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Previous Year Paper
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Uttar Pradesh
Power Corporation Limited

Electricity Service Commission, Uttar Pradesh Power Corporation Ltd. S.L.D.C campus, near Mantri Awas, Vibhuti Khand Phase-2, Gomti Nagar, Lucknow-226010

Participant ID	
Participant Name	
Test Center Name	
Test Date	13/09/2021
Test Time	2:30 PM - 5:30 PM
Subject	Assistant Engineer (Trainee)

Section : Domain Knowledge

Q.1 What is the correct range of water filtration rate for a normal slow sand filter?

Ans
- ✔ A. 24-48 Ml/d/ha.
- ✘ B. 240-480 Ml/d/ha.
- ✘ C. 10-20 Ml/d/ha.
- ✘ D. 700-1400 Ml/d/ha.

Question ID : **9277597162**
Status : **Answered**
Chosen Option : **C**

Q.2 Use Euler's method with h=0.1 to find the y(0.2) of the equation $\frac{dy}{dx} = x^2 + y^2$ with y(0)=0. $\frac{dy}{dx} = x^2 + y^2$

Ans
- ✗ A. 0
- ✗ B. 0.0001
- ✓ C. 0.001
- ✗ D. 0.1

Question ID : **9277597229**
Status : **Not Answered**
Chosen Option : **--**

Q.3 **Which of the following is an INCORRECT statement regarding effective angle of shearing resistance of soil?**

Ans
- ✗ A. Effective angle of shearing resistance increases as the soil gradation improves.
- ✗ B. Effective angle of shearing resistance increases as the size of particles increases.
- ✓ C. Effective angle of shearing resistance is limited to a maximum value of 45°.
- ✗ D. Effective angle of shearing resistance is rarely more than 30° for fine grained soils.

Question ID : **9277597117**
Status : **Answered**
Chosen Option : **C**

Q.4 **Which of the following substance makes bitumen brittle and non-plastic, if present in excess?**

Ans
- ✗ A. Petrolene.
- ✓ B. Asphaltene.
- ✗ C. Naphtha.
- ✗ D. Nut-oil.

Question ID : **9277597188**
Status : **Answered**
Chosen Option : **C**

Q.5 If the particle is larger than a molecule but small enough to remain suspended in air, then the particles are known as:

Ans
- ✔ A. Aerosols.
- ✘ B. Respiratory suspended particulate matter.
- ✘ C. Aero-allergens.
- ✘ D. Total suspended particulate matter.

Question ID : **9277597166**
Status : **Answered**
Chosen Option : **A**

Q.6 If the Characteristic equation of a matrix A is $\lambda^3 - \lambda + 1 = 0$, then $A^3 = ?$

Ans
- ✔ A. $A - I$
- ✘ B. $A^2 + \lambda - I$
- ✘ C. A
- ✘ D. A^2

Question ID : **9277597209**
Status : **Answered**
Chosen Option : **B**

Q.7 Which of the following criteria is satisfied in case of determination of optimum moisture content?

Ans
- ✔ A. Dry density is maximum
- ✘ B. Shear strength is maximum
- ✘ C. Permeability is maximum
- ✘ D. Settlement is maximum

Question ID : **9277597112**
Status : **Answered**
Chosen Option : **A**

Q.8 The fluid layer in the neighborhood of the solid boundary where the effects of fluid friction are predominant is known as:

Ans
- ✗ A. Specific weight.
- ✗ B. Hydraulic jump.
- ✗ C. Surface tension.
- ✓ D. Boundary layer.

Question ID : **9277597125**
Status : **Answered**
Chosen Option : **D**

Q.9 If the system of linear equation is AX=B and rank of A is equal to rank of AB, then choose the correct statement.

Ans
- ✓ A. System of equation has a unique Solution.
- ✗ B. System of equation has No Solution.
- ✗ C. System of equation is said to be inconsistent.
- ✗ D. Systems of equation have an infinite number of Solutions.

Question ID : **9277597211**
Status : **Answered**
Chosen Option : **A**

Q.10 What is the width of taxiway recommended by the ICAO for C type of Airport?

Ans
- ✗ A. 22.5 m
- ✗ B. 7.5 m
- ✓ C. 15 m
- ✗ D. 9.9 m

Question ID : **9277597238**
Status : **Answered**
Chosen Option : **B**

Q.11 Which type of leveling is used to reduce the slope distance to horizontal measured electronically?

Ans
✗ A. Trigonometric leveling
✗ B. Fly leveling
✗ C. Check leveling
✓ D. Barometric leveling

Question ID : **9277597143**
Status : **Answered**
Chosen Option : **D**

Q.12 If, $\sum x_i^2 = 240, \bar{x} = 5$ and n=8 then standard deviation is:

Ans
✗ A. $\sqrt{14}$
✗ B. $\sqrt{8}$
✗ C. $\sqrt{10}$
✓ D. $\sqrt{5}$

Question ID : **9277597213**
Status : **Answered**
Chosen Option : **B**

Q.13 Which of the following is correct relationship with regard to sensitivity of a level tube?

Ans
✗ A. Larger the length less is sensitiveness.
✗ B. Greater the viscosity more is sensitiveness.
✓ C. Lesser the viscosity more is sensitiveness.
✗ D. Greater the smoothness, lesser is sensitiveness.

Question ID : **9277597146**
Status : **Answered**
Chosen Option : **C**

Q.14 At a water treatment plant, 15 ppm of alum dose is required for treatment. How much of alum will be required for treatment of 20 million litres of water?

Ans
- ✗ A. 15 kg.
- ✓ B. 300 kg.
- ✗ C. 35 kg.
- ✗ D. 300 g.

Question ID : **9277597161**
Status : **Answered**
Chosen Option : **B**

Q.15 An irrigation scheme is defined as medium irrigation scheme, if command area is:

Ans
- ✗ A. 200 to 1200 hectares.
- ✓ B. 2000 to 10000 hectares.
- ✗ C. Greater than 10000 hectares.
- ✗ D. 0 to 500 hectares.

Question ID : **9277597133**
Status : **Answered**
Chosen Option : **B**

Q.16 When a cant is said to be equilibrium cant?

Ans
- ✓ A. When the lateral forces and wheel loads are almost equal.
- ✗ B. When there is maximum possibilities off derailment or accident on curvature
- ✗ C. When the lateral forces are greater than wheel loads.
- ✗ D. When the lateral forces are lesser than wheel loads.

Question ID : **9277597235**
Status : **Answered**
Chosen Option : **A**

Q.17 IS 10500: 2012 is an Indian standard for drinking water specification. What is the maximum acceptable limit of Nitrate as NO_3 in drinking water as per this standard?

Ans

✗ A. 75 mg/l.

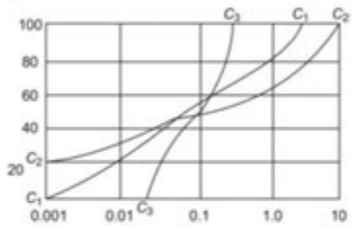
✗ B. 1.5 mg/l.

✗ C. 200 mg/l.

✓ D. 45 mg/l.

Question ID : **9277597160**
Status : **Answered**
Chosen Option : **A**

Q.18



The above given figure is a Grain size distribution curve of different type of soils. What type of soil does the curve C_1C_1 represent?

Ans

✗ A. Gap-graded soil

✗ B. Skip-graded soil

✓ C. Well-graded soil

✗ D. Poorly graded soil

Question ID : **9277597100**
Status : **Answered**
Chosen Option : **C**

Q.19 The depth of flow in an irrigation channel is 2m and the value of critical velocity ratio is 1.1. What is the critical velocity (m/sec) of the channel using Kennedy's theory?

Ans

✗ A. $2*(0.55)^{0.64}$

✗ B. $0.605*(2)^{0.16}$

✗ C. $1.10*(1.55)^{0.64}$

✔ D. $0.605*(2)^{0.64}$

Question ID : **9277597134**
Status : **Answered**
Chosen Option : **D**

Q.20 Which of the following buckling class is applicable in z-direction for a rolled steel I-section, having $(h/b_f) > 1.2$ and $t_f <$ 40 mm, as per the 'Indian Standard for General construction in steel- code of practice'?

Ans

✗ A. Class – d

✗ B. Class – c

✗ C. Class – b

✔ D. Class - a

Question ID : **9277597197**
Status : **Answered**
Chosen Option : **D**

Q.21 What should be the area ratio of the samples for an undisturbed sample?

Ans

✗ A. Zero

✔ B. 10 percent or less

✗ C. 10 percent to 20 percent

✗ D. More than 20 percent

Question ID : **9277597114**
Status : **Answered**
Chosen Option : **B**

Q.22 What will be the minimum cement content (in Kg/m^3) for reinforced concrete surface members constructed in tidal zone as per the 'Indian Standard for Plain and reinforced concrete- code of practice'?

Ans
✗ A. 320
✗ B. 340
✓ C. 360
✗ D. 300

Question ID : **9277597195**
Status : **Answered**
Chosen Option : **C**

Q.23 **Which of the following is not the error aroused from imperfect adjustment of a theodolite?**

Ans
✗ A. Axis not vertical in an observation, either from imperfect plate level adjustment or settlement of the instrument.
✓ B. Line of altitude bubble not perpendicular to the line of collimation when the verniers of vertical circle read zero.
✗ C. Line of collimation not perpendicular to the horizontal axis.
✗ D. Horizontal axis not perpendicular to the vertical axis.

