Junior Engineer Civil Mechanical and Electrical Examination 2023 Paper II

Roll Number	
Candidate Name	
Venue Name	
Exam Date	04/12/2023
Exam Time	9:00 AM - 11:00 AM
Subject	Junior Engineer 2023 Paper II Civil

Section : **General Engineering Civil And Structural**

Q.1 Calculate the annual depreciation of a property, whose original cost is ₹30,00,000. Consider its scrape value as ₹3,00,000 after 30 years. Use the straight-line method.

Ans

✗ 1. ₹93,000

✓ 2. ₹90,000

✗ 3. ₹87,000

✗ 4. ₹82,000

Question ID : **264330184869**
Option 1 ID : **264330724179**
Option 2 ID : **264330724178**
Option 3 ID : **264330724177**
Option 4 ID : **264330724176**
Status : **Answered**
Chosen Option : **2**

Q.2 Determine the volume of coarse aggregate (in m^3 units), volume of fine aggregate (in m^3 units) and cement (in kg units), respectively, for preparing 1 m^3 of 1 : 2 : 4 (by volume) of concrete. (Assume 1 m^3 of freshly mixed concrete corresponds to 1.54 m^3 dry volume of concrete. Take 1 m^3 of cement is equal to 1500 kg by weight.)

Ans

✗ 1. 1.32 m^3; 0.61 m^3; 412.5 kg

✗ 2. 0.96 m^3; 0.48 m^3; 247.5 kg

✗ 3. 0.44 m^3; 0.22 m^3; 165 kg

✓ 4. 0.88 m^3; 0.44 m^3; 330 kg

Question ID : **264330185060**
Option 1 ID : **264330724942**
Option 2 ID : **264330724943**
Option 3 ID : **264330724941**
Option 4 ID : **264330724940**
Status : **Answered**
Chosen Option : **4**

Q.3 Study the given estimates for the construction of a proposed hospital building and identify the estimate that does NOT belong to the category of preliminary estimates.

Ans

✗ 1. Estimate on the basis rate per unit length of wall and length of walls of hospital

✗ 2. Estimate on the basis of rate per bed, and number of beds in the hospital

✗ 3. Estimate on the basis of the plinth area unit rate and plinth area of hospital

✓ 4. Estimate on the basis of each item of the work in the building and their respective unit rates

Question ID : **264330185014**
Option 1 ID : **264330724758**
Option 2 ID : **264330724756**
Option 3 ID : **264330724757**
Option 4 ID : **264330724759**
Status : **Answered**
Chosen Option : **1**

Q.4 Study the given statements P and Q, based on the plasticity index of soils and select the most appropriate option with respect to the correctness of the statements.

P. The plasticity index of a soil is a measure of the amount of clay in the soil.

Q. When silt is added to clay, the plasticity index of the resulting soil increases.

Ans

✗ 1. Neither P nor Q

✗ 2. Q only

✗ 3. Both P and Q

✓ 4. P only

Question ID : **264330185033**
Option 1 ID : **264330724835**
Option 2 ID : **264330724833**
Option 3 ID : **264330724834**
Option 4 ID : **264330724832**
Status : **Answered**
Chosen Option : **4**

Q.5 In the design of a two-way slab, the flexural reinforcement required in a shorter span is found to be 200 mm^2/m. Calculate the required spacing if steel bars of diameter 8 mm are to be used. Ignore the spacing of reinforcement based on other criteria's and calculate only based on the given information.

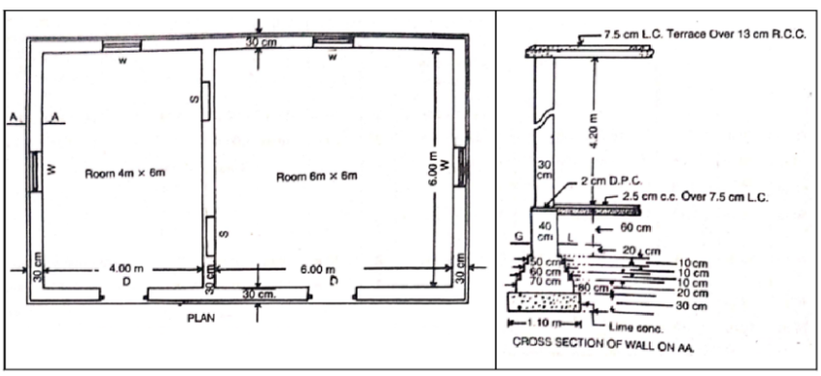
Ans

1. ✗ 267.23 mm
2. ✗ 236.87 mm
3. ✗ 194.65 mm
4. ✓ 251.32 mm

Question ID : **264330184922**
Option 1 ID : **264330724391**
Option 2 ID : **264330724388**
Option 3 ID : **264330724390**
Option 4 ID : **264330724389**
Status : **Not Answered**
Chosen Option : **--**

Q.6 A two-roomed building is shown in the figure. Calculate the quantity of lime concrete foundation (PCC).

The width of PCC 1.1 m is mentioned in figure.



Ans

1. ✗ 9.56 m^3
2. ✗ 14.66 m^3
3. ✗ 10.53 m^3
4. ✓ 12.87 m^3

Question ID : **264330184944**
Option 1 ID : **264330724476**
Option 2 ID : **264330724479**
Option 3 ID : **264330724477**
Option 4 ID : **264330724478**
Status : **Answered**
Chosen Option : **4**

Q.7 Consider the below statements with respect to asbestos and identify the correct option.

Statement A: When asbestos is heated below 550°C, asbestos loses its elasticity and strength and becomes brittle but restores its properties on cooling.

Statement B: Asbestos molecules are strongly bound together only in one direction, whereas the lateral bond with adjacent molecules is quite weak.

Ans

✔ 1. Statement B is correct, and statement A is incorrect.

✗ 2. Both statements are correct.

✗ 3. Both statements are incorrect.

✗ 4. Statement A is correct, and statement B is incorrect.

Question ID : **264330184933**
Option 1 ID : **264330724433**
Option 2 ID : **264330724434**
Option 3 ID : **264330724435**
Option 4 ID : **264330724432**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.8 Calculate the limiting moment of resistance in accordance with the limit state design of a singly reinforced rectangular beam whose width is 200 mm and effective depth is 400 mm. Consider that the grade of steel is Fe415 and that of concrete is M20.

Ans

✗ 1. 75.96 kN-m

✗ 2. 69.98 kN-m

✗ 3. 96.52 kN-m

✔ 4. 88.30 kN-m

Question ID : **264330184923**
Option 1 ID : **264330724393**
Option 2 ID : **264330724392**
Option 3 ID : **264330724395**
Option 4 ID : **264330724394**
Status : **Answered**
Chosen Option : **4**

Q.9 Study the given statements (S1, and S2) pertaining to the permeability of soils and select the most appropriate option with respect to the correctness of the statements.

S1 : Coefficient of permeability of a soil is directly proportional to the square of the particle size.

S2 : Permeability of a partially saturated soil is greater than that of a fully saturated soil.

Ans

✔ 1. S1 is true and S2 is false

✗ 2. S1 is false and S2 is true

✗ 3. Both S1 and S2 are true

✗ 4. Both S1 and S2 are false

Question ID : **264330185029**
Option 1 ID : **264330724817**
Option 2 ID : **264330724818**
Option 3 ID : **264330724816**
Option 4 ID : **264330724819**
Status : **Answered**
Chosen Option : **1**

Q.10 A residential building fetches a monthly gross rent of ₹12,000. The annual outgoings in the form of taxes and other contingencies is ₹12,000. The cost of land comes to ₹6,00,000. Estimate the total value of property (in ₹) on a yearly basis. Assume the rate of interest as 6% per annum.

Ans

✗ 1. 22,00,380

✗ 2. 29,88,000

✔ 3. 28,00,440

✗ 4. 7,32,550

Question ID : **264330185019**
Option 1 ID : **264330724776**
Option 2 ID : **264330724779**
Option 3 ID : **264330724777**
Option 4 ID : **264330724778**
Status : **Answered**
Chosen Option : **3**

Q.11 Identify the type of weld made between two plates shown in the figure below.

