-I, D-III

(2) A-III, B-I, C-IV, D-II

(3) A-II, B-III, C-I, D-IV

(4) A-II, B-I, C-III, D-IV

Options :

432449107061. 1

432449107062. 2

432449107063. 3

432449107064. 4

Question Number : 42 Question Id : 43244927169 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Principle)		**List - II (Effects)**
A.	Hele Shaw flow	I.	Surface of equal pressure
B.	Stokes law	II.	Settling of time particles
C.	Hagen Poiseuille flows	III.	Laminar flow between parallel plates
D.	Pascal's law	IV.	Laminar flow in tubes

Choose the **correct** answer from the options given below :

(1) A-III, B-II, C-IV, D-I

(2) A-III, B-IV, C-II, D-I

(3) A-II, B-III, C-IV, D-I

(4) A-II, B-I, C-III, D-IV

Options :

432449107065. 1

432449107066. 2

432449107067. 3

432449107068. 4

Question Number : 43 Question Id : 43244927170 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : In the analysis of rigid frames, the usual practice is to consider the strain energy due to flexure only.

Reason (R) : The strain energies due to axial and shear forces are usually quite small compared to that of flexure.

In the light of the above statements, choose the **most appropriate answer** from the options given below :

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

432449107069. 1

432449107070. 2

432449107071. 3

432449107072. 4

Question Number : 44 Question Id : 43244927171 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Energy dissipation in hydraulic jump is mainly by the large eddies in turbulence.

Reason (R) : Large eddies transport the fluid over large distance, thus causing the mixing effect of turbulence.

In the light of the above statements, choose the **most appropriate answer** from the options given below :

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

432449107073. 1

432449107074. 2

432449107075. 3

432449107076. 4

Question Number : 45 Question Id : 43244927172 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Chlorides should be absent in drinking water.

Reason (R) : Chlorides give salty taste to water.

In the light of the above statements, choose the **most appropriate answer** from the options given below :

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

432449107077. 1

432449107078. 2

432449107079. 3

432449107080. 4

Question Number : 46 Question Id : 43244927173 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Quick sand is not a type of sand but it is a condition arising in a sand mass.

Reason (R) : When the upward seepage pressure becomes equal to the pressure due to submerged weight of a soil, the effective pressure becomes zero.

In the light of the above statements, choose the **most appropriate answer** from the options given below :

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

432449107081. 1

432449107082. 2

432449107083. 3

432449107084. 4

Question Number : 47 Question Id : 43244927174 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Road camber helps in surface drainage.

Reason (R) : In a curved road alignment, super elevation serves the purpose of camber.

In the light of the above statements, choose the **most appropriate answer** from the options given below :

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

432449107085. 1

432449107086. 2

432449107087. 3

432449107088. 4

Question Number : 48 Question Id : 43244927175 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No

Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Whole circle bearing of a line is preferred to a quadrantal bearing.

Reason (R) : Bearing is completely specified by an angle.

In the light of the above statements, choose the **most appropriate answer** from the options given below :

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

432449107089. 1

432449107090. 2

432449107091. 3

432449107092. 4

Question Number : 49 Question Id : 43244927176 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : The leakage losses are less when water supply is intermittent.

Reason (R) : Pressure is less in intermittent water supply.

In the light of the above statements, choose the **most appropriate answer** from the options given below :

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

432449107093. 1

432449107094. 2

432449107095. 3

432449107096. 4

Question Number : 50 Question Id : 43244927177 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No

Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Unit hydrograph theory is not applicable to catchment areas larger than 5000 sq.km.

Reason (R) : Rainfall is not uniformly distributed on large catchment areas.

In the light of the above statements, choose the **most appropriate answer** from the options given below :

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

432449107097. 1

432449107098. 2

432449107099. 3

432449107100. 4

Question Number : 51 Question Id : 43244927178 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Terzaghi's theory of consolidation considers only primary consolidation.

Reason (R) : Secondary consolidation takes place only at the end of the primary consolidation.

In the light of the above statements, choose the **most appropriate answer** from the options given below :

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

432449107101. 1

432449107102. 2

432449107103. 3

432449107104. 4

Question Number : 52 Question Id : 43244927179 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The sight distance available on a road to a driver at any instance depends on :

A. Features of the road ahead

B. Height of the driver's eye above the road surface

C. Height of the object above the road surface

Choose the **correct** answer from the options given below :

(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

Options :

432449107105. 1

432449107106. 2

432449107107. 3

432449107108. 4

Question Number : 53 Question Id : 43244927180 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Consider the following in the context of variations in magnetic declination :

A. Secular

B. Diurnal

C. Annual

D. Regular

Choose the **correct** answer from the options given below :

(1) A, B and C only

(2) A, B and D only

(3) B and C only

(4) C and D only

Options :

432449107109. 1

432449107110. 2

432449107111. 3

432449107112. 4

Question Number : 54 Question Id : 43244927181 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following assumptions are made in the force analysis of simple trusses ?