Question ID : **9277597144**
Status : **Answered**
Chosen Option : **D**

Q.24 **Two tensile forces of magnitude 15N and 10N are acting at a point. The angle is 60° between them. What will be the magnitude of the resultant force?**

Ans
✗ A. $\sqrt{325}$ N
✗ B. $\sqrt{25}$ N
✗ C. $\sqrt{585}$ N
✓ D. $\sqrt{475}$ N

Question ID : **9277597203**
Status : **Answered**
Chosen Option : **B**

Q.25 The number of vibrations per unit time is known as:

Ans
- ✗ A. Power of sound.
- ✓ B. Frequency of sound.
- ✗ C. Period of sound.
- ✗ D. Wave length of sound.

Question ID : **9277597169**
Status : **Answered**
Chosen Option : **C**

Q.26 High Alumina bricks are a type of:

Ans
- ✓ A. Neutral fire bricks
- ✗ B. Traditional bricks
- ✗ C. Basic fire bricks
- ✗ D. Acidic fire bricks

Question ID : **9277597192**
Status : **Answered**
Chosen Option : **C**

Q.27 The encoded spatial data are stored systematically in the form of layer are known as:

Ans
- ✗ A. GIS Database.
- ✗ B. Multigeodatasets.
- ✗ C. Heterogeneous database.
- ✓ D. GIS Layers.

Question ID : **9277597153**
Status : **Answered**
Chosen Option : **D**

Q.28 If the actual value of the standard penetration number (N) is greater than 15 for fine sands below water table, then what will be the corrected value of N?

Ans
✗ A. 15 + [(N+15)/2]
✓ B. 15 + [(N-15)/2]
✗ C. 15 + [(15-N)/2]
✗ D. 15 – [(N+15)/2]

Question ID : **9277597116**
Status : **Answered**
Chosen Option : **B**

Q.29 For which of the following term, the given definition is correct?

" Definition- The average discharge velocity of flow under unit hydraulic gradient."

Ans
✓ A. Coefficient of permeability
✗ B. Stokes' coefficient
✗ C. Uniformity coefficient
✗ D. Voids ratio

Question ID : **9277597101**
Status : **Answered**
Chosen Option : **A**

Q.30 Which of the following is the correct relation given by Lacey, for determining silt factor in design of irrigation channels?

Ans
✗ A. 1.76*(Average particle size of alluvium in millimeter)0.64
✗ B. 1.76*(Average particle size of alluvium in millimeter)2
✗ C. $1.76*(\text{Average particle size of alluvium in millimeter})^{1/6}$
✓ D. $1.76*(\text{Average particle size of alluvium in millimeter})^{1/2}$

Question ID : **9277597135**
Status : **Answered**
Chosen Option : **D**

Q.31 Which of the following is the most suitable method of municipal solid waste disposal, for an inland village with sufficient land area?

Ans
- ✔ A. Composting.
- ✘ B. Barging it out into the sea.
- ✘ C. Incineration.
- ✘ D. Destructive distillation.

Question ID : **9277597174**
Status : **Answered**
Chosen Option : **A**

Q.32 The state of a soil, having natural water content between its liquid limit and plastic limit, is called as:

Ans
- ✘ A. Solid state.
- ✔ B. Plastic state.
- ✘ C. Semi-solid state.
- ✘ D. Liquid state.

Question ID : **9277597098**
Status : **Answered**
Chosen Option : **B**

Q.33 What will be the evaporation of water from a lake, if the Pan evaporation is 60 mm and the Pan Coefficient is 0.70?

Ans
- ✘ A. 60 mm.
- ✘ B. 130 mm.
- ✔ C. 42 mm.
- ✘ D. 100 mm.

Question ID : **9277597131**
Status : **Answered**
Chosen Option : **C**

Q.34 What is the range of noise level in dB for heavy road traffic (Highway)?

Ans
- ✗ A. 100- 110.
- ✗ B. 60- 70.
- ✗ C. 70- 80.
- ✓ D. 80- 90.

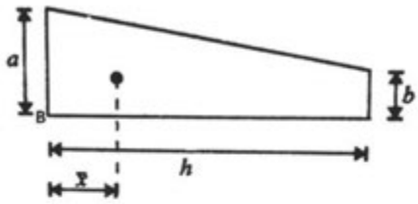
Question ID : **9277597171**
Status : **Answered**
Chosen Option : **B**

Q.35 PM 10 is also designated as:

Ans
- ✗ A. Stake.
- ✗ B. Aerosols.
- ✓ C. RSPM.
- ✗ D. TSPM.

Question ID : **9277597167**
Status : **Answered**
Chosen Option : **C**

Q.36 What is the value of x- coordinate from the left base point 'B' of the center of mass of the given figure below?



Ans
✗ A. (h/2)
✗ B. ((a + 2b) *h)/ (2*(a + b))
✓ C. ((a + 2b) *h)/ (3*(a + b))
✗ D. (h/3)

Question ID : **9277597201**
Status : **Answered**
Chosen Option : **B**

Q.37 The slenderness ratio of a compression member is defined as the ratio of its effective length to the appropriate radius of gyration. A circular cross section compression member has 200 mm diameter and 10 m effective length. What will be the slenderness ratio of the given member?

Ans
✓ A. 200
✗ B. 300
✗ C. 1000
✗ D. 500

Question ID : **9277597198**
Status : **Answered**
Chosen Option : **A**

Q.38 Which of the following term represent the ratio of 'flowing through period' to 'detention period' in a sedimentation tank?

Ans
- ✔ A. Displacement efficiency.
- ✘ B. Surface loading.
- ✘ C. Recirculation ratio.
- ✘ D. Detention time.

Question ID : **9277597180**
Status : **Answered**
Chosen Option : **A**

Q.39 Which is the recommended shape of seepage line in actual dams, according to Casagrande?

Ans
- ✘ A. Hyperbolic
- ✔ B. Basic parabola
- ✘ C. Elliptical
- ✘ D. Circular

Question ID : **9277597103**
Status : **Answered**
Chosen Option : **C**

Q.40 The moisture content of a sludge is 95 percent and volume is M, in a sludge digestion tank. If the moisture content is reduced to 90 percent , then calculate the volume of the sludge.

Ans
- ✘ A. (5M)
- ✘ B. (M/5)
- ✔ C. (M/2)
- ✘ D. (2M)

Question ID : **9277597181**
Status : **Answered**
Chosen Option : **C**

Q.41 A simply supported beam, of three-meter span, is subjected to a triangular load with zero intensity on the left end to 4 kN/m intensity on the right end support. Where will be the shear force zero from left end support?

Ans

✗ A. $(1/\sqrt{3})$ m

✗ B. $\sqrt{5}$ m

✗ C. 1.5 m

✓ D. $\sqrt{3}$ m

Question ID : **9277597199**
Status : **Answered**
Chosen Option : **D**

Q.42 At what location, the uplift will occur in an aqueduct provided with a pucca bottom floor?

Ans

✓ A. On the bottom floor

✗ B. Nowhere, since the flow is free in the canal as well as in the drainage channel.

✗ C. On the roof slab

✗ D. On both the roof slab as well as the bottom floor

Question ID : **9277597137**
Status : **Answered**
Chosen Option : **D**

Q.43 A second-degree polynomial passes through (0,1), (1,3), (2,7) and (3,13). Find the polynomial.

Ans
- ✗ A. $x^2 + x - 1$
- ✗ B. $x^2 + 2_x + 1$
- ✗ C. $x^2 - x + 1$
- ✓ D. $x^2 + x + 1$

Question ID : **9277597228**
Status : **Not Answered**
Chosen Option : **--**

Q.44 The duty of a crop is 1300 hectares/cumec and the base period is 130 days. What is the delta of the crop?

Ans
- ✗ A. 10.3 m
- ✗ B. 0.624 m
- ✓ C. 0.864 m
- ✗ D. 1.30 m

Question ID : **9277597129**
Status : **Answered**
Chosen Option : **C**

Q.45 Which of the following statement is not correct?

Ans ✗ A.

The ratio of precision of a measurement to the measurement itself is termed as relative precision and is expressed as 1 in d/s_d, where d is the measurement and s_d is the standard errors.

✗ B. Accuracy is considered to be an overall estimate of the errors including systematic errors present in measurements.

✗ C. Precision is referred to as the degree of fineness and care with which any physical measurement is made.

✓ D. Accuracy and precision are the same if all systematic errors are removed. Precision is sometime referred to as external accuracy.

Question ID : **9277597141**
Status : **Answered**
Chosen Option : **B**

Q.46 7, 10 and 15 months are the optimistic, the most likely duration and the pessimistic time estimates in respectively in a network. What will be expected time?

Ans ✗ A. 7 months

✗ B. 10 months

✓ C. 10.33 months

✗ D. 10.67 months

Question ID : **9277597186**
Status : **Answered**
Chosen Option : **C**

Q.47 Which type of sensors used the man-made source of energy for data collection?

Ans ✗ A. Return bram vidicon.

✗ B. Electro-optical scanner.

✓ C. Radar.

✗ D. Electro-optical radiometer.

Question ID : **9277597156**
Status : **Answered**
Chosen Option : **A**

Q.48 The flow in a circular pipe is laminar and Reynold's number is equal to800. Determine the Darcy-Weisbach friction factor for the circular pipe?

Ans
- ✔ A. 0.08
- ✘ B. 80
- ✘ C. 10
- ✘ D. 0.8

Question ID : **9277597126**
Status : **Answered**
Chosen Option : **A**

Q.49 What is the relationship between the stress developed at a point in the soil below a point load at the surface?