Ans

✗ 1. Continuous fillet weld

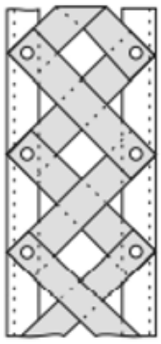
✔ 2. Groove weld

✗ 3. Flat fillet weld

✗ 4. Lap weld

Question ID : **264330184927**
Option 1 ID : **264330724409**
Option 2 ID : **264330724408**
Option 3 ID : **264330724410**
Option 4 ID : **264330724411**
Status : **Answered**
Chosen Option : **2**

Q.12 Identify the type of lacing/batten system shown in the figure below.



Ans

✗ 1. Single flat batten intersecting

✗ 2. Double flat batten intersecting

✓ 3. Double flat lacing intersecting

✗ 4. Single flat lacing intersecting

Question ID : **264330184926**
Option 1 ID : **264330724407**
Option 2 ID : **264330724406**
Option 3 ID : **264330724404**
Option 4 ID : **264330724405**
Status : **Answered**
Chosen Option : **3**

Q.13 Study the given statements (S1, S2) about centrifugal pumps and select the most appropriate option with respect to the correctness of the statements.

S1 : The operation of pumps connected in series (more than one impeller in the same shaft) increase the flow rate.

S2 : The operation pumps connected in parallel allow the head to increase.

Ans

✗ 1. S1 is true and S2 is false

✗ 2. S1 is false and S2 is true

✗ 3. Both S1 and S2 are true

✓ 4. Both S1 and S2 are false

Question ID : **264330185036**
Option 1 ID : **264330724845**
Option 2 ID : **264330724846**
Option 3 ID : **264330724844**
Option 4 ID : **264330724847**
Status : **Answered**
Chosen Option : **4**

Q.14 A column with length 'b' and breadth 'd' is subjected to an eccentric point load 'P' (eccentric in the direction of breadth) with an eccentricity 'e'. Calculate the bending stress developed.

Ans

✗ 1. $12\ Pe/bd^3$

✓ 2. $6\ Pe/bd^2$

✗ 3. $3\ Pe/bd^2$

✗ 4. $24\ Pe/bd^2$

Question ID : **264330184912**
Option 1 ID : **264330724349**
Option 2 ID : **264330724348**
Option 3 ID : **264330724351**
Option 4 ID : **264330724350**
Status : **Answered**
Chosen Option : **2**

Q.15 The unit of measurement used for estimating the quantity of expansion joint is _____.

Ans

✓ 1. running metre

✗ 2. quintal

✗ 3. cubic metres

✗ 4. square metres

Question ID : **264330184864**
Option 1 ID : **264330724156**
Option 2 ID : **264330724158**
Option 3 ID : **264330724159**
Option 4 ID : **264330724157**
Status : **Answered**
Chosen Option : **1**

Q.16 Which of the following minor losses in pipe flow is taken as $\frac{V^2}{2g}$?

(Consider that 'v' is velocity of the liquid in the pipe and 'g' is acceleration due to gravity.)

Ans

✓ 1. Loss of head at the exit of the pipe

✗ 2. Loss of head at the entrance of the pipe with a sharp-cornered entrance

✗ 3. Loss of head due to obstruction in the pipe

✗ 4. Loss of head due to friction

Question ID : **264330184887**
Option 1 ID : **264330724248**
Option 2 ID : **264330724249**
Option 3 ID : **264330724251**
Option 4 ID : **264330724250**
Status : **Answered**
Chosen Option : **1**

Q.17 As per IS 10262:2019, what is the approximate amount of entrapped air to be expected in normal (non-air-entrained) concrete when 10 mm nominal maximum size of aggregate is used in making concrete?

Ans

✔ 1. 1.5
✗ 2. 0.5
✗ 3. 2.0
✗ 4. 0.8

Question ID : **264330184995**
Option 1 ID : **264330724681**
Option 2 ID : **264330724682**
Option 3 ID : **264330724683**
Option 4 ID : **264330724680**
Status : **Answered**
Chosen Option : **2**

Q.18 Read the given statements (S1, S2) pertaining to structural plywood as per IS : 10701 -2012 and select the most appropriate option with respect to the correctness of the statements.

S1 : The moisture content of finished plywood boards shall be in the range 5% to 15%.

S2 : The tensile strength and compressive strength across the grain shall be greater than that along the grain.

Ans

✗ 1. S1 is false and S2 is true
✔ 2. S1 is true and S2 is false
✗ 3. Both S1 and S2 are true
✗ 4. Both S1 and S2 are false

Question ID : **264330185006**
Option 1 ID : **264330724726**
Option 2 ID : **264330724725**
Option 3 ID : **264330724724**
Option 4 ID : **264330724727**
Status : **Answered**
Chosen Option : **2**

Q.19 The maximum water content at which reduction in the water content will NOT cause a decrease in the volume of soil mass is known as _____ of soil sample.

Ans

✔ 1. shrinkage limit
✗ 2. liquidity index
✗ 3. liquid limit
✗ 4. plastic limit

Question ID : **264330184881**
Option 1 ID : **264330724226**
Option 2 ID : **264330724227**
Option 3 ID : **264330724225**
Option 4 ID : **264330724224**
Status : **Answered**
Chosen Option : **1**

Q.20 Consider the following statements with respect to the maximum thickness of particle boards and identify the correct option.

Statement A: As per IS 3129: 1985, the maximum thickness of low-density particle boards shall be 50 mm.

Statement B: As per IS 3129: 1985, the maximum thickness of insulation particle boards shall be 40 mm.

Ans

✔ 1. Statement A is correct, but statement B is incorrect.

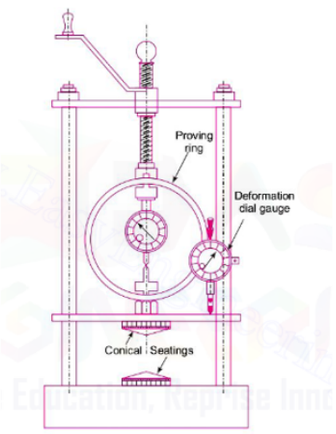
✘ 2. Both the statements are incorrect.

✘ 3. Both the statements are correct.

✘ 4. Statement B is correct, but statement A is incorrect.

Question ID : **264330184863**
Option 1 ID : **264330724152**
Option 2 ID : **264330724155**
Option 3 ID : **264330724154**
Option 4 ID : **264330724153**
Status : **Not Answered**
Chosen Option : **--**

Q.21 Identify the instrument shown in the figure below, which is used for finding the shear strength of soil.



Ans

✘ 1. Direct shear test apparatus

✔ 2. Unconfined compression test apparatus

✘ 3. Vane shear test apparatus

✘ 4. Tri-axial shear test apparatus

Question ID : **264330184884**
Option 1 ID : **264330724237**
Option 2 ID : **264330724239**
Option 3 ID : **264330724238**
Option 4 ID : **264330724236**
Status : **Answered**
Chosen Option : **4**

Q.22 Select the option that is correct regarding the following two statements, labelled as Assertion (A) and Reason (R), with respect to permeability of soil.

Assertion (A): Permeability of soil continues to decrease with the increase in dry density of compacted soil.

Reason (R): Soil and water are compressible in nature.

Ans

✔ 1. A is true, but R is false.

✗ 2. Both A and R are true, but R is not the correct explanation of A.

✗ 3. A is false, but R is true.

✗ 4. Both A and R are true and R is the correct explanation of A.

Question ID : **264330184880**
Option 1 ID : **264330724222**
Option 2 ID : **264330724221**
Option 3 ID : **264330724223**
Option 4 ID : **264330724220**
Status : **Answered**
Chosen Option : **2**

Q.23 Match the following with respect to IS specifications on drinking water quality as per IS 10500-2012.

Characteristics	Acceptable limit
1. Calcium	a. 250 mg/l
2. Chloride	b. 75 mg/l
3. Fluoride	c. 0.2 mg/l
4. Free residual chlorine	d. 1.0 mg/l

Ans

✗ 1. 1-d, 2-a, 3-b, 4-c

✗ 2. 1-b, 2-d, 3-a, 4-c

✗ 3. 1-a, 2-b, 3-d, 4-c

✔ 4. 1-b, 2-a, 3-d, 4-c

Question ID : **264330184983**
Option 1 ID : **264330724635**
Option 2 ID : **264330724634**
Option 3 ID : **264330724632**
Option 4 ID : **264330724633**
Status : **Answered**
Chosen Option : **4**

Q.24 Consider the following statements P and Q, based on the testing of natural building stones, following the IS codes and select the correct option.