A. All members have same cross-sectional area.

B. The bending resistance of all the members is small in comparison with their axial force resistance.

C. All the external loads are applied directly or indirectly at the joints.

D. All joints are idealized to be frictionless hinges.

Choose the **correct** answer from the options given below :

(1) A, B and D only

(2) B, C and D only

(3) A, B and C only

(4) C and D only

Options :

432449107113. 1

432449107114. 2

432449107115. 3

432449107116. 4

Question Number : 55 Question Id : 43244927182 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Consider the following modes regarding the failure of an axially loaded column :

A. Local buckling

B. Squashing

C. Joint buckling

Choose the **correct** answer from the options given below :

(1) B and C only

(2) A and B only

(3) A and C only

(4) A, B and C

Options :

432449107117. 1

432449107118. 2

432449107119. 3

432449107120. 4

Question Number : 56 Question Id : 43244927183 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Length of plastic hinge of a beam depends on :

A. Span of the beam

B. Type of loading

C. Shape of cross-section

D. Yield strength of steel

Choose the **correct** answer from the options given below :

(1) A and B only

(2) A, B and C only

(3) B and C only

(4) A and D only

Options :

432449107121. 1

432449107122. 2

432449107123. 3

432449107124. 4

Question Number : 57 Question Id : 43244927184 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Following are the statements for a square matrix A :

A. If A is invertible then $\det(A) \neq 0$

B. If $\det(A) = 0$, A has no inverse

C. All eigen values of A are always positive

D. A^TA is always invertible if A is invertible

Choose the **correct** answer from the options given below :

(1) A, B and C only

(2) A and B only

(3) A, B and D only

(4) A, B, C and D

Options :

432449107125. 1

432449107126. 2

432449107127. 3

432449107128. 4

Question Number : 58 Question Id : 43244927185 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The design strength of a tension member is governed by :

A. Rupture at a critical section

B. Yielding of gross area

C. Block shear of end region

Choose the **correct** answer from the options given below :

(1) A and B only

(2) B only

(3) C and A only

(4) A, B and C

Options :

432449107129. 1

432449107130. 2

432449107131. 3

432449107132. 4

Question Number : 59 Question Id : 43244927186 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Nominal cover to reinforcement is provided to :

A. Protect reinforcement against corrosion.

B. Provide shear resistance.

C. Protect reinforcement against fire.

D. Develop sufficient bond strength along surface area of reinforcement bars.

Choose the **correct** answer from the options given below :

(1) A and D only

(2) B, C and D only

(3) A, C and D only

(4) A, B and C only

Options :

432449107133. 1

432449107134. 2

432449107135. 3

432449107136. 4

Question Number : 60 Question Id : 43244927187 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

When flow is critical through open channel :

A. The specific energy is minimum for a given discharge.

B. The discharge is maximum for a given specific energy.

C. The specific force is minimum for a given discharge.

D. Froude number of the flow is equal to unity.

Choose the **correct** answer from the options given below :

(1) A, B and C only

(2) A, B and D only

(3) A, B, C and D

(4) B, C and D only

Options :

432449107137. 1

432449107138. 2

432449107139. 3

432449107140. 4

Question Number : 61 Question Id : 43244927188 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Consider the following statements :

A. The quality of waste water is determined on the basis of dissolved oxygen.

B. The BOD test is based on dissolved oxygen.

C. Determination of dissolved oxygen also helps in controlling corrosion.

Choose the **correct** answer from the options given below :

(1) A, B and C

(2) A and B only

(3) A and C only

(4) B and C only

Options :

432449107141. 1

432449107142. 2

432449107143. 3

432449107144. 4

Question Number : 62 Question Id : 43244927189 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The coefficient of permeability depends upon :

A. Void ratio of the soil

B. Duration of flow

C. Equivalent diameter of the soil grains

Choose the **correct** answer from the options given below :

(1) B and C only

(2) A and B only

(3) B only

(4) A and C only

Options :

432449107145. 1

432449107146. 2

432449107147. 3

432449107148. 4

Question Number : 63 Question Id : 43244927190 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The strength of concrete depends on :

A. Type of mortar

B. Proportion between coarse and fine aggregates

C. Water-Cement ratio

D. Temperature at the time of mixing

Choose the **correct** answer from the options given below :

(1) B and C only

(2) C only

(3) A and B only

(4) B and D only

Options :

432449107149. 1

432449107150. 2

432449107151. 3

432449107152. 4

Question Number : 64 Question Id : 43244927191 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following operations in **correct** order for treating raw surface water to make it suitable for drinking purpose :

A. Screening

B. Filtration

C. Sedimentation

D. Disinfection

Choose the **correct** answer from the options given below :

(1) A, D, C, B

(2) A, B, C, D

(3) A, C, D, B

(4) A, C, B, D

Options :

432449107153. 1

432449107154. 2

432449107155. 3

432449107156. 4

Question Number : 65 Question Id : 43244927192 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following sludge treatment unit operations and processes in chronological order :