Ans
- ✘ A. Stress is inversely proportional to the depth of point.
- ✔ B. Stress is inversely proportional to the square of the depth of point.
- ✘ C. Stress is proportional to the square of the depth of point.
- ✘ D. Stress is proportional to the depth of point.

Question ID : **9277597106**
Status : **Answered**
Chosen Option : **B**

Q.50 Which of the following is a group, including only aerobic treatment units for sewage treatment?

Ans
- ✔ A. Trickling filter, Oxidation pond, Activated sludge plant.
- ✘ B. Septic tank, Imhoff tank, Sludge digestion tank.
- ✘ C. Trickling filter, Septic tank, Oxidation pond.
- ✘ D. Trickling filter, Oxidation pond, Imhoff tank.

Question ID : **9277597182**
Status : **Answered**
Chosen Option : **A**

Q.51 If $\underset{r}{\rightarrow} = x\hat{i} + y\hat{j} + z\hat{k}$ then find ∇r^{-3}

Ans

✗ A. $-9r^{-4}$

✗ B. $-3r^{-4}\left(\hat{i} + \hat{j} + \hat{k}\right)$

✗ C. $9r^{-4}$

✓ D. $-3r^{-5}\vec{r}$

Question ID : **9277597215**
Status : **Answered**
Chosen Option : **A**

Q.52 If f is the coefficient of friction, W is the unit weight of cement concrete in kg/m^3, width and thickness of slab is b and h respectively in meter, As is the total area of steel in cm^2 across the slab width and allowable tensile stress in steel in kg/cm^2 is Ss, then what will be the spacing between contraction joints in meter (Lc)?

Ans

✗ A. Lc = (b* h*W * f)/ (200 Ss * As)

✓ B. Lc = (200 Ss * As)/ (b* h* W * f)

✗ C. Lc = (200b* h* W * f)/ (Ss * As)

✗ D. Lc = (Ss * As*b)/ (200hWf)

Question ID : **9277597231**
Status : **Answered**
Chosen Option : **A**

Q.53 For treatment of 25000 m^3/day water, a dose of 10 kg/day of chlorine is applied. The residual chlorine after 10 minutes contact is 0.25 mg/l. What is the chlorine demand of the water?

Ans
- ✗ A. 0.40 mg/l
- ✓ B. 0.15 mg/l
- ✗ C. 10 mg/l
- ✗ D. 0.25 mg/l

Question ID : **9277597163**
Status : **Answered**
Chosen Option : **C**

Q.54 Which of the following figure is equal to 3(three) acre?

Ans
- ✗ A. 2.1 hectare
- ✓ B. 130680 sq. ft.
- ✗ C. 4.6875 sq. mile
- ✗ D. 4780 sq. yards

Question ID : **9277597140**
Status : **Answered**
Chosen Option : **C**

Q.55 If 5 ml of raw sewage has been diluted to 500 ml and 3 mg/l of dissolved oxygen is consumed of the diluted sample after 5-day incubation at 20° C. Calculate the BOD of raw sewage in mg/l.

Ans
- ✓ A. 300
- ✗ B. 30
- ✗ C. 500
- ✗ D. 50

Question ID : **9277597177**
Status : **Answered**
Chosen Option : **A**

Q.56 For vehicles of maximum width 2.44 m, which of the following width of road is consider as a desirable for single lane?

Ans
✗ A. 5.5 m
✗ B. 7.5 m
✓ C. 3.75 m
✗ D. 7.0 m

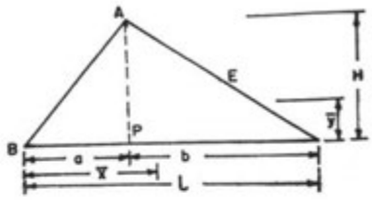
Question ID : **9277597241**
Status : **Answered**
Chosen Option : **C**

Q.57 Which of the following expression is used to find the optimum number of rain gauges, if the mean rainfall is calculated by simple arithmetical average? C_v = coefficient of variation of the rainfall values of the existing rain gauge stations, and P = desired degree of percentage error in the estimate of basin mean rainfall.

Ans
✗ A. $(C_v*P)^2$
✗ B. (C_v/P)
✗ C. $(P/C_v)^2$
✓ D. $(C_v/P)^2$

Question ID : **9277597130**
Status : **Answered**
Chosen Option : **D**

Q.58 What is the value of x- coordinate from the left base point 'B' of the center of mass of the given figure below?



Ans

✗ A. (l)/3

✓ B. (a + l)/3

✗ C. (l + b)/2

✗ D. (h)/3

Question ID : **9277597200**
Status : **Answered**
Chosen Option : **B**

Q.59 A surface of 4m x 4m lies in a vertical plane at 20 m below the water surface. Find out the total force on the square surface if unit weight of water is 10 kN/m^3.

Ans

✗ A. 3520 N

✗ B. 1460 kN

✗ C. 2000 kN

✓ D. 3520 kN

Question ID : **9277597122**
Status : **Answered**
Chosen Option : **D**

Q.60 _____ is the maximum quantity of water that is estimated to remain available in a storage reservoir for supply, even during worst dry periods.

Ans
- ✔ A. firm yield.
- ✗ B. secondary yield.
- ✗ C. primary yield.
- ✗ D. reservoir yield.

Question ID : **9277597139**
Status : **Answered**
Chosen Option : **A**

Q.61 Which of the following ingredient should be less than 1% for making good brick earth?

Ans
- ✔ A. Magnesia
- ✗ B. Silica
- ✗ C. Alumina
- ✗ D. Lime

Question ID : **9277597189**
Status : **Answered**
Chosen Option : **A**

Q.62 How does the optimum moisture content vary with increasing comp active effort for cohesive soils?

Ans
- ✗ A. It remains constant.
- ✗ B. It is uncertain.
- ✗ C. It increases.
- ✔ D. It decreases.

Question ID : **9277597111**
Status : **Answered**
Chosen Option : **D**

Q.63 If the road surface is thin bituminous surface then what will be the range of chamber in areas of rainfall range from heavy to light?

Ans
✔ A. 1 in 40 (2.5 percent) to 1 in 50 (2 percent)
✘ B. 1 in 33 (3 percent) to 1 in 40 (2.5 percent)
✘ C. 1 in 50 (2 percent) to 1 in 60 (1.7 percent)
✘ D. 1 in 25(4 percent) to 1 in 33 (3 percent)

Question ID : **9277597240**
Status : **Answered**
Chosen Option : **A**

Q.64 The water absorption value for a brick is in between 16-20% of its dry weight. Which type of brick is this?

Ans
✘ A. Fourth class bricks.
✔ B. Second class bricks.
✘ C. Third class bricks.
✘ D. First class bricks.

Question ID : **9277597190**
Status : **Answered**
Chosen Option : **D**

Q.65 Which of the following is an application of O&D Studies?

Ans
✘ A. To use in accident studies
✘ B. To decide the speed trends
✔ C. To locate intermediate stops of public transport
✘ D. To study the traffic capacity

Question ID : **9277597187**
Status : **Answered**
Chosen Option : **A**

Q.66 An isolated two-phase traffic signal is designed by Webster method, what will be the Optimum Signal cycle, if the critical flow ratio is 0.6 and the all red time required for pedestrian crossing is 10 seconds?

Ans
- ✗ A. 56 seconds
- ✗ B. 50 seconds
- ✓ C. 65 seconds
- ✗ D. 70 seconds

Question ID : **9277597239**
Status : **Answered**
Chosen Option : **B**

Q.67 Which of the following signs are in the shape of equilateral triangle with its apex pointing upwards and have a white background, red border and black symbol?

Ans
- ✗ A. No parking signs.
- ✗ B. One-way signs.
- ✓ C. Warning signs.
- ✗ D. No entry signs.

Question ID : **9277597246**
Status : **Answered**
Chosen Option : **C**

Q.68 Residual soil is obtained by:

Ans
- ✗ A. Magma of volcano.
- ✗ B. Flood in rivers.
- ✗ C. Weathering of rocks and acted upon by the force of transportation.
- ✓ D. Weathering of rocks and not acted upon by the force of transportation.

Question ID : **9277597097**
Status : **Answered**
Chosen Option : **D**

Q.69 What is the value of maximum effective slenderness ratio for compression flange of a steel beam against lateral torsional buckling, specified in the 'Indian Standard for General construction in steel- code of practice'?

Ans
✗ A. 180
✗ B. 250
✗ C. 350
✓ D. 300

Question ID : **9277597196**
Status : **Answered**
Chosen Option : **C**

Q.70 The degree of consolidation for a soil mass is less than 60%, coefficient of consolidation is C_v and 'd' is the length of drainage path (single drainage). What will be degree of consolidation (U) after a time 't'?

Ans
✗ A. $(2*d) * (C_v/\pi t)^{1/2}$
✓ B. $(2/d) * (C_v * t/\pi)^{1/2}$
✗ C. $(2/d) * (C_v/\pi t)^{1/2}$
✗ D. $(2*d) * (C_v * t/\pi)^{1/2}$

Question ID : **9277597110**
Status : **Answered**
Chosen Option : **B**

Q.71 What will be grade compensation (percent) of a 3-degree curve on a meter gauge (MG)?

Ans
✗ A. 0.06 percent
✗ B. 0.9 percent
✗ C. 0.12 percent
✓ D. 0.09 percent

Question ID : **9277597233**
Status : **Answered**
Chosen Option : **D**

Q.72 About _____ of the global air pollution is caused by primary pollutants.

Ans
✗ A. 75 percent
✓ B. 90 percent
✗ C. 85 percent
✗ D. 95 percent

Question ID : **9277597168**
Status : **Answered**
Chosen Option : **C**

Q.73 Which of the following is not the subsystem of GIS?