P. The shear strength of the test piece of natural building stone tested using Johnson shear tool is estimated as, $S = \frac{W}{2A}$ where W is the total maximum load indicated by testing machine and A is the centre cross-section area of test piece.

Q. For testing the durability of stone as per IS 1126 – 1974, the durability value of the stone shall be expressed in percentage as change in the volume of specimen.

Ans

✗ 1. Q only

✗ 2. Both P and Q

✗ 3. Neither P nor Q

✓ 4. P only

Question ID : **264330185010**
Option 1 ID : **264330724741**
Option 2 ID : **264330724742**
Option 3 ID : **264330724743**
Option 4 ID : **264330724740**
Status : **Not Answered**
Chosen Option : **--**

Q.25 The following bearings were taken in a closed compass traverse.

Line	Fore bearing	Back bearing
AB	80° 10'	259° 0'
BC	120° 20'	301° 50'
CD	170° 50'	350° 50'
DE	230° 10'	49° 30'
EA	310° 20'	130° 15'

Calculate the corrected fore bearing of line 'DE' by assuming that the observed bearing of line 'CD' is correct.

Ans

✗ 1. 230° 15'

✗ 2. 229° 55'

✓ 3. 230° 5'

✗ 4. 230° 10'

Question ID : **264330184949**
Option 1 ID : **264330724497**
Option 2 ID : **264330724499**
Option 3 ID : **264330724496**
Option 4 ID : **264330724498**
Status : **Answered**
Chosen Option : **2**

Q.26 Identify the correctly matched pair(s) from the following based on the type of cut-back bitumen and fluxing agents used.

1. Rapid curing (RC) cut-backs : Kerosene
2. Medium curing (MC) cut-backs : Naptha or gasoline
3. Slow curing (SC) cut-backs : light oils

Ans

✔ 1. Only 3

✘ 2. Only 1 and 2

✘ 3. Only 1

✘ 4. Only 1 and 3

Question ID : **264330184936**
Option 1 ID : **264330724447**
Option 2 ID : **264330724444**
Option 3 ID : **264330724446**
Option 4 ID : **264330724445**
Status : **Answered**
Chosen Option : **1**

Q.27 Match the following with respect to types of precipitation.

1. Sleet	a. It is ice coating formation when rain or drizzle comes in contact with cold object on the ground
2. Glaze	b. It is a showery precipitation in the form of irregular pellets or lumps of ice of size more than 8 mm.
3. Hail	c. They are frozen raindrops of transparent grains that are formed when rain falls through air at a sub-freezing temperature.

Ans

✘ 1. 1 – a, 2 – c, 3 – b

✘ 2. 1 – c, 2 – b, 3 – a

✔ 3. 1 – c, 2 – a, 3 – b

✘ 4. 1 – b, 2 – a, 3 – c

Question ID : **264330184893**
Option 1 ID : **264330724274**
Option 2 ID : **264330724275**
Option 3 ID : **264330724272**
Option 4 ID : **264330724273**
Status : **Answered**
Chosen Option : **3**

Q.28 Match the items under List 1 (Type of canals) with those under List 2 (Details pertaining to different types of canals).

List 1	List 2
P. Ridge Canal	1. Aligned roughly at right angles to the contour of area, neither on a watershed nor valley, does not intercept any cross-drainage.
Q. Contour canal	2. Draw supplies from a river when there is high stage in river, not provided with head works for diversion of river water to canal.
R. Side slope canal	3. Aligned along a watershed, can command areas on both banks of canal.
S. Inundation canal	4. Aligned nearly parallel to the contours of the area, irrigation possible on one side of the canal only.

Ans

✗ 1. P – 3, Q – 1, R – 2, S – 4

✗ 2. P – 1, Q – 3, R – 4, S – 2

✗ 3. P – 2, Q – 4, R – 3, S – 1

✓ 4. P – 3, Q – 4, R – 1, S – 2

Question ID : **264330185045**
Option 1 ID : **264330724883**
Option 2 ID : **264330724880**
Option 3 ID : **264330724881**
Option 4 ID : **264330724882**
Status : **Answered**
Chosen Option : **4**

Q.29 Which of the following is NOT the effect of noise?

Ans

✗ 1. High blood pressure

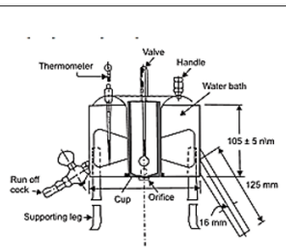
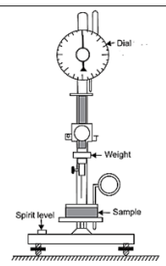
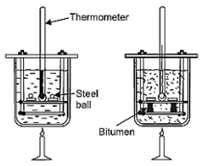
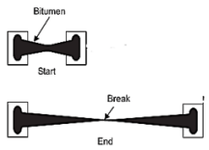
✓ 2. Fluorosis

✗ 3. Hearing loss

✗ 4. Sleeplessness

Question ID : **264330184986**
Option 1 ID : **264330724646**
Option 2 ID : **264330724647**
Option 3 ID : **264330724644**
Option 4 ID : **264330724645**
Status : **Answered**
Chosen Option : **2**

Q.30 Identify the correct pairs from the following with respect to the tests used to find the desirable properties of bitumen.

Tests on Bitumen	Test Setup (Full or Partial)	Tests on Bitumen	Test Setup (Full or Partial)
1. Viscosity Test		3. Penetration test	
2.Softening point test		4. Ductility test	

Ans

✗ 1. Only 1, 3 and 4

✗ 2. Only 2, 3 and 4

✓ 3. All of 1, 2, 3 and 4

✗ 4. Only 1, 2 and 4

Question ID : **264330184859**
Option 1 ID : **264330724137**
Option 2 ID : **264330724136**
Option 3 ID : **264330724139**
Option 4 ID : **264330724138**
Status : **Answered**
Chosen Option : **2**

Q.31 Consider the below statements with respect to cement concrete and identify the correct statement(s).

i. Size and shape of aggregates used in making concrete influence the workability of concrete.

ii. As the water cement ratio in making concrete increases, the strength of concrete increases.

iii. Maturity of concrete is independent of temperature at which it is cured.

Ans

✗ 1. i and ii

✗ 2. Only ii

✗ 3. i and iii

✓ 4. Only i

Question ID : **264330184992**
Option 1 ID : **264330724669**
Option 2 ID : **264330724671**
Option 3 ID : **264330724668**
Option 4 ID : **264330724670**
Status : **Answered**
Chosen Option : **4**

Q.32 Select the option that is correct regarding the following two statements, labelled as Assertion (A) and Reason (R).

Assertion (A): Copper sulphate should not be used for control of aquatic weeds, except for the algae.

Reason (R): The concentration of copper sulphate required to destroy the vegetation will assuredly kill any fish present in water.

Ans

✗ 1. A is true, but R is false.

✗ 2. Both A and R are true, but R is not the correct explanation of A.

✗ 3. A is false, but R is true.

✓ 4. Both A and R are true and R is the correct explanation of A.

Question ID : **264330184906**
Option 1 ID : **264330724326**
Option 2 ID : **264330724325**
Option 3 ID : **264330724327**
Option 4 ID : **264330724324**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.33 A crop having a base period of 120 days requires the following depth of water application in the planting stage, vegetation stage, flowering stage, and maturity stage as 20 cm, 32 cm, 25 cm and 13 cm, respectively. Estimate the duty of irrigation water in ha/cumec units.

Ans

✗ 1. 848

✗ 2. 648

✗ 3. 1346

✓ 4. 1152

Question ID : **264330185039**
Option 1 ID : **264330724859**
Option 2 ID : **264330724857**
Option 3 ID : **264330724858**
Option 4 ID : **264330724856**
Status : **Answered**
Chosen Option : **4**

Q.34 Identify the INCORRECT statement about prismoidal formula used to compute earthwork.

Ans

✗ 1.
Prismoidal formula is also known as Simpson's rule for volume.