A. Conditioning

B. Dewatering

C. Concentration

D. Digestion

E. Incineration

Choose the **correct** answer from the options given below :

(1) C, B, A, D, E

(2) A, D, C, B, E

(3) C, D, A, B, E

(4) A, B, C, D, E

Options :

432449107157. 1

432449107158. 2

432449107159. 3

432449107160. 4

Question Number : 66 Question Id : 43244927193 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following design steps for the design of channel section on the basis of Lacey's Theory in the **correct** sequence :

A. Finding out the perimeter

B. Finding out the velocity

C. Calculation of the silt factor

D. Finding out the area

Choose the **correct** answer from the options given below :

(1) D, A, C, B

(2) C, B, D, A

(3) D, B, C, A

(4) C, A, D, B

Options :

432449107161. 1

432449107162. 2

432449107163. 3

432449107164. 4

Question Number : 67 Question Id : 43244927194 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following steps for applying the critical path method in the **correct** sequence :

A. Identification of all activities that the project require.

B. Network Diagram Construction

C. Critical Path Determination

D. Activity Duration Estimation

Choose the **correct** answer from the options given below :

(1) A, D, B, C

(2) A, B, D, C

(3) D, A, B, C

(4) B, A, D, C

Options :

432449107165. 1

432449107166. 2

432449107167. 3

432449107168. 4

Question Number : 68 Question Id : 43244927195 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following checks in the **correct** order during R.C beam design :

A. Deflection check

B. Flexural strength design

C. Crack width control

D. Shear strength check

Choose the **correct** answer from the options given below :

(1) B, A, D, C

(2) B, D, A, C

(3) D, B, A, C

(4) B, C, D, A

Options :

432449107169. 1

432449107170. 2

432449107171. 3

432449107172. 4

Question Number : 69 Question Id : 43244927196 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following building materials in the increasing order of density of materials :

A. Granite

B. River sand

C. Water

D. Steel

Choose the **correct** answer from the options given below :

(1) B < A < D < C

(2) C < B < A < D

(3) C < B < D < A

(4) C < D < B < A

Options :

432449107173. 1

432449107174. 2

432449107175. 3

432449107176. 4

Question Number : 70 Question Id : 43244927197 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following temporary adjustment of the theodolite in the **correct** sequence :

A. Centering

B. Elimination of parallax

C. Levelling

D. Setting

Choose the **correct** answer from the options given below :

(1) A, B, C, D

(2) A, D, B, C

(3) D, A, C, B

(4) D, C, B, A

Options :

432449107177. 1

432449107178. 2

432449107179. 3

432449107180. 4

Question Number : 71 Question Id : 43244927198 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No

Option Orientation : Vertical

Arrange the following components of a typical flexible pavement from bottom to top in **correct** sequence :

A. Prepared soil subgrade

B. Granular subbase cum drainage layer

C. Granular base course

D. Surface course

Choose the **correct** answer from the options given below :

(1) A, C, B, D

(2) A, B, C, D

(3) B, A, C, D

(4) C, D, A, B

Options :

432449107181. 1

432449107182. 2

432449107183. 3

432449107184. 4

Question Number : 72 Question Id : 43244927199 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following parts of a canal system in the **correct** sequence :

A. Head works

B. Distributary

C. Branch canal

D. Minor

E. Main canal

Choose the **correct** answer from the options given below :

(1) A, B, C, D, E

(2) A, E, C, B, D

(3) A, E, C, D, B

(4) A, C, E, B, D

Options :

432449107185. 1

432449107186. 2

432449107187. 3

432449107188. 4

Question Number : 73 Question Id : 43244927200 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following stages of engineering surveys to be done for a new highway alignment project in the **correct** sequence :

A. Reconnaissance

B. Map study

C. Preliminary survey

D. Final location

E. Detailed survey

Choose the **correct** answer from the options given below :

(1) A, B, C, D, E

(2) C, B, A, D, E

(3) B, A, C, D, E

(4) B, C, A, D, E

Options :

432449107189. 1

432449107190. 2

432449107191. 3

432449107192. 4

Question Number : 74 Question Id : 43244927201 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following flow types in increasing order of specific energy :

A. Sub critical flow

B. Critical flow

C. Supercritical flow

Choose the **correct** answer from the options given below :

(1) C < B < A

(2) A < B < C

(3) B < A < C

(4) A < C < B

Options :

432449107193. 1

432449107194. 2

432449107195. 3

432449107196. 4

Question Number : 75 Question Id : 43244927202 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following steps in sequential order for obtaining a unit hydrograph :

A. Separation of base flow

B. Estimating the surface runoff in volume

C. Estimating the surface runoff in depth

D. Dividing surface runoff ordinates by depth of runoff

Choose the **correct** answer from the options given below :

(1) D, C, B, A

(2) A, B, C, D

(3) D, B, C, A

(4) A, C, B, D

Options :

432449107197. 1

432449107198. 2

432449107199. 3

432449107200. 4