

## 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

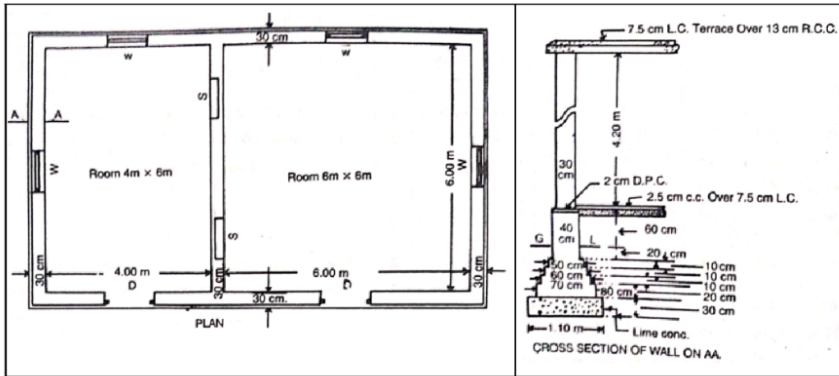


**Q.5** In the design of a two-way slab, the flexural reinforcement required in a shorter span is found to be  $200 \text{ mm}^2/\text{m}$ . Calculate the required spacing if steel bars of diameter 8 mm are to be used. Ignore the spacing of reinforcement based on other criteria's and calculate only based 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.  $9.56 \text{ m}^3$
  - 2.  $14.66 \text{ m}^3$
  - 3.  $10.53 \text{ m}^3$
  - 4.  $12.87 \text{ m}^3$

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

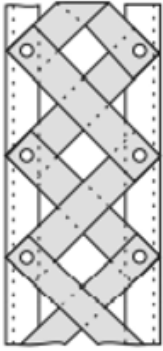
**Q.11** Identify the type of weld made between two plates shown in the figure below.



- 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

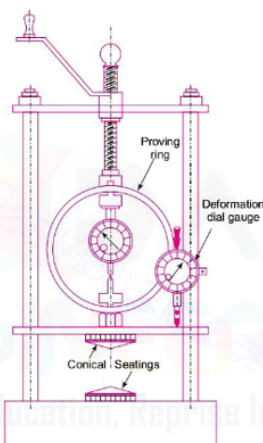
Option 3 ID : 264330724154

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	$80^{\circ} 10'$	$259^{\circ} 0'$
BC	$120^{\circ} 20'$	$301^{\circ} 50'$
CD	$170^{\circ} 50'$	$350^{\circ} 50'$
DE	$230^{\circ} 10'$	$49^{\circ} 30'$
EA	$310^{\circ} 20'$	$130^{\circ} 15'$

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

- Ans**
- 1.  $230^{\circ} 15'$
  - 2.  $229^{\circ} 55'$
  - 3.  $230^{\circ} 5'$
  - 4.  $230^{\circ} 10'$

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

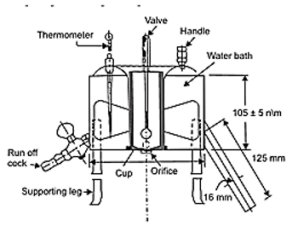
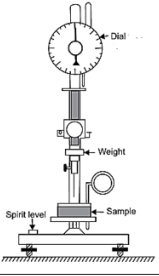
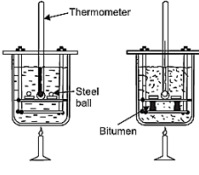
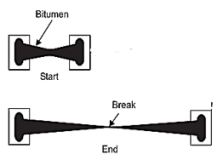
Question ID : **264330185045**  
 Option 1 ID : **264330724883**  
 Option 2 ID : **264330724880**  
 Option 3 ID : **264330724881**  
 Option 4 ID : **264330724882**  
 Status : **Answered**  
 Chosen Option : **4**

**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  $\phi$ -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  $0.01 \times 10^{-4} \text{ m}^2/\text{s}$ , which is flowing through a pipe of diameter 200 mm with the velocity of 5 m/s.