✗ 2.
It is necessary to have an odd number of cross-sections to apply prismoidal formula.

✓ 3.
The ratio of volume calculated by end area formula and the prismoidal formula is called as the 'Prismoidal correction'.

✗ 4.
If there is an even number of cross sections, the end strip must be treated separately, and volume between the remaining sections may be calculated by prismoidal formula.

Question ID : **264330184954**
Option 1 ID : **264330724516**
Option 2 ID : **264330724517**
Option 3 ID : **264330724519**
Option 4 ID : **264330724518**
Status : **Answered**
Chosen Option : **1**

Q.35 In saturated soils, the initial consolidation is mainly due to _____.

Ans

✓ 1. compression of solid particles

✗ 2. expulsion of air in voids

✗ 3. compression of air in voids

✗ 4. compression of water molecules

Question ID : **264330184960**
Option 1 ID : **264330724540**
Option 2 ID : **264330724541**
Option 3 ID : **264330724543**
Option 4 ID : **264330724542**
Status : **Answered**
Chosen Option : **2**

Q.36 Consider the following statements with respect to proportioning of flanges in a plate girder and identify the correct option.

Statement A: When the moment-resisting capacity of a plate girder is to be increased, the flange cover plates may be provided over the flange angles.

Statement B: The flange plates shall be thicker than the flange angles in a riveted/bolted plate girder.

Ans

✗ 1. Both the statements are correct.

✓ 2. Statement A is correct, but statement B is incorrect.

✗ 3. Both the statements are incorrect.

✗ 4. Statement B is correct, but statement A is incorrect.

Question ID : **264330184928**
Option 1 ID : **264330724414**
Option 2 ID : **264330724412**
Option 3 ID : **264330724415**
Option 4 ID : **264330724413**
Status : **Answered**
Chosen Option : **2**

Q.37 Identify the correct pairs from the following with respect to the minimum road way width in a mountainous and steep terrain.

Road Type	Minimum Road Way Width
Single-lane major district roads	5.75 m
Single-lane other district roads	4.75 m
Single-lane village roads	4.00 m

Ans

✗ 1. Only 1 and 3

✓ 2. Only 2 and 3

✗ 3. 1, 2 and 3

✗ 4. Only 1 and 2

Question ID : **264330184902**
Option 1 ID : **264330724308**
Option 2 ID : **264330724310**
Option 3 ID : **264330724311**
Option 4 ID : **264330724309**
Status : **Not Answered**
Chosen Option : **--**

Q.38 A timber test specimen of size 50 × 50 mm in cross-section and 150 mm in length was tested for its specific gravity. If the specimen weighs 250 g and has 15% of moisture content, calculate its specific gravity by accounting the moisture content.

Ans

✗ 1. 0.667

✓ 2. 0.579

✗ 3. 0.596

✗ 4. 0.625

Question ID : **264330184932**
Option 1 ID : **264330724428**
Option 2 ID : **264330724429**
Option 3 ID : **264330724430**
Option 4 ID : **264330724431**
Status : **Answered**
Chosen Option : **1**

Q.39 Which of the following constant factors relates stress in the steel linearly with stress in adjoining concrete?

Ans

✗ 1. Shear modulus

✗ 2. Young's modulus

✗ 3. Poisson's ratio

✓ 4. Modular ratio

Question ID : **264330184999**
Option 1 ID : **264330724699**
Option 2 ID : **264330724696**
Option 3 ID : **264330724697**
Option 4 ID : **264330724698**
Status : **Answered**
Chosen Option : **2**

Q.40 If the amount of annuity begins at some future date after a number of years, it is known as _____.

Ans

✓ 1. deferred annuity

✗ 2. annuity due

✗ 3. annuity certain

✗ 4. perpetual annuity

Question ID : **264330185016**
Option 1 ID : **264330724764**
Option 2 ID : **264330724766**
Option 3 ID : **264330724767**
Option 4 ID : **264330724765**
Status : **Answered**
Chosen Option : **3**

Q.41 For a steady, ideal flow of an incompressible fluid, the total energy at any point of the fluid is constant. This is called _____.

Ans

✗ 1. the moment of the momentum equation

✗ 2. Euler's equation

✗ 3. the momentum equation

✓ 4. Bernoulli's equation

Question ID : **264330184889**
Option 1 ID : **264330724259**
Option 2 ID : **264330724256**
Option 3 ID : **264330724257**
Option 4 ID : **264330724258**
Status : **Answered**
Chosen Option : **4**

Q.42 Select the option that is true regarding the following two statements labelled Assertion (A) and Reason (R).

(A) : For horizontal curves, the centrifugal ratio increases along the length of the transition curve.

(R) : In a horizontal curve, the superelevation is provided at an increasing rate with zero at the start to the maximum value at the end of transition curve.

Ans

✗ 1. A is false, but R is true

✓ 2. Both A and R are true and R is the correct explanation of A

✗ 3. A is true, but R is false

✗ 4. Both A and R are true, but R is not the correct explanation of A

Question ID : **264330185046**
Option 1 ID : **264330724887**
Option 2 ID : **264330724884**
Option 3 ID : **264330724886**
Option 4 ID : **264330724885**
Status : **Answered**
Chosen Option : **2**

Q.43 The rainfall on five successive days on a catchment was 2, 6, 9, 5 and 3 (in cm units). If the ϕ-index for the storm is taken as 3 cm/day, the total direct runoff from the catchment will be:

Ans

✗ 1. 10 cm

✓ 2. 11 cm

✗ 3. 22 cm

✗ 4. 20 cm

Question ID : **264330185042**
Option 1 ID : **264330724868**
Option 2 ID : **264330724870**
Option 3 ID : **264330724871**
Option 4 ID : **264330724869**
Status : **Answered**
Chosen Option : **2**

Q.44 Textural classification of soil is based on:

Ans

✗ 1. consistency limits only

✗ 2. grain size and consistency limits

✗ 3. plasticity index

✓ 4. grain size only

Question ID : **264330185028**
Option 1 ID : **264330724812**
Option 2 ID : **264330724814**
Option 3 ID : **264330724813**
Option 4 ID : **264330724815**
Status : **Answered**
Chosen Option : **4**

Q.45 Match the items under List 1 (Members used for) with those under List 2 (Name of member).

List 1	List 2
P. Member supporting roof in a building	1. Tie
Q. Tension member in a roof truss	2. Boom
R. Compression member in a roof truss	3. Strut
S. Compression member in a crane	4. Joist

Ans

✗ 1. $P-4, Q-2, R-1, S-3$

✓ 2. $P-4, Q-1, R-3, S-2$

✗ 3. $P-1, Q-4, R-2, S-3$

✗ 4. $P-1, Q-2, R-3, S-4$

Question ID : **264330185067**
Option 1 ID : **264330724969**
Option 2 ID : **264330724971**
Option 3 ID : **264330724968**
Option 4 ID : **264330724970**
Status : **Answered**
Chosen Option : **2**

Q.46 Calculate the Reynolds number if the kinematic viscosity of water is 0.01×10^{-4} m^2/s, which is flowing through a pipe of diameter 200 mm with the velocity of 5 m/s.

Ans

✓ 1. 1×10^6

✗ 2. 1.6×10^6

✗ 3. 0.5×10^6

✗ 4. 2.2×10^6

Question ID : **264330184888**
Option 1 ID : **264330724252**
Option 2 ID : **264330724255**
Option 3 ID : **264330724253**
Option 4 ID : **264330724254**
Status : **Answered**
Chosen Option : **1**

Q.47 As per IS soil classification, if the coefficient of uniformity of a soil sample is greater than 6 and the coefficient of curvatures lies between 1 and 3, the soil is classified as _____.

Ans

✗ 1. SM

✓ 2. SW

✗ 3. GW

✗ 4. GC

Question ID : **264330184958**
Option 1 ID : **264330724535**
Option 2 ID : **264330724534**
Option 3 ID : **264330724532**
Option 4 ID : **264330724533**
Status : **Answered**
Chosen Option : **2**

Q.48 In case of slenderness limits, according to IS 456-2000, the ratio of unsupported length (l) to the least lateral dimension (d) of a column should not exceed a value of _____.