Ans
✗ A. Display.
✓ B. Hardware of GIS.
✗ C. Input.
✗ D. Management.

Question ID : **9277597154**
Status : **Answered**
Chosen Option : **B**

Q.74 What is the value of moment M_a at the fixed support 'A' of the given beam in figure below?

Ans
✗ A. (2*M)
✗ B. (M)
✗ C. (3*M)
✓ D. (M/2)

Question ID : **9277597206**
Status : **Answered**
Chosen Option : **D**

Q.75 **Which of the following is NOT a marine pollutant?**

Ans
✗ A. Agricultural waste
✗ B. Dissolved oxygen
✗ C. Industrial waste
✓ D. Carbon dioxide

Question ID : **9277597165**
Status : **Answered**
Chosen Option : **A**

Q.76 **Which country developed TSIKADA GPS SYSTEM?**

Ans
✗ A. China.
✗ B. India.
✓ C. Russia.
✗ D. United States.

Question ID : **9277597151**
Status : **Answered**
Chosen Option : **C**

Q.77 Which of the following may be the effect of noise pollution?

Ans ✔ A. Hearing loss.

✗ B. Fever.

✗ C. Blindness.

✗ D. Dumbness.

Question ID : **9277597170**
Status : **Answered**
Chosen Option : **A**

Q.78 Which factor is determined by utilization of Flow nets?

Ans ✗ A. Uniformity coefficient

✗ B. Coefficient of curvature

✗ C. Particle size curve

✔ D. Seepage pressure

Question ID : **9277597102**
Status : **Answered**
Chosen Option : **D**

Q.79 Which of the following is a WRONG assumption in the Terzaghi's theory of consolidation?

Ans ✗ A. Darcy's law is valid throughout the consolidation process.

✗ B. The soil is homogeneous and isotropic.

✔ C. The coefficient of permeability of the soil is variable during the entire period of consolidation.

✗ D. The consolidation occurs due o expulsion of water from the voids.

Question ID : **9277597107**
Status : **Answered**
Chosen Option : **A**

Q.80 The computing value of a problem as5.623. The absolute error in the computing value is less than 1.5 percent. Find the range within which the true value must lie.

Ans

✗ A. $5.508<X<5.613$

✓ B. $5.608<X<5.638$

✗ C. $5.615<X<5.628$

✗ D. $5.612<X<5.625$

Question ID : **9277597225**
Status : **Answered**
Chosen Option : **C**

Q.81 Solve: $(D^2+8D+16)y = ae^{-4x}$

Ans

✗ A. $y = c_1e^{-4x} + c_2e^{4x} + ax^2e^{-4x}$

✗ B. $y = (c_1 + c_2x)e^{-4x} + ax^2e^{-4x}$

✗ C. $y = c_1e^{-4x} + c_2e^{4x} + \frac{a}{2}x^2e^{-4x}$

✓ D. $y = (c_1 + c_2x)e^{-4x} + \frac{a}{2}x^2e^{-4x}$

Question ID : **9277597220**
Status : **Answered**
Chosen Option : **D**

Q.82 Evaluate $\int_0^4 (x^2 + 2_x) d_x$ using Trapezoidal rule, taking h=1.

Ans
- ✔ A. 38
- ✘ B. 48
- ✘ C. 47
- ✘ D. 29

Question ID : **9277597226**
Status : **Answered**
Chosen Option : **A**

Q.83 A rainfall of 1.6 cm occurred in a 5-hour storm and the φ- index was 0.20 cm/hour. What was the rainfall excess?

Ans
- ✘ A. 8.00 cm.
- ✘ B. 0.20 cm.
- ✔ C. 0.60 cm.
- ✘ D. 1.60 cm.

Question ID : **9277597132**
Status : **Answered**
Chosen Option : **C**

Q.84 If solid waste is heated in closed containers in absence of oxygen, its organic substances can be split into gaseous, liquid and solid fractions. What process is this?

Ans
- ✘ A. Composting.
- ✘ B. Controlled tipping.
- ✔ C. Pyrolysis.
- ✘ D. Incineration.

Question ID : **9277597173**
Status : **Answered**
Chosen Option : **C**

Q.85 Which type of data defines location, size, shape and orientation of objects using line?

Ans
- ✔ A. Geospatial data.
- ✘ B. Areal data.
- ✘ C. Point data.
- ✘ D. Attribute data.

Question ID : **9277597155**
Status : **Answered**
Chosen Option : **C**

Q.86 Which of the following mortar is most suitable for construction of Damp-proof course?

Ans
- ✘ A. Lime mortar
- ✘ B. Mud mortar
- ✘ C. Surkhi mortar
- ✔ D. Cement mortar

Question ID : **9277597193**
Status : **Answered**
Chosen Option : **D**

Q.87 Which of the following is correctly paired, regarding the various components of a water supply project and their design periods?

Ans
- ✔ A. Water treatment units --- 15 years.
- ✘ B. Distribution system --- 60 years.
- ✘ C. Storage by dams --- 120 years.
- ✘ D. Intake works --- 55 years.

Question ID : **9277597159**
Status : **Answered**
Chosen Option : **B**

Q.88 What is the correction to the second bearing, if the closing error in the bearing is '4e' and 'n' is the number of sides of traverse?

Ans
✗ A. e/n
✓ B. 8e/n
✗ C. 2(e/n)
✗ D. 4e/n

Question ID : **9277597145**
Status : **Answered**
Chosen Option : **D**

Q.89 Find the impulse produced by an average force of 500N in 1/10 seconds.

Ans
✗ A. 490 N
✗ B. 5000 N-s
✓ C. 50 N-s
✗ D. 510 N

Question ID : **9277597204**
Status : **Answered**
Chosen Option : **C**

Q.90 An iceberg floats in sea water with 10% of its volume projecting above the sea surface. What is the density of the iceberg, if the density of sea water is 1020 kg/m^3?

Ans
✗ A. 858 kg/m^3.
✗ B. 1080 kg/m^3.
✓ C. 918 kg/m^3.
✗ D. 1020 kg/m^3.

Question ID : **9277597123**
Status : **Answered**
Chosen Option : **C**

Q.91 If design speed is 12.5 m/sec, coefficient of friction is 0.37 and reaction time of driver is 2.5 seconds then what will be safe stopping sight distance (m), when there is two-way traffic on a two-lane road? Take g=10 m/sec^2

Ans

✗ A. 61.40 m

✗ B. 72.37 m

✓ C. 52.37 m

✗ D. 45.40 m

Question ID : **9277597242**
Status : **Answered**
Chosen Option : **D**

Q.92 **Which of the following is measured in centi poise?**

Ans

✗ A. Weight

✗ B. Volume

✗ C. Kinematic viscosity

✓ D. Dynamic viscosity

Question ID : **9277597120**
Status : **Answered**
Chosen Option : **D**

Q.93 **If additional works are required to supplement the original work, which of the following type of estimate is used?**

Ans

✗ A. Contingencies.

✗ B. Item rate estimate.

✓ C. Supplementary estimate.

✗ D. Revised estimate.

Question ID : **9277597185**
Status : **Answered**
Chosen Option : **C**

Q.94 Which of the following is undesirable property of soil as a highway material?

Ans
✗ A. Stability
✓ B. Compressibility
✗ C. Ease of compaction
✗ D. Good drainage

Question ID : **9277597149**
Status : **Answered**
Chosen Option : **C**

Q.95 Solve by Laplace transform $\frac{d^2y}{dt} + y = 0$,
given that $y'(0) = 1, y(0) = 0$.

Ans
✓ A. cost
✗ B. sint
✗ C. - cost
✗ D. - sint

Question ID : **9277597223**
Status : **Not Answered**
Chosen Option : **--**

Q.96 For a given road, what will be intermediate sight distance if safe stopping sight distance is 70 m and passing sight distance is 270 m?

Ans
✗ A. 270 m
✗ B. 70 m
✗ C. 135 m
✓ D. 140 m

Question ID : **9277597243**
Status : **Answered**
Chosen Option : **D**

Q.97 A flow net has five flow channels and twenty equipotential drops. How much is the shape factor?

Ans
✗ A. (20-5)
✗ B. (20+5)
✓ C. (5/20)
✗ D. (20/5)

Question ID : **9277597104**
Status : **Answered**
Chosen Option : **C**

Q.98 Which of the following represent the coefficient of friction between two rough bodies?

Ans
✗ A. Limiting force of friction * Normal reaction between two bodies.
✗ B. Limiting force of friction - Normal reaction between two bodies.
✗ C. Limiting force of friction + Normal reaction between two bodies.
✓ D. Limiting force of friction/Normal reaction between two bodies.

Question ID : **9277597205**
Status : **Answered**
Chosen Option : **D**

Q.99 Which of the following is a Laplace equation?

Ans
✗ A. $\nabla^4 u = 0$
✗ B. $\nabla u = 0$
✗ C. $\nabla^3 u = 0$
✓ D. $\nabla^2 u = 0$

Question ID : **9277597232**
Status : **Answered**
Chosen Option : **D**

Q.100 In which of the following type of contracts, the contractor is asked to quote only the percentage above or below or at par with the rates?

Ans
✗ A. Labor contract.
✓ B. Percentage rate contract.
✗ C. Item rate contract.
✗ D. D. rate contract.

Question ID : **9277597183**
Status : **Answered**
Chosen Option : **B**

Q.101 According to Railway Board, what is the maximum value of super-elevation?