- Ans**
- 1.  $1 \times 10^6$
  - 2.  $1.6 \times 10^6$
  - 3.  $0.5 \times 10^6$
  - 4.  $2.2 \times 10^6$

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

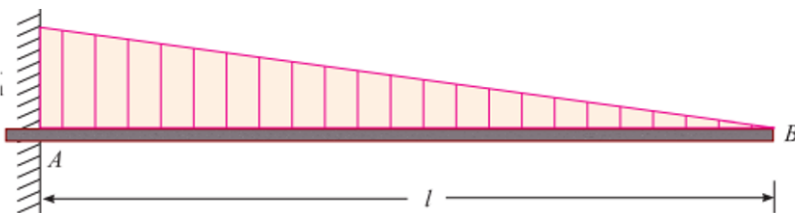
Question ID : **264330185052**  
Option 1 ID : **264330724908**  
Option 2 ID : **264330724909**  
Option 3 ID : **264330724911**  
Option 4 ID : **264330724910**  
Status : **Answered**  
Chosen Option : **1**

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  $\text{km}^2$  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

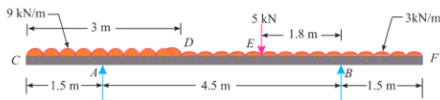
Question ID : 264330184938  
Option 1 ID : 264330724454  
Option 2 ID : 264330724452  
Option 3 ID : 264330724455  
Option 4 ID : 264330724453  
Status : **Answered**  
Chosen Option : 3

**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

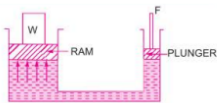
Question ID : 264330184911  
 Option 1 ID : 264330724346  
 Option 2 ID : 264330724344  
 Option 3 ID : 264330724347  
 Option 4 ID : 264330724345  
 Status : Answered  
 Chosen Option : 4

**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  $30 \times 30$  cm and a plunger of cross-section area  $4 \times 4$  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° 30'	1. S 54° 30' E
Q. 215° 30'	2. N 35° 30' W
R. 125° 30'	3. S 35° 30' W
S. 324° 30'	4. S 35° 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<sup>3</sup>
  - 2. 1500 N/m<sup>3</sup>
  - 3. 2500 N/m<sup>3</sup>
  - 4. 4000 N/m<sup>3</sup>

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 following 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 <sup>2</sup>
2. All rooms and kitchens of dwelling houses	b. 4 kN/m <sup>2</sup>
3. Dining rooms, cafeterias and restaurants in hotels, hostels and boarding houses	c. 2.5 kN/m <sup>2</sup>
4. Office rooms in hotels, hostels and boarding houses	d. 3 kN/m <sup>2</sup>

- 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  $7850 \text{ kg/m}^3$ .

- Ans**
- 1. 15.58 kg
  - 2. 12.56 kg
  - 3. 19.72 kg
  - 4. 17.77 kg

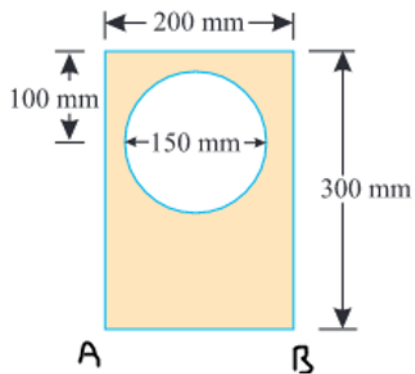
Question ID : 264330184945  
Option 1 ID : 264330724480  
Option 2 ID : 264330724482  
Option 3 ID : 264330724481  
Option 4 ID : 264330724483  
Status : Answered  
Chosen Option : 3

**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  $5^\circ$  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 ( $\Delta$ ) =  $120^\circ$ .

- 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<sup>2</sup>. If the unit weight of the soil is 20 kN/m<sup>3</sup>, estimate the net bearing capacity in kN/m<sup>2</sup> 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 <i>switch rail</i> .
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 ( $\delta l_1$  to  $\delta l_2$ ) 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