Ans

✗ 1. 30

✗ 2. 75

✓ 3. 60

✗ 4. 40

Question ID : **264330185001**
Option 1 ID : **264330724704**
Option 2 ID : **264330724707**
Option 3 ID : **264330724706**
Option 4 ID : **264330724705**
Status : **Answered**
Chosen Option : **3**

Q.49 Select the air pollutant that does NOT belong to the category of secondary air pollutants.

Ans

✗ 1. Photochemical smog

✗ 2. Ozone

✗ 3. PAN (Peroxyacetyl nitrate)

✓ 4. Halogens

Question ID : **264330185052**
Option 1 ID : **264330724908**
Option 2 ID : **264330724909**
Option 3 ID : **264330724911**
Option 4 ID : **264330724910**
Status : **Answered**
Chosen Option : **1**

Q.50 The minimum length of a tongue rail in case of a broad-gauge railway track is _____.

Ans

✗ 1. 4.22 m

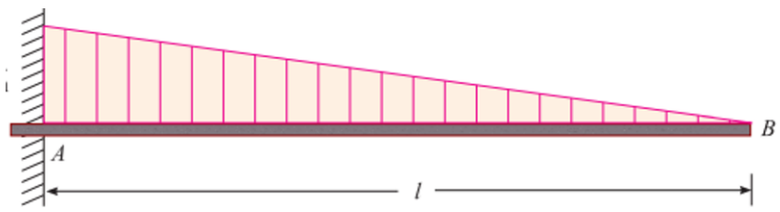
✗ 2. 4.34 m

✗ 3. 3.44 m

✓ 4. 3.66 m

Question ID : **264330184900**
Option 1 ID : **264330724302**
Option 2 ID : **264330724303**
Option 3 ID : **264330724300**
Option 4 ID : **264330724301**
Status : **Not Answered**
Chosen Option : **--**

Q.51 Calculate the slope at free end of a cantilever beam of length $l = 5$ m subjected to a uniformly varying load with intensity varying from 0 kN/m (at B) to 20 kN/m (at A) as shown in figure. Consider that the flexural rigidity (EI) of the beam as constant throughout its length.



Ans

✗ 1. $\frac{129.27}{EI}$

✗ 2. $\frac{64.64}{EI}$

✓ 3. $\frac{104.16}{EI}$

✗ 4. $\frac{88.58}{EI}$

Question ID : **264330184991**
Option 1 ID : **264330724667**
Option 2 ID : **264330724664**
Option 3 ID : **264330724666**
Option 4 ID : **264330724665**
Status : **Answered**
Chosen Option : **3**

Q.52 Identify the behaviour study of soils in which the zero air void unit weight is found.

Ans

✗ 1. Permeability test

✓ 2. Compaction test

✗ 3. Consolidation test

✗ 4. Shear strength test

Question ID : **264330185030**
Option 1 ID : **264330724823**
Option 2 ID : **264330724821**
Option 3 ID : **264330724820**
Option 4 ID : **264330724822**
Status : **Answered**
Chosen Option : **2**

Q.53 Calculate the combined correction, due to refraction and Earth's curvature, in levelling (surveying) for a distance of 2500 m.

Ans

✗ 1. 0.168 m

✗ 2. 0.070 m

✗ 3. 0.490 m

✓ 4. 0.420 m

Question ID : **264330184872**
Option 1 ID : **264330724188**
Option 2 ID : **264330724190**
Option 3 ID : **264330724191**
Option 4 ID : **264330724189**
Status : **Answered**
Chosen Option : **4**

Q.54 Select the option that is correct regarding the following two statements, labelled as Assertion (A) and Reason (R), with respect to characteristic features of contour lines.

Assertion (A): A single contour cannot split into two lines.

Reason (R): A knife-edge ridge or depression does not occur in nature.

Ans

✓ 1. Both A and R are true and R is the correct explanation of A.

✗ 2. A is false, but R is true.

✗ 3. Both A and R are true, but R is not the correct explanation of A.

✗ 4. A is true, but R is false.

Question ID : **264330184873**
Option 1 ID : **264330724192**
Option 2 ID : **264330724195**
Option 3 ID : **264330724193**
Option 4 ID : **264330724194**
Status : **Answered**
Chosen Option : **3**

Q.55 Identify the Dicken's formula used for the estimation of the peak rate of runoff Q_p (in cumec units), during a flood from a catchment area of A (in km^2 units). (C_D – Dicken's constant.)

Ans

✗ 1. $Q_p = C_D\ A^{3/5}$

✗ 2. $Q_p = C_D\ A^{2/3}$

✗ 3. $Q_p = C_D\ A^{1/2}$

✓ 4. $Q_p = C_D\ A^{3/4}$

Question ID : **264330185041**
Option 1 ID : **264330724866**
Option 2 ID : **264330724864**
Option 3 ID : **264330724867**
Option 4 ID : **264330724865**
Status : **Answered**
Chosen Option : **4**

Q.56 Identify the correctly matched pair(s) from the following based on the unit of measurement used for the estimation of different items of work.

1. Stone slab in roof: square metres

2. Cutting of trees: tonnes

3. Lime concrete in foundation: cubic metres

Ans

✗ 1. Only 1 and 2

✗ 2. 1, 2 and 3

✓ 3. Only 1 and 3

✗ 4. Only 2 and 3

Question ID : **264330184940**
Option 1 ID : **264330724460**
Option 2 ID : **264330724463**
Option 3 ID : **264330724461**
Option 4 ID : **264330724462**
Status : **Answered**
Chosen Option : **3**

Q.57 In case of volume batching followed for the manufacture of cement concrete, generally, the volume of one bag of cement is considered as _____.

Ans

✗ 1. 50 litres

✗ 2. 25 litres

✓ 3. 35 litres

✗ 4. 42 litres

Question ID : **264330184918**
Option 1 ID : **264330724375**
Option 2 ID : **264330724372**
Option 3 ID : **264330724373**
Option 4 ID : **264330724374**
Status : **Answered**
Chosen Option : **3**

Q.58 As per IS456: 2000, the deflection, including effects of temperature, creep and shrinkage occurring after erection of partitions and application of finishes of RC structures, should NOT normally exceed _____.

Ans

✗ 1. span/200 or 40 mm, whichever is less

✗ 2. span/350 or 40 mm, whichever is less

✓ 3. span/350 or 20 mm, whichever is less

✗ 4. span/250 or 20 mm, whichever is less

Question ID : **264330184921**
Option 1 ID : **264330724387**
Option 2 ID : **264330724386**
Option 3 ID : **264330724385**
Option 4 ID : **264330724384**
Status : **Answered**
Chosen Option : **3**

Q.59 Which of the following is a vehicle used in making paint?

Ans

✗ 1. Aluminium powder

✗ 2. Zinc white

✓ 3. Linseed oil

✗ 4. Antimony white

Question ID : **264330184938**
Option 1 ID : **264330724454**
Option 2 ID : **264330724452**
Option 3 ID : **264330724455**
Option 4 ID : **264330724453**
Status : **Answered**
Chosen Option : **3**

Q.60 Which of the following is an INCORRECT statement with respect to the characteristics and design factors of rigid and flexible pavements?

Ans

✗ 1.
Rigid pavements do not get deformed to the shape of the supporting layer below it.

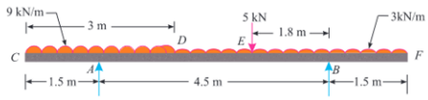
✓ 2.
The stresses in rigid pavements are analysed by using the plastic theory, assuming that the pavement is resting over a rigid surface.

✗ 3.
The flexible pavement layers may reflect non-recoverable as well as recoverable deformations of the lower layers, including the sub-grade onto the upper layers and also the pavement surface.

✗ 4.
The lower layers of flexible pavements face stresses of lesser magnitudes as compared to the pavement surface directly under the wheel load.

Question ID : **264330184903**
Option 1 ID : **264330724314**
Option 2 ID : **264330724315**
Option 3 ID : **264330724313**
Option 4 ID : **264330724312**
Status : **Answered**
Chosen Option : **3**

Q.61 An overhanging beam CADEBF is shown in the figure below. Calculate the sum of the bending moment values at A and B. Ignore the sign conventions.