Ans
✗ A. $1/50^{th}$ to $1/52^{th}$ of the gauge.
✗ B. $1/30^{th}$ to $1/32^{th}$ of the gauge.
✓ C. $1/10^{th}$ to $1/12^{th}$ of the gauge.
✗ D. $1/20^{th}$ to $1/22^{th}$ of the gauge.

Question ID : **9277597234**
Status : **Answered**
Chosen Option : **C**

Q.102 Evaluate $\left(\frac{\Delta^2}{E}\right)x^3, \mathrm{h} = 1.$

Ans
- ✔ A. 6_x
- ✘ B. 8_x
- ✘ C. 7_x
- ✘ D. 5_x

Question ID : **9277597227**
Status : **Not Answered**
Chosen Option : **--**

Q.103 Which type of transition curve is recommended by Indian Road Congress in the horizontal alignment of highways?

Ans
- ✘ A. Cubic Parabola.
- ✔ B. Clothoid.
- ✘ C. Parabola.
- ✘ D. Lemniscate.

Question ID : **9277597244**
Status : **Answered**
Chosen Option : **B**

Q.104 Which of the following is true with regard to 'specific yield' for an unconfined aquifer?

Ans
- ✘ A. It is greater than porosity.
- ✘ B. It is either equal to or greater than porosity
- ✘ C. It has infinite value
- ✔ D. It is less than porosity.

Question ID : **9277597138**
Status : **Answered**
Chosen Option : **B**

Q.105 The capillary rise of a fluid in a 2 mm diameter tube is 4 cm. What will be the rise of the fluid in a 0.2 mm diameter tube for the same conditions?

Ans
✗ A. 20 cm
✓ B. 40 cm
✗ C. 4 cm
✗ D. 2 cm

Question ID : **9277597121**
Status : **Answered**
Chosen Option : **B**

Q.106 Which function of total station is used to determine the heights of inaccessible points where it is not possible to locate the prism?

Ans
✗ A. Coordinated measurements.
✓ B. Remote elevation measurements.
✗ C. Traverse measurements.
✗ D. Setting out functions.

Question ID : **9277597150**
Status : **Answered**
Chosen Option : **B**

Q.107 Which of the following is constructed at the junction of a canal and a drain to dispose of drainage without disturbing canal supplies?

Ans
✗ A. Canal module.
✗ B. Canal regulator.
✗ C. Cattle crossing.
✓ D. Canal crossing.

Question ID : **9277597136**
Status : **Answered**
Chosen Option : **B**

Q.108 For which type of soil, the In-situ vane shear test is used to measure shear strength?

Ans
- ✗ A. Gravel
- ✓ B. Very soft and sensitive clays
- ✗ C. Sandy soil
- ✗ D. Stiff and fissured clay

Question ID : **9277597115**
Status : **Answered**
Chosen Option : **B**

Q.109 How much time does the Indore method of composting take to complete the process?

Ans
- ✗ A. 3- 4 weeks.
- ✗ B. 5- 6 months.
- ✓ C. 3- 4 months.
- ✗ D. 2- 3 months.

Question ID : **9277597172**
Status : **Answered**
Chosen Option : **D**

Q.110 In a breaking test, a vehicle is travelling at a speed of 6.94 m/s was stopped by applying brakes fully and the skid marks were 4.8 m in length, determine the average skid resistance of the pavement surface? Take g=10 m/ sec^2

Ans
- ✗ A. 0.061
- ✓ B. 0.5
- ✗ C. 0.4
- ✗ D. 0.74

Question ID : **9277597245**
Status : **Answered**
Chosen Option : **B**

Q.111 What shall be the Turning Radius of an exit taxiway with design exit speed of 80 kmph, if the coefficient of friction is 0.13?

Ans
✗ A. 493.85 m
✓ B. 393.85 m
✗ C. 439.58 m
✗ D. 339.85 m

Question ID : **9277597237**
Status : **Answered**
Chosen Option : **C**

Q.112 If C is the simple closed curve in the xy-plane not inclosing the origin and $\vec{F} = \frac{-y\hat{i}+x\hat{j}}{x^2+y^2}$ then $\int_C \vec{F}.d\vec{r} =$

Ans
✗ A. 1
✗ B. 3
✗ C. -2
✓ D. 0

Question ID : **9277597219**
Status : **Answered**
Chosen Option : **D**

Q.113 Choose the correct statement regarding the net ultimate bearing capacity of a purely cohesive soil.

Ans
✓ A. The net ultimate bearing capacity of a purely cohesive soil is independent of the width as well as of depth of the footing.
✗ B. The net ultimate bearing capacity of a purely cohesive soil depends on the width of footing and is independent of the depth of footing.
✗ C. The net ultimate bearing capacity of a purely cohesive soil depends on the depth of footing and is independent of the width of footing.
✗ D. The net ultimate bearing capacity of a purely cohesive soil depends on the width of footing as well as on the depth of footing.

Question ID : **9277597119**
Status : **Answered**
Chosen Option : **A**

Q.114 What will be the Max capacity flow (qc), if the jam density is Kj and the free mean speed is Vf?

Ans
✔ A. $qc = (Vf * Kj)/4$
✘ B. $qc = (Vf * Kj)/2$
✘ C. $qc = Vf/4 + Kj/4$
✘ D. $qc = Vf/2 + Kj/2$

Question ID : **9277597217**
Status : **Answered**
Chosen Option : **A**

Q.115 If $\vec{r} = t\hat{i} - t^2\hat{j} + (t-1)\hat{k}$ and $\vec{s} = 2t^2\hat{i} + 6t\hat{k}$ the find the value of $\int_0^2 (\vec{r}.\vec{s})dt$

Ans
✘ A. 15
✘ B. 8
✔ C. 12
✘ D. 18

Question ID : **9277597218**
Status : **Answered**
Chosen Option : **C**

Q.116 Which is the European satellite based navigation system?

Ans
✘ A. NNSS.
✔ B. Galileo.
✘ C. ISS.
✘ D. BeiDou.

Question ID : **9277597152**
Status : **Answered**
Chosen Option : **B**

Q.117 What is the limit of cant deficiency (cm) for speed up to 100 kmph on Broad gauge (BG)?

Ans
✗ A. 7.6 mm
✗ B. 10.0 cm
✓ C. 5.1 cm
✗ D. 7.6 cm

Question ID : **9277597236**
Status : **Answered**
Chosen Option : **B**

Q.118 Solve: $(D^2 - 4D + 4)y = 0$

Ans
✓ A. $y = (c_1 + c_2 x)e^{2x}$
✗ B. $y = c_1 e^{-2x} + c_2 e^{-2x}$
✗ C. $y = (c_1 + c_2 x)e^{-4x}$
✗ D. $y = c_1 e^{-2x} + c_2 e^{2x}$

Question ID : **9277597221**
Status : **Answered**
Chosen Option : **A**

Q.119 Which of the following is the correct equation given by Kuichling for estimating the discharge rate (Q litre/minute) of the firefighting water requirement?

Ans

✗ A. $Q = 3182*(\text{population in thousands})^2$

✗ B. $Q = 100*(\text{population in thousands})^{1/2}$

✓ C. $Q = 3182*(\text{population in thousands})^{1/2}$

✗ D. $Q = 100*(\text{population in thousands})^2$

Question ID : **9277597158**
Status : **Answered**
Chosen Option : **C**

Q.120 Which of the following property of Bitumen is determine by Ring and Ball test?

Ans

✗ A. Ductility

✗ B. Flash ad Fire Point

✗ C. Viscosity

✓ D. Softening Point

Question ID : **9277597230**
Status : **Answered**
Chosen Option : **D**

Q.121 Which of the following expression represents the factor of safety against heave piping?

Ans
✗ A. (Downward force due to submerged weight of soil + Upward seepage force)

✗ B. (Downward force due to submerged weight of soil - Upward seepage force)

✓ C. $\frac{\text{Downward force due to submerged weight of soil}}{\text{Upward seepage force}}$

✗ D. $\frac{\text{Upward seepage force}}{\text{Downward force due to submerged weight of soil}}$

Question ID : **9277597105**
Status : **Answered**
Chosen Option : **D**

Q.122 What advantage is obtained, if the load is applied through shear center in a beam cross-section?

Ans
✓ A. There is no twisting moment in the beam.

✗ B. There is no shear in the beam.

✗ C. There is no axial force in the beam.

✗ D. There is no bending moment in the beam.

Question ID : **9277597208**
Status : **Answered**
Chosen Option : **A**

Q.123 Calculate the depth of capillary fringe in a soil mass having average pore size of 0.10 mm.

Ans
✗ A. 35.6 cm

✗ B. 50.5 cm

✓ C. 30.6 cm

✗ D. 10.5 cm

Question ID : **9277597108**
Status : **Answered**
Chosen Option : **C**

Q.124 Which of the following instrument is not used for setting out right angles in chain surveying?

Ans
✗ A. Optical square
✓ B. Dumpy level
✗ C. Prism square
✗ D. Cross staff

Question ID : **9277597142**
Status : **Answered**
Chosen Option : **B**

Q.125 Find the moment generating function of the random variable whose moment are

$\mu'_r = (r+1)!\,2^r$

Ans
✗ A. $\frac{1}{(1-2t)}$
✗ B. $\frac{1}{(1+2t)}$
✓ C. $\frac{1}{(1-2t)^2}$
✗ D. $\frac{1}{(1+2t)^2}$

Question ID : **9277597214**
Status : **Not Answered**
Chosen Option : **--**

Q.126 Which of the following is NOT an assumption made for the friction circle method of slope stability analysis?

Ans
✗ A. Total stress analysis is applicable.