Ans

✗ 1. 16.78 kN-m

✗ 2. 10.00 kN-m

✗ 3. 12.50 kN-m

✓ 4. 13.50 kN-m

Question ID : **264330184911**
Option 1 ID : **264330724346**
Option 2 ID : **264330724344**
Option 3 ID : **264330724347**
Option 4 ID : **264330724345**
Status : **Answered**
Chosen Option : **4**

Q.62 As per IS-456-2000, for ultimate limit states, the partial factor of safety assigned for concrete is _____.

Ans

✗ 1. 1.15

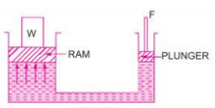
✓ 2. 1.5

✗ 3. 0.36

✗ 4. 0.87

Question ID : **264330184996**
Option 1 ID : **264330724685**
Option 2 ID : **264330724686**
Option 3 ID : **264330724684**
Option 4 ID : **264330724687**
Status : **Answered**
Chosen Option : **2**

Q.63 A hydraulic press has a ram of cross-section area 30 × 30 cm and a plunger of cross-section area 4 × 4 cm as shown in figure. Find the force 'F' required to lift the weight 'W' = 30 kN.



Ans

✗ 1. 481.22 N

✗ 2. 589.58 N

✗ 3. 232.88 N

✓ 4. 533.33 N

Question ID : **264330184964**
Option 1 ID : **264330724557**
Option 2 ID : **264330724559**
Option 3 ID : **264330724556**
Option 4 ID : **264330724558**
Status : **Answered**
Chosen Option : **4**

Q.64 Match the following.

1. Storm water inlets	a. Provided to admit the surface runoff to sewers
2. Catch basins	b. Provided at the head of sewers
3. Flushing manholes	c. Provided to stop the entry of heavy debris present in the storm water into sewers

Ans

✗ 1. 1 – a, 2 – b, 3 – c

✓ 2. 1 – a, 2 – c, 3 – b

✗ 3. 1 – c, 2 – a, 3 – b

✗ 4. 1 – c, 2 – b, 3 – a

Question ID : **264330184907**
Option 1 ID : **264330724330**
Option 2 ID : **264330724331**
Option 3 ID : **264330724328**
Option 4 ID : **264330724329**
Status : **Answered**
Chosen Option : **2**

Q.65 Match the angles under List 1 (whole circle bearings) with their corresponding values under List 2 (quadrantal bearings).

List 1	List 2
P. $144^0\ 30'$	1. S $54^0\ 30'$ E
Q. $215^0\ 30'$	2. N $35^0\ 30'$ W
R. $125^0\ 30'$	3. S $35^0\ 30'$ W
S. $324^0\ 30'$	4. S $35^0\ 30'$ E

Ans

✓ 1. P – 4, Q – 3, R – 1, S – 2

✗ 2. P – 4, Q – 3, R – 2, S – 1

✗ 3. P – 2, Q – 3, R – 2, S – 1

✗ 4. P – 3, Q – 2, R – 1, S – 4

Question ID : **264330185024**
Option 1 ID : **264330724799**
Option 2 ID : **264330724798**
Option 3 ID : **264330724796**
Option 4 ID : **264330724797**
Status : **Answered**
Chosen Option : **1**

Q.66 The actual length of a prismatic compression member is found to be 3 m. Calculate its effective length if one of its ends is restrained against both translation and rotation and the other end is restrained against rotation but free to translate.

Ans

✗ 1. 6 m

✗ 2. 2.8 m

✗ 3. 3.2 m

✓ 4. 3.6 m

Question ID : **264330185003**
Option 1 ID : **264330724715**
Option 2 ID : **264330724712**
Option 3 ID : **264330724714**
Option 4 ID : **264330724713**
Status : **Answered**
Chosen Option : **4**

Q.67 As per IS456: 2000, the pH value of water used for mixing and curing of cement concrete shall NOT be less than _____.

Ans

✗ 1. 7.5

✗ 2. 5

✓ 3. 6

✗ 4. 8.5

Question ID : **264330184917**
Option 1 ID : **264330724370**
Option 2 ID : **264330724368**
Option 3 ID : **264330724369**
Option 4 ID : **264330724371**
Status : **Answered**
Chosen Option : **3**

Q.68 Identify the correct statements from the following based on IS specifications (IS: 1130-1969) regarding the marble slabs and blocks supplied.

1. Marble slabs shall be supplied with a minimum thickness of 20 mm.

2. Marble blocks shall be supplied with a maximum thickness of 100 cm.

3. Marble blocks shall be supplied with a minimum length of 100 cm.

Ans

✓ 1. Only 1 and 2

✗ 2. 1, 2 and 3

✗ 3. Only 2 and 3

✗ 4. Only 1 and 3

Question ID : **264330184934**
Option 1 ID : **264330724436**
Option 2 ID : **264330724439**
Option 3 ID : **264330724438**
Option 4 ID : **264330724437**
Status : **Answered**
Chosen Option : **2**

Q.69 It is found that the weight of liquid is 15N which measures 6 litres. Calculate its specific weight.

Ans

✗ 1. $3200\ N/m^3$

✗ 2. $1500\ N/m^3$

✓ 3. $2500\ N/m^3$

✗ 4. $4000\ N/m^3$

Question ID : **264330184963**
Option 1 ID : **264330724554**
Option 2 ID : **264330724552**
Option 3 ID : **264330724553**
Option 4 ID : **264330724555**
Status : **Answered**
Chosen Option : **3**

Q.70 Match the fallowing with respect to imposed floor loads for different occupancies as specified in IS 875(part 2)-1987.

Occupancy classification	Uniformly distributed
1. Balconies of dwelling houses	a. 2 kN/m^2
2. All rooms and kitchens of dwelling houses	b. 4 kN/m^2
3. Dining rooms, cafeterias and restaurants in hotels, hostels and boarding houses	c. 2.5 kN/m^2
4. Office rooms in hotels, hostels and boarding houses	d. 3 kN/m^2

Ans

✓ 1. 1-d, 2-a, 3-b, 4-c

✗ 2. 1-c, 2-a, 3-b, 4-d

✗ 3. 1-d, 2-b, 3-a, 4-c

✗ 4. 1-a, 2-d, 3-b, 4-c

Question ID : **264330184998**
Option 1 ID : **264330724694**
Option 2 ID : **264330724693**
Option 3 ID : **264330724692**
Option 4 ID : **264330724695**
Status : **Answered**
Chosen Option : **4**

Q.71 Which of the following stones is classified as igneous rock?

Ans

✔ 1. Syenite

✘ 2. Limestone

✘ 3. Marble

✘ 4. Kankar

Question ID : **264330184860**
Option 1 ID : **264330724143**
Option 2 ID : **264330724140**
Option 3 ID : **264330724141**
Option 4 ID : **264330724142**
Status : **Answered**
Chosen Option : **1**

Q.72 The following statements (P, Q) are derived on the basis of precipitation values from the mass curve of rainfall of a self-recording rain gauge, given in the table. Identify the correct statement(s) and select the most appropriate option.

Time from start of rainfall (minutes)	0	15	30	45	60	75	90
Cumulative rainfall (mm)	0	6	15	15	30	35	45

P. The intensity of rainfall during the time interval (0 to 15) is more than the intensity of rainfall during the time interval (60 to 75).

Q. There is no rainfall during the time interval (30 to 45).

Ans

✘ 1. Q only

✔ 2. Both P and Q

✘ 3. P only

✘ 4. Neither P nor Q

Question ID : **264330185044**
Option 1 ID : **264330724877**
Option 2 ID : **264330724878**
Option 3 ID : **264330724876**
Option 4 ID : **264330724879**
Status : **Answered**
Chosen Option : **2**

Q.73 Consider the below statements with respect to hydraulic pumps and identify the correct option.

Assertion (A): Reciprocating pumps are used for lifting oils from deep wells, as it can build up very high pressure.

Reason (R): Discharge capacity of a reciprocating pump is much greater than that of a centrifugal pump.

Ans

✔ 1. A is true but R is false.

✗ 2. Both A and R are true, and R is the correct explanation of A.

✗ 3. A is false but R is true.

✗ 4. Both A and R are true, but R is not the correct explanation of A.

Question ID : **264330184971**
Option 1 ID : **264330724586**
Option 2 ID : **264330724584**
Option 3 ID : **264330724587**
Option 4 ID : **264330724585**
Status : **Answered**
Chosen Option : **1**

Q.74 Hirakud Dam is built across _____.

Ans

✗ 1. Kaveri River

✗ 2. Yamuna River

✗ 3. Krishna River

✔ 4. Mahanadi River

Question ID : **264330184978**
Option 1 ID : **264330724615**
Option 2 ID : **264330724614**
Option 3 ID : **264330724612**
Option 4 ID : **264330724613**
Status : **Answered**
Chosen Option : **4**

Q.75 Identify the correct pairs from the following with respect to the manufacturing techniques of different types of cement.

Type of Cement	Physical or chemical properties
1. Quick-setting cement	Use of reduced gypsum content as compared to that used in ordinary Portland cement.
2. Low heat cement	Use of reduced C_2S content as compared to that used in ordinary Portland cement.
3. Sulphate-resistant cement	Cement with C_3A content not more than 5%

Ans

✔ 1. Only 1 and 3

✗ 2. Only 1 and 2

✗ 3. Only 2 and 3

✗ 4. 1, 2 and 3

Question ID : **264330184916**
Option 1 ID : **264330724366**
Option 2 ID : **264330724365**
Option 3 ID : **264330724364**
Option 4 ID : **264330724367**
Status : **Answered**
Chosen Option : **1**

Q.76 A person constructed a warehouse at a cost of ₹4,00,000, excluding the cost of land. The warehouse will become obsolete after 10 years. Find the amount of sinking fund to be annually deposited at the rate of 5% compound interest. The scrap value of the warehouse is 10% of the cost of purchase.

Ans

✗ 1. ₹30,800

✔ 2. ₹28,571

✗ 3. ₹25,980

✗ 4. ₹32,502

Question ID : **264330184868**
Option 1 ID : **264330724172**
Option 2 ID : **264330724173**
Option 3 ID : **264330724174**
Option 4 ID : **264330724175**
Status : **Answered**
Chosen Option : **2**

Q.77 As specified in IS 2386 (Part IV): 1963, which of the following set of sieves are used to find the crushing value of coarse aggregates?

Ans

✗ 1. 6.3 mm, 10 mm, 12.5 mm

✓ 2. 2.36 mm, 10 mm, 12.5 mm

✗ 3. 10 mm, 12.5 mm, 20 mm

✗ 4. 2.36 mm, 6.3 mm, 12.5 mm

Question ID : **264330184854**
Option 1 ID : **264330724117**
Option 2 ID : **264330724116**
Option 3 ID : **264330724118**
Option 4 ID : **264330724119**
Status : **Answered**
Chosen Option : **2**

Q.78 Calculate the theoretical weight of a steel bar of length 8 m and diameter 20 mm. Take density of steel as 7850 kg/m^3.

Ans

✗ 1. 15.58 kg

✗ 2. 12.56 kg

✓ 3. 19.72 kg

✗ 4. 17.77 kg

Question ID : **264330184945**
Option 1 ID : **264330724480**
Option 2 ID : **264330724482**
Option 3 ID : **264330724481**
Option 4 ID : **264330724483**
Status : **Answered**
Chosen Option : **3**

Q.79 Which of the following types of canal is aligned roughly at right angles to the contours of the country?

Ans

✗ 1. Water shed canal

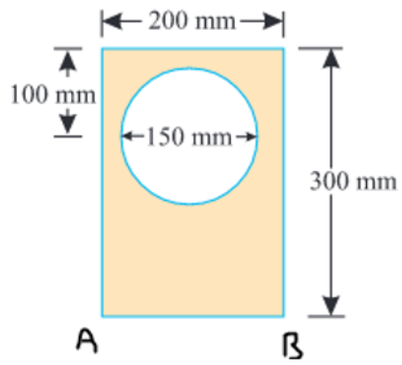
✗ 2. Contour canal

✓ 3. Side slope canal

✗ 4. Ridge canal

Question ID : **264330184975**
Option 1 ID : **264330724603**
Option 2 ID : **264330724600**
Option 3 ID : **264330724601**
Option 4 ID : **264330724602**
Status : **Answered**
Chosen Option : **3**

Q.80 Locate the centroid with respect to base AB of a rectangular section shown in the figure.
Consider that a part of the circular section with diameter 150 mm is removed.



Ans
✗ 1. 112.44 mm
✗ 2. 1.5.49 mm
✗ 3. 133.68 mm
✓ 4. 129.1 mm

Question ID : **264330184988**
Option 1 ID : **264330724652**
Option 2 ID : **264330724655**
Option 3 ID : **264330724654**
Option 4 ID : **264330724653**
Status : **Answered**
Chosen Option : **1**

Q.81 An offset is laid out 5° from its true direction on the field. If the scale of plotting is 20 m to 1 cm, find the maximum length of the offset so that the displacement of the point on the paper may not exceed 0.5 mm.

Ans
✗ 1. 5 m
✗ 2. 9.22 m
✓ 3. 11.47 m
✗ 4. 13.33 m

Question ID : **264330184947**
Option 1 ID : **264330724488**
Option 2 ID : **264330724489**
Option 3 ID : **264330724490**
Option 4 ID : **264330724491**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.82 A simple circular curve of radius 600 m is to be set out on field. Calculate the value of versed sine for the curve if the deflection angle (Δ) = 120°.

Ans

✗ 1. 333.33 m

✓ 2. 300 m

✗ 3. 453.33 m

✗ 4. 120 m

Question ID : **264330184955**
Option 1 ID : **264330724523**
Option 2 ID : **264330724522**
Option 3 ID : **264330724521**
Option 4 ID : **264330724520**
Status : **Answered**
Chosen Option : **2**

Q.83 Select the INCORRECT statement pertaining to the lining of an irrigation canal.

Ans

✗ 1.
Lining helps to provide a flatter hydraulic gradient to canal, and better command area.

✗ 2.
Lining minimalizes the seepage loss in the canal, more area can be irrigated.

✗ 3.
Lining increases the discharge in the canal section by increasing the velocity.

✓ 4.
Due to lining the resistance to flow increases and the velocity of flow decreases.

Question ID : **264330185040**
Option 1 ID : **264330724863**
Option 2 ID : **264330724860**
Option 3 ID : **264330724861**
Option 4 ID : **264330724862**
Status : **Answered**
Chosen Option : **4**

Q.84 Study the given statements (P, Q) pertaining to propagation of sound waves and select the most appropriate option with respect to the correctness of the statements.

P. Sound propagation from one point to another point is governed by Sabines' formula.

Q. In air, sound propagates as longitudinal waves.

Ans

✓ 1. Q only

✗ 2. Both P and Q

✗ 3. Neither P nor Q

✗ 4. P only

Question ID : **264330185054**
Option 1 ID : **264330724917**
Option 2 ID : **264330724918**
Option 3 ID : **264330724919**
Option 4 ID : **264330724916**
Status : **Answered**
Chosen Option : **2**

Q.85 Identify the defect in timber, which is NOT caused by seasoning of timber.

Ans

✗ 1. Warpage

✓ 2. Ringall

✗ 3. Checks

✗ 4. Splitting

Question ID : **264330185007**
Option 1 ID : **264330724731**
Option 2 ID : **264330724730**
Option 3 ID : **264330724728**
Option 4 ID : **264330724729**
Status : **Answered**
Chosen Option : **2**

Q.86 Consider the following statements with respect to the effects of water logging on agricultural land and identify the correct option.

Statement A: Water logging increases the activity of soil bacteria.

Statement B: Water logging leads to growth of wild flora.

Ans

✗ 1. Statement A is correct, but statement B is incorrect.

✗ 2. Both the statements are incorrect.

✗ 3. Both the statements are correct.

✓ 4. Statement B is correct, but statement A is incorrect.

Question ID : **264330184899**
Option 1 ID : **264330724296**
Option 2 ID : **264330724299**
Option 3 ID : **264330724298**
Option 4 ID : **264330724297**
Status : **Answered**
Chosen Option : **1**

Q.87 The gross bearing capacity of a strip footing 1.5 m wide located at a depth of 1.2 m in clay is 420 kN/m^2. If the unit weight of the soil is 20 kN/m^3, estimate the net bearing capacity in kN/m^2 units.