✓ B. The resultant passes through the center of friction circle.

✗ C. The resultant is tangential to the friction circle.

✗ D. Friction is fully mobilized.

Question ID : **9277597113**
Status : **Answered**
Chosen Option : **A**

Q.127 Find $\left[\frac{n!e^{-as}}{(s-b)^{n+1}}\right]$

Ans
✗ A. $e^{-b(t-a)}(t-a)^{n+1}u(t-a)$

✗ B. $e^{-b(t+a)}(t+a)^{n}u(t+a)$

✓ C. $e^{b(t-a)}(t-a)^{n}u(t-a)$

✗ D. $n!\,e^{-b(t-a)}(t-a)^{n+1}u(t-a)$

Question ID : **9277597224**
Status : **Answered**
Chosen Option : **B**

Q.128 A loose uniform sand (filter sand) with rounded grains has an effective grain size of 0.02 cm. What will be the coefficient of permeability of the sand according to Allen Hazen equation?

Ans
- ✗ A. 0.02 cm/sec.
- ✓ B. 0.04 cm/sec.
- ✗ C. 0.10 cm/sec.
- ✗ D. 0.08 cm/sec.

Question ID : **9277597099**
Status : **Answered**
Chosen Option : **B**

Q.129 Find the Laplace transform of: $3\sqrt{t}+\frac{4}{\sqrt{t}}$

Ans
- ✗ A. $\sqrt{\pi}\left(\frac{3}{2s}+\frac{4}{s}\right)$
- ✗ B. $\sqrt{\pi}\left(\frac{3}{2s}+4\right)$
- ✓ C. $\sqrt{\frac{\pi}{s}}\left(\frac{3}{2s}+4\right)$
- ✗ D. $\sqrt{\frac{\pi}{s}}\left(\frac{3}{2s}+\frac{4}{s}\right)$

Question ID : **9277597222**
Status : **Answered**
Chosen Option : **A**

Q.130 Which type of tender is used if only single firm is invited to provide the required service by quoting rates?

Ans
- ✗ A. Rate contract.
- ✓ B. Single tender.
- ✗ C. Limited tender.
- ✗ D. Open tender.

Question ID : **9277597184**
Status : **Answered**
Chosen Option : **B**

Q.131 If $f = x^2 + 2y^2 + 3z^2$, the div grad f is:

Ans
- ✓ A. 12
- ✗ B. 31
- ✗ C. 20
- ✗ D. 38

Question ID : **9277597216**
Status : **Answered**
Chosen Option : **A**

Q.132 Which of the following is NOT correctly matched?

Ans
- ✓ A. Radial system ---- Interlaced system.
- ✗ B. Ring system --- Circular system.
- ✗ C. Grid Iron system --- Reticulation system.
- ✗ D. Dead end system --- Tree system.

Question ID : **9277597164**
Status : **Answered**
Chosen Option : **A**

Q.133 If F(x) is distribution function of random variables X then $F(-\infty) = ?$

Ans
- ✔ A. 0
- ✘ B. $-\infty$
- ✘ C. ∞
- ✘ D. 1

Question ID : **9277597212**
Status : **Answered**
Chosen Option : **A**

Q.134 If λ is an Eigen value of a non-singular matrix A, then Eigen value of adjA is:

Ans
- ✘ A. λ
- ✔ B. $\frac{|A|}{\lambda}$
- ✘ C. $\lambda|A|$
- ✘ D. λ^{-1}

Question ID : **9277597210**
Status : **Answered**
Chosen Option : **A**

Q.135 A 4 cm jet of water strikes a stationary inclined flat plate with a velocity of 20m/sec. The plate makes an angle of 30° with the axis of the jet. Calculate the normal force exerted on the plate.

Ans
- ✔ A. (80π) Newton.
- ✘ B. (20π) Newton.
- ✘ C. (10π) Newton.
- ✘ D. (100π) Newton.

Question ID : **9277597124**
Status : **Answered**
Chosen Option : **A**

Q.136 What will be the combined correction for curvature and refraction, if the distance is 7D?

Ans

✔ A. $C_C = 3.2977\ D^2$

✗ B. $C_C = 2.4711\ D$

✗ C. $C_C = 0.4711\ D^2$

✗ D. $C_c = 1.0673\ D^2$

Question ID : **9277597147**
Status : **Answered**
Chosen Option : **A**

Q.137 The quantity of concrete work is $43m^3$. How many samples should be tested for the concrete work, according to the 'Indian Standard for Plain and reinforced concrete- code of practice'?

Ans

✗ A. 9

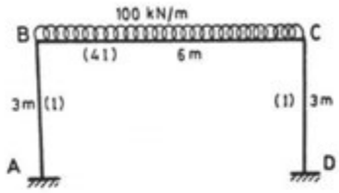
✗ B. 3

✗ C. 2

✔ D. 4

Question ID : **9277597194**
Status : **Answered**
Chosen Option : **D**

Q.138 What will be the value of Distribution factor for member 'BC', at joint 'B' for the given portal frame in figure below?



Ans
- ✗ A. (4/5)
- ✗ B. (1/3)
- ✓ C. (2/3)
- ✗ D. (3/5)

Question ID : **9277597207**
Status : **Answered**
Chosen Option : **B**

Q.139 Which of the following treatment is NOT categorized as preliminary treatment of sewage?

Ans
- ✗ A. Removal of grit and sand.
- ✗ B. Removal of oils and grease.
- ✓ C. Removal of pathogens and chlorination.
- ✗ D. Removal of floating materials.

Question ID : **9277597179**
Status : **Answered**
Chosen Option : **C**

Q.140 A recently completed fill was 10 m thick and its initial average void ratio was 1.0. The fill was loaded on the surface by constructing an embankment covering a large area of the fill. Some months after the embankment was constructed, measurements of the fill indicated an average void ratio of 0.8. Calculate the compression of the fill.

Ans
- ✗ A. 10 m
- ✓ B. 1.0 m
- ✗ C. 1.5 m
- ✗ D. 15 m

Question ID : **9277597109**
Status : **Answered**
Chosen Option : **B**

Q.141 For which type of soil, Skempton's method can be used in determining bearing capacity?

Ans
- ✗ A. Cohesion less soil
- ✓ B. Cohesive soil
- ✗ C. c-Φ soil
- ✗ D. Rocks

Question ID : **9277597118**
Status : **Answered**
Chosen Option : **B**

Q.142 In a Pelton Wheel turbine, the ratio of pitch diameter of the wheel to the jet diameter is equal to 20. What will be the number of buckets according to Taygun empirical formula?

Ans
- ✗ A. 110
- ✗ B. 35
- ✓ C. 25
- ✗ D. 20

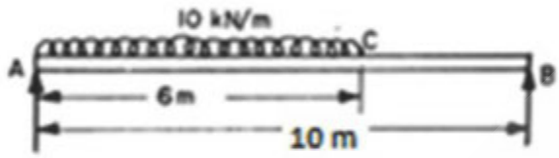
Question ID : **9277597128**
Status : **Answered**
Chosen Option : **C**

Q.143 Which of the following type of pavement marking is meant to separate the opposite streams of traffic on undivided two-way roads?

Ans
- ✗ A. Turn markings
- ✗ B. No passing zone markings
- ✓ C. Centre lines
- ✗ D. Stop lines

Question ID : **9277597148**
Status : **Answered**
Chosen Option : **C**

Q.144 Calculate the reaction at support 'B' of the given beam in the figure below.



Ans
- ✓ A. 18 kN
- ✗ B. 100 kN
- ✗ C. 42 kN
- ✗ D. 60 kN

Question ID : **9277597202**
Status : **Answered**
Chosen Option : **A**

Q.145 For which of the following warning information the traffic sign board, shown in figure, is used?

Ans
- ✗ A. Dangerous dip.
- ✗ B. Narrow bridge.
- ✗ C. Unguarded.
- ✓ D. Gap in median.

Question ID : **9277597157**
Status : **Answered**
Chosen Option : **C**

Q.146 A Cipolletti weir is a:

Ans
- ✗ A. rectangular weir with sharp edges
- ✓ B. trapezoidal notch with sides inclined at 1 H: 4 V
- ✗ C. High triangular notch
- ✗ D. Trapezoidal notch with sides sloping at 45°

Question ID : **9277597127**
Status : **Answered**
Chosen Option : **B**

Q.147 Which of the following is not a desirable characteristic of good timber?

Ans
✗ A. When struck sonorous sound is produced.
✓ B. Wider annual rings.
✗ C. Uniform texture.
✗ D. Dark colour.

Question ID : **9277597191**
Status : **Answered**
Chosen Option : **A**

Q.148 Select the INCORRECT statement from the following statements.

Ans
✗ A. Leachate is produced during rainy season and undesirable product.
✗ B. Leachate may seep to ground water-table to contaminate the ground water.
✗ C. Leachate is a coloured, poisonous and polluted liquid.
✓ D. Leachate is produced during peak summer and desirable product.

Question ID : **9277597175**
Status : **Answered**
Chosen Option : **D**

Q.149 Which of the following is NOT a good landfill sealant for control of Gas and Leachate movement at sanitary landfill sites?

Ans
✓ A. Thin layer of gravel.
✗ B. Polyvinyl chloride.
✗ C. Kaolinites.
✗ D. Sodium carbonate.

Question ID : **9277597176**
Status : **Answered**
Chosen Option : **A**

Q.150 The sewage of a city is discharged, with flow rate of 100 l/s and 250 mg/l BOD, into a river flowing at 300 l/s with 5 mg/l BOD. What will be the BOD of the diluted mixture in mg/l?