Ans

✗ 1. 400

✗ 2. 390

✓ 3. 396

✗ 4. 366

Question ID : **264330185031**
Option 1 ID : **264330724827**
Option 2 ID : **264330724825**
Option 3 ID : **264330724824**
Option 4 ID : **264330724826**
Status : **Answered**
Chosen Option : **3**

Q.88 A hydraulic jump is categorised as an oscillating jump when the Froude number of the incoming flow lies between _____.

Ans

✗ 1. 1.2 and 1.7

✗ 2. 1.7 and 2.5

✓ 3. 2.5 and 4.5

✗ 4. 0.5 and 1.2

Question ID : **264330184891**
Option 1 ID : **264330724267**
Option 2 ID : **264330724265**
Option 3 ID : **264330724266**
Option 4 ID : **264330724264**
Status : **Answered**
Chosen Option : **3**

Q.89 In plane table surveying, Lehmann's rules are associated with:

Ans

✗ 1. method of resection after orientation by compass

✓ 2. method of resection by three-point problem

✗ 3. solution of all type of resection problems

✗ 4. method of resection by two-point problem

Question ID : **264330185021**
Option 1 ID : **264330724787**
Option 2 ID : **264330724786**
Option 3 ID : **264330724785**
Option 4 ID : **264330724784**
Status : **Answered**
Chosen Option : **2**

Q.90 The value of speed ratio of a Pelton wheel turbine varies from _____.

Ans

✗ 1. 0.62 to 0.77

✗ 2. 0.78 to 0.85

✗ 3. 0.5 to 0.98

✓ 4. 0.43 to 0.48

Question ID : **264330184969**
Option 1 ID : **264330724579**
Option 2 ID : **264330724577**
Option 3 ID : **264330724576**
Option 4 ID : **264330724578**
Status : **Not Answered**
Chosen Option : **--**

Q.91 Match the items under List 1 (Components of turn out in a railway track) with those under List 2 (Details of components).

List 1	List 2
P. Stock rail	1. Tapered movable rail, at its thicker end it is attached to a running rail. Also known as *switch rail*.
Q. Crossing	2. Pair of tongue and stock rails with necessary connections and fittings
R. Tongue rail	3.Device introduced at the junction where two rails cross each other to permit the wheel flange of a railway vehicle to pass from one track to another.
S. Switch	4. Running rail against which a tongue rail operates

Ans

✗ 1. P – 1, Q – 2, R – 4, S – 3

✗ 2. P – 1, Q – 3, R – 4, S – 2

✓ 3. P – 4, Q – 3, R – 1, S – 2

✗ 4. P – 4, Q – 2, R – 1, S – 3

Question ID : **264330185048**
Option 1 ID : **264330724894**
Option 2 ID : **264330724893**
Option 3 ID : **264330724895**
Option 4 ID : **264330724892**
Status : **Answered**
Chosen Option : **2**

Q.92 French polish is a type of _____, which is used to hide the grain defects on hardwood substances.

Ans

✓ 1. spirit varnish

✗ 2. water varnish

✗ 3. asphalt varnish

✗ 4. flat varnish

Question ID : **264330184861**
Option 1 ID : **264330724144**
Option 2 ID : **264330724145**
Option 3 ID : **264330724146**
Option 4 ID : **264330724147**
Status : **Answered**
Chosen Option : **1**

Q.93 Study the following pairs (P, Q, R, S) with respect to GPS receivers used in GPS surveys and select the correct answer based on the matching.

P : GPS receivers : L-band radio processor

Q : Self-contained GPS receivers : Also known as 'GPS mice'

R : Dual-frequency receivers : Survey grade GPS, position accuracy according to differential correction within sub - centimetre

S : Carrier phase receivers: GPS receivers with 10 to 30 cm position accuracy with differential correction

Ans

✗ 1. P, S only

✓ 2. P, R, S only

✗ 3. P, Q only

✗ 4. Q, R only

Question ID : **264330185027**
Option 1 ID : **264330724810**
Option 2 ID : **264330724811**
Option 3 ID : **264330724808**
Option 4 ID : **264330724809**
Status : **Not Answered**
Chosen Option : **--**

Q.94 Consider the following statements with respect to effects of air pollutants on human health and identify the INCORRECT statement.

Ans

✗ 1.
Inhalation of carbon monoxide leads to reduction in the amount of oxygen delivered to organs and tissues.

✓ 2.
Sulphur dioxide can cause cancer and mutations and it is radioactive in nature.

✗ 3.
Inhalation of lead can cause mental retardation and behavioural disorders.

✗ 4.
Nitrogen dioxide irritates the lungs and can cause bronchitis and pneumonia.

Question ID : **264330184908**
Option 1 ID : **264330724332**
Option 2 ID : **264330724333**
Option 3 ID : **264330724335**
Option 4 ID : **264330724334**
Status : **Answered**
Chosen Option : **3**

Q.95 Consider the below statements with respect to surveying and identify the correct answer.

Statement A: Latitude of a survey line is defined as its coordinate length measured in the direction perpendicular to an assumed meridian direction.

Statement B: The type of levelling in which levels are taken on each side of a main line at right angles to that line in order to determine a vertical cross-section of the surface of the ground is called Differential levelling.

Ans

✔ 1. Both statements are incorrect.

✗ 2. Both statements are correct.

✗ 3. Statement B is correct, and statement A is incorrect.

✗ 4. Statement A is correct, and statement B is incorrect.

Question ID : **264330184953**
Option 1 ID : **264330724515**
Option 2 ID : **264330724514**
Option 3 ID : **264330724513**
Option 4 ID : **264330724512**
Status : **Answered**
Chosen Option : **1**

Q.96 Identify the INCORRECT statement with respect to different types of pipe flow.

Ans

✔ 1.
The flow in a circular pipe is categorised as laminar when the Reynolds number for the flow is less than 4000.

✗ 2.
The type of flow in which the fluid particles move along a well-defined streamline or paths, such that all the streamlines are straight and parallel to each other is known as laminar flow.

✗ 3.
The fluid characteristics like velocity, density and pressure at a point do not change with time in case of steady flow.

✗ 4.
The velocity of the flow at any given time does not change with respect to space in case of uniform flow.

Question ID : **264330184965**
Option 1 ID : **264330724563**
Option 2 ID : **264330724560**
Option 3 ID : **264330724562**
Option 4 ID : **264330724561**
Status : **Answered**
Chosen Option : **1**

Q.97 In the design of RCC structures, the limit state of collapse deals with _____.

Ans

✗ 1. discomfort caused by excessive deflection

✗ 2. leakage of water in the structure

✔ 3. the strength of the structure under the maximum design load

✗ 4. loss of durability

Question ID : **264330184920**
Option 1 ID : **264330724383**
Option 2 ID : **264330724382**
Option 3 ID : **264330724380**
Option 4 ID : **264330724381**
Status : **Answered**
Chosen Option : **3**

Q.98 A solution of resin or resinous substance dissolved in alcohol, turpentine or spirit is called _____.

Ans

✗ 1. aluminium paint

✗ 2. resin paint

✓ 3. varnish

✗ 4. distemper

Question ID : **264330184937**
Option 1 ID : **264330724451**
Option 2 ID : **264330724448**
Option 3 ID : **264330724449**
Option 4 ID : **264330724450**
Status : **Answered**
Chosen Option : **3**

Q.99 The ratio of Young's modulus of elasticity of two materials (E_1 to E_2) is 2.5. Find the ratio of the elongations in the two bars (δl_1 to δl_2) of these materials if they are of the same length and same area and subjected to the same force P.

Ans

✗ 1. 2

✗ 2. 2.5

✓ 3. 0.4

✗ 4. 1

Question ID : **264330185055**
Option 1 ID : **264330724923**
Option 2 ID : **264330724920**
Option 3 ID : **264330724921**
Option 4 ID : **264330724922**
Status : **Answered**
Chosen Option : **3**

Q.100 As per IS 800:2007, what is the maximum slenderness ratio for tension members (e.g. tie in roof truss) and subjected to reversal of stresses due to action of the wind or earthquake forces?

Ans

✗ 1. 180

✓ 2. 350

✗ 3. 450

✗ 4. 280

Question ID : **264330185002**
Option 1 ID : **264330724708**
Option 2 ID : **264330724709**
Option 3 ID : **264330724711**
Option 4 ID : **264330724710**
Status : **Answered**
Chosen Option : **2**