Ans
- ✔ A. 66.25
- ✘ B. 250
- ✘ C. 100
- ✘ D. 5

Question ID : **9277597178**
Status : **Answered**
Chosen Option : **A**

Section : General Knowledge and Awareness

Q.1 As of October 2020, the Government of India sold rice at a subsidised rate of Rs. _____ per kilo to the poorest of poor under the Antyodaya Anna Yojana (AAY) scheme.

Ans
- ✘ A. 10
- ✔ B. 3
- ✘ C. 2
- ✘ D. 5

Question ID : **9277597250**
Status : **Answered**
Chosen Option : **A**

Q.2 Paolo Rossi, who passed away in December 2020, was a _____ football player.

Ans
✗ A. French
✓ B. Italian
✗ C. Spanish
✗ D. Brazilian

Question ID : **9277597264**
Status : **Answered**
Chosen Option : **A**

Q.3 The state government in _____ proposed the Shakti Bill in December 2020.

Ans
✗ A. Gujarat
✗ B. Punjab
✗ C. Andhra Pradesh
✓ D. Maharashtra

Question ID : **9277597262**
Status : **Answered**
Chosen Option : **C**

Q.4 Which of the following devices is used to forecast weather?

Ans
✗ A. Fluxmeter
✗ B. Odometer
✓ C. Hygrometer
✗ D. Refractometer

Question ID : **9277597252**
Status : **Answered**
Chosen Option : **D**

Q.5 Around AD 1651, the 'factors' of the British East India Company began operations from a base in _____.

Ans
✗ A. Surat
✗ B. Bombay
✗ C. Madras
✓ D. Bengal

Question ID : **9277597257**
Status : **Answered**
Chosen Option : **A**

Q.6 As per the Census of India 2011, the population of the country increased by about _____ million persons in absolute numbers during the decade 2001-2011.

Ans
✓ A. 181
✗ B. 128
✗ C. 51
✗ D. 96

Question ID : **9277597255**
Status : **Answered**
Chosen Option : **A**

Q.7 Which of the following is a 3-day fair held in West Bengal in January-February every year?

Ans
✗ A. Tarnetar Mela
✗ B. Dadri Mela
✗ C. Sonepur Mela
✓ D. Ganga Sagar Mela

Question ID : **9277597247**
Status : **Answered**
Chosen Option : **D**

Q.8 In March 2021, Mithali Raj became the _____ woman cricketer internationally to complete 10000 runs across all formats.

Ans
✗ A. third
✗ B. first
✗ C. fourth
✓ D. second

Question ID : **9277597265**
Status : **Answered**
Chosen Option : **B**

Q.9 Union Budget 2021-22 allocated an amount of Rs. _____ crore to the Pradhan Mantri Jan Arogya Yojna (PMJAY).

Ans
✗ A. 3100
✗ B. 4800
✗ C. 5200
✓ D. 6400

Question ID : **9277597249**
Status : **Answered**
Chosen Option : **D**

Q.10 The Indian state of Bihar shares an international boundary with _____.

Ans
✗ A. Bhutan
✗ B. China
✗ C. Myanmar
✓ D. Nepal

Question ID : **9277597253**
Status : **Answered**
Chosen Option : **D**

Q.11 Archeological evidence of a ploughed field was found at the Harappan site in _____.

Ans
- ✔ A. Kalibangan
- ✘ B. Lothal
- ✘ C. Dholavira
- ✘ D. Mehrgarh

Question ID : **9277597256**
Status : **Answered**
Chosen Option : **D**

Q.12 The Motor Vehicles (Amendment) Act 2019 describes '_____' as the time period, after a traumatic injury, during which there is highest likelihood of preventing death by providing prompt medical care.

Ans
- ✘ A. micro minutes
- ✘ B. accident hour
- ✘ C. deadly minutes
- ✔ D. golden hour

Question ID : **9277597261**
Status : **Answered**
Chosen Option : **D**

Q.13 Who among the following is an inductee to the US National Women's Hall of Fame for 2021?

Ans
- ✔ A. Indra Nooyi
- ✘ B. Swati Mohan
- ✘ C. Kamala Harris
- ✘ D. Nikki Haley

Question ID : **9277597259**
Status : **Answered**
Chosen Option : **D**

Q.14 In November 2020, the Board of Control for Cricket in India (BCCI) announced that MPL Sports would replace _____ as Team India's kit sponsor.

Ans
✔ A. Nike
✘ B. Adidas
✘ C. Oppo
✘ D. Byju's

Question ID : **9277597263**
Status : **Answered**
Chosen Option : **D**

Q.15 In which of the following states is the Datia Palace located?

Ans
✘ A. Rajasthan
✘ B. West Bengal
✘ C. Maharashtra
✔ D. Madhya Pradesh

Question ID : **9277597248**
Status : **Answered**
Chosen Option : **D**

Q.16 Which of the following is paired CORRECTLY?

Ans
✘ A. translucent – objects through which we cannot see through at all
✔ B. transparent – objects through which things can be seen clearly
✘ C. luminous - objects through which we can see, but not very clearly
✘ D. opaque – objects that emit a light of their own

Question ID : **9277597251**
Status : **Answered**
Chosen Option : **B**

Q.17 The _____ film 'Jallikattu' was chosen as India's official entry to the Best International Feature Film category of the 93rd Academy Awards.

Ans
✗ A. Tamil
✗ B. Telugu
✓ C. Malayalam
✗ D. Kannada

Question ID : **9277597260**
Status : **Answered**
Chosen Option : **C**

Q.18 After the death of Guru Gobind Singh, the Sikhs revolted against the Mughals under the leadership of _____.

Ans
✗ A. Guru HarGobind
✗ B. Ranjit Singh
✗ C. Phula Singh
✓ D. Banda Bahadur

Question ID : **9277597258**
Status : **Answered**
Chosen Option : **D**

Q.19 Umananda is a peacock-shaped _____ in north-east India.

Ans
✗ A. lake
✓ B. island
✗ C. crater
✗ D. hill

Question ID : **9277597254**
Status : **Answered**
Chosen Option : **B**

Q.20 Vinesh Phogat defeated _____ to win the gold medal in the women's 53-kg category at XXIV Outstanding Ukrainian Wrestlers and Coaches Memorial tournament in February 2021.

Ans
✗ A. Jacarra Winchester
✓ B. Vanesa Kaladzinskaya
✗ C. Evin Demirhan
✗ D. Yui Susaki

Question ID : **9277597266**
Status : **Answered**
Chosen Option : **A**

Section : Reasoning and Aptitude

Q.1 Varun and Kishore are brothers of Gitanjali. Ashok is the father of Varun. Lovely is the daughter of Gitanjali. How is Varun related to Lovely?

Ans
✓ A. Maternal uncle
✗ B. Paternal uncle
✗ C. Father
✗ D. Brother

Question ID : **9277597276**
Status : **Answered**
Chosen Option : **A**

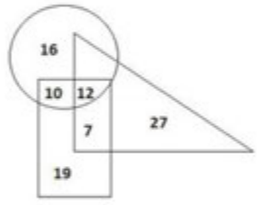
Q.2 Select the option that is related to the third word in the same way as the second word is related to the first word.

Elephant : Trumpet : : Donkey : ?

Ans
- ✗ A. Grunt
- ✗ B. Howl
- ✗ C. Bleat
- ✓ D. Bray

Question ID : **9277597271**
Status : **Answered**
Chosen Option : **C**

Q.3 In the following diagram, circle represents diabetic persons, triangle represents rural persons and rectangle represents persons infected by Corona virus.



Which number represents the persons who are neither diabetic nor rural but are infected by Corona virus?

Ans
- ✓ A. 19
- ✗ B. 10
- ✗ C. 7
- ✗ D. 12

Question ID : **9277597282**
Status : **Answered**
Chosen Option : **A**

Q.4 Three of the following four pairs have letter clusters that share a certain logical relationship.
Select the pair in which no such relationship exists.

Ans
✔ A. MBH : PYS
✘ B. QGM : JTN
✘ C. TCK : GXP
✘ D. HDP : SWK

Question ID : **9277597270**
Status : **Answered**
Chosen Option : **B**

Q.5 A cube having a side 42 cm is painted blue on all the faces and then cut into smaller cubes of sides 7 cm each. Find the number of smaller cubes having only one face painted.

Ans
✘ A. 32
✘ B. 128
✘ C. 64
✔ D. 96

Question ID : **9277597286**
Status : **Answered**
Chosen Option : **C**

Q.6 Select the option that represents the correct order of the given words as they would appear in an English dictionary.

1.Possessor
2.Possible
3. Possibility
4. Possession
5.Possessive

Ans
✗ A. 3, 5, 1, 4, 2
✗ B. 3, 5, 4, 1, 2
✗ C. 1, 2, 3, 4, 5
✓ D. 4, 5, 1, 3, 2

Question ID : 9277597268
Status : Answered
Chosen Option : D

Q.7 Which of the following interchange of signs would make the given equation correct?

189 ÷ 27 – 3 + 29 × 2 = 48

Ans
✓ A. - and ×
✗ B. + and ×
✗ C. ÷ and -
✗ D. - and +

Question ID : 9277597279
Status : Answered
Chosen Option : A

Q.8 Two positions of a die marked with numbers IX, X, XI, XII, XIII and XIV are shown in this figure.
Identify the number on the face opposite to the face having number X on it.

Ans
✗ A. XI
✗ B. X
✗ C. XII
✓ D. IX

Question ID : 9277597285
Status : Answered
Chosen Option : D

Q.9 If 'Crocodile' is called 'Fish', 'Fish' is called 'Duck', 'Duck' is called 'Swan', 'Swan' is called 'Sparrow', and 'Sparrow' is called 'Crow' , then the sound of which animal is called quack?

Ans
✗ A. Fish
✗ B. Duck
✗ C. Sparrow
✓ D. Swan

Question ID : 9277597274
Status : Answered
Chosen Option : A

Q.10 If "RAJU" is coded as XMDU and "TINA" is coded as DQLW, then what will be the code for "RUHI" in the same coding system?

Ans
- ✗ A. NLXV
- ✗ B. MKYV
- ✓ C. LKXU
- ✗ D. KJXW

Question ID : **9277597273**
Status : **Answered**
Chosen Option : **C**

Q.11 Three of the following four pairs have words/group of words that share a certain logical relationship.
Select the pair in which no such relationship exists.

Ans
- ✗ A. Vitamin C : Scurvy
- ✗ B. Vitamin D : Rickets
- ✗ C. Vitamin A : Night Blindness
- ✓ D. Vitamin B1 :Pellagra

Question ID : **9277597269**
Status : **Answered**
Chosen Option : **C**

Q.12 Two statements are given, followed by two conclusions numbered I and II. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusion(s) logically follows/follow from the statements.

Statements:
All rabbits are cows.
Some rabbits are cats.

Conclusions:
I. All cats are rabbits.
II. Some cows are rabbits.

Ans
✔ A. Only conclusion II follows.

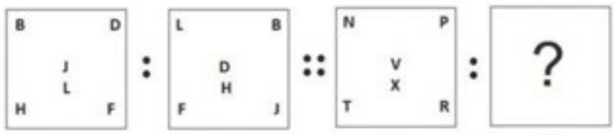
✗ B. Either conclusion I or II follows.

✗ C. Both the conclusions follow.

✗ D. Only conclusion I follows.

Question ID : **9277597277**
Status : **Answered**
Chosen Option : **A**

Q.13 Select the option that is related to the third figure in the same way as the second figure is related to the first figure.

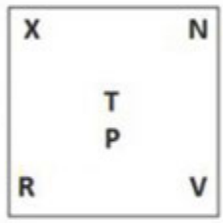


i ii iii iv

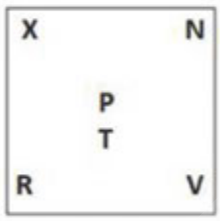
Ans

✗ A.

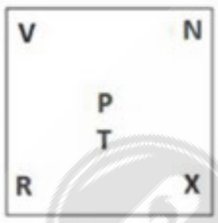
✗ B.



✓ C.



✗ D.



Question ID : **9277597284**
Status : **Answered**

Chosen Option : C

Q.14 Select the option that is related to the third letter cluster in the same way as the second letter cluster is related to the first letter cluster.

TKG : WPN :: KTH : ?

Ans
✔ A. NYO
✘ B. MXP
✘ C. PXQ
✘ D. OLQ

Question ID : 9277597272
Status : Answered
Chosen Option : A

Q.15 Which number from the options will logically replace the question mark in the below series:

8, 12, 39, 55, 180, ?

Ans
✘ A. 324
✘ B. 256
✘ C. 248
✔ D. 216

Question ID : 9277597278
Status : Not Answered
Chosen Option : --

Q.16 Seven friends Gauri , Vinod , Ridima , Jiya, Ritik, Vishal and Karishma are sitting on a circular bench facing towards the centre but not necessarily in the same order. Vinod and Jiya are not neighbour of Ritik. Karishma is sitting third to the left of Ritik. Gauri is sitting immediately to the right of Karishma . Ridima is sitting immediately to the left of Ritik .Who is sitting third to the right of Gauri ?

Ans
- ✗ A. Vinod
- ✗ B. Jiya
- ✗ C. Karishma
- ✓ D. Vishal

Question ID : **9277597275**
Status : **Answered**
Chosen Option : **D**

Q.17 Radhika is facing towards East and moves 10 m forward. Then she takes a right turn and moves 5 m. She then turns to her left and moves 10 m. Then she takes a right turn and moves 5 m. She again turns to her right and moves 12 m. Then Radhika turns 90 degrees clockwise and moves 4 m and reaches a point P. What is the shortest distance of this point P from her initial position?

Ans
- ✗ A. 9 m
- ✗ B. 8 m
- ✓ C. 10 m
- ✗ D. 12 m

Question ID : **9277597283**
Status : **Answered**
Chosen Option : **C**

Q.18 Which letter cluster from the options will logically replace the question mark in the below series:

KSV, LPQ, MML, NJG, ?

Ans
- ✔ A. OGB
- ✘ B. OGC
- ✘ C. NFC
- ✘ D. MFD

Question ID : **9277597267**
Status : **Answered**
Chosen Option : **A**

Q.19 Which diagram best represents the relation between:

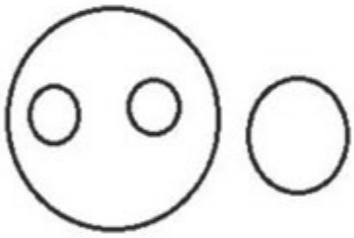
Communicable diseases, Influenza, Diabetes and Measles

Ans

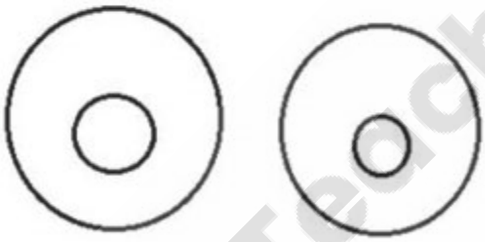
✗ A.

✗ B.

✔ C.



✗ D.



Question ID : **9277597281**
Status : **Answered**
Chosen Option : **C**

Q.20 On interchanging the digits of a two-digit number X, a new number Y is formed. If the sum of X and Y is 88 and the difference of X and Y is 36, find the value of (2X - 3)?

Ans
✔ A. 121
✘ B. 118
✘ C. 133
✘ D. 123

Question ID : **9277597280**
Status : **Answered**
Chosen Option : **D**

Section : General Hindi

Q.1 'न उसमें पत्ते थे न फूल थे।' यह वाक्य किस प्रकार का है?

Ans
✘ A. इच्छाबोधक वाक्य
✘ B. मिश्र वाक्य
✔ C. संकुचित संयुक्त वाक्य
✘ D. साधारण वाक्य

Question ID : **9277597295**
Status : **Answered**
Chosen Option : **C**

Q.2 'सुख-दुख से परे मस्त रहने वाला' किस लोकोक्ति का अर्थ है?

Ans
✔ A. कोई मरे कोई जीवे सुथरा घोल बताशा पीवे
✘ B. कोठी वाला रोवे, छप्पर वाला सोवे
✘ C. कोई मरे या रोवे, कोई मल्हार गावे
✘ D. कोई माल मस्त, कोई हाल मस्त

Question ID : **9277597294**
Status : **Answered**
Chosen Option : **C**

Q.3 'प्रतिष्ठा बचा लेना' इस अर्थ को प्रकट करने वाला मुहावरा कौन सा है?

Ans
✗ A. पगड़ी उछालना
✓ B. पगड़ी बगल में ले लेना
✗ C. पगड़ी झटकना
✗ D. पगड़ी बदलना

Question ID : **9277597293**
Status : **Answered**
Chosen Option : **C**

Q.4 'उद्‌बुद्ध' का पर्यायवाची शब्द कौन सा है?

Ans
✗ A. श्रेष्ठ
✗ B. उत्पत्ति
✓ C. प्रबुद्ध
✗ D. तैयार

Question ID : **9277597288**
Status : **Answered**
Chosen Option : **D**

Q.5 'जिसका दमन करना कठिन हो' वाक्यांश के लिए सार्थक शब्द है:

Ans
✗ A. दुर्जेय
✗ B. दुर्भेद्य
✗ C. दुर्गम
✓ D. दुर्दम

Question ID : **9277597289**
Status : **Answered**
Chosen Option : **C**

Q.6 अधोलिखित में कौन सा शब्द तत्सम है?

Ans
✗ A. खेत
✗ B. किसान
✓ C. कवि
✗ D. राय

Question ID : **9277597287**
Status : **Answered**
Chosen Option : **A**

Q.7 'अपनी अवज्ञा से उत्पन्न क्षोभ' इस अर्थ को प्रकट करने वाला शब्द कौन सा है ?

Ans
✓ A. अमर्ष
✗ B. भय
✗ C. क्रोध
✗ D. आशंका

Question ID : **9277597290**
Status : **Answered**
Chosen Option : **C**

Q.8 'फाँस' उपन्यास के रचनाकार कौन हैं?

Ans
✗ A. राजेंद्र यादव
✗ B. शिवमूर्ति
✗ C. पंकज सुबीर
✓ D. संजीव

Question ID : **9277597296**
Status : **Not Answered**
Chosen Option : **--**

Q.9 'अलिका-अलीका' शब्द युग्म का उचित अर्थ कौन सा है?

Ans
✗ A. मिथ्या-माथा
✗ B. सखी-भ्रमर
✗ C. भ्रमर-सखी
✓ D. माथा-मिथ्या

Question ID : **9277597291**
Status : **Answered**
Chosen Option : **D**

Q.10 बहुव्रीहि समास का उदाहरण कौन सा है?

Ans
✗ A. लेनदेन
✓ B. निर्जन
✗ C. त्रिभुवन
✗ D. पुरुषोत्तम

Question ID : **9277597292**
Status : **Answered**
Chosen Option : **D**