Question Paper Preview

Question Paper Name: Civil Engineering 11th May 2018 Shift1
Subject Name: Civil Engineering
Duration: 120

Civil Engineering

Display Number Panel: Yes
Group All Questions: No

Question Number : 1 Question Id : 2203604321 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The number of linearly independent Eigen vectors of $\begin{bmatrix} 2 & 1 \\ 0 & 2 \end{bmatrix}$ is _____.

Options :

1. 0

2. 1

3. 2

4. infinite

Question Number : 2 Question Id : 2203604322 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If S is any closed surface enclosing a volume V and $\overline{F} = x\overline{i} + 2y\overline{j} + 3z\overline{k}$ then

$\iint_S \overline{F}.\overline{N}\, ds =$ _____.

Options :

1. V

2. $2V$

3. $3V$

4. $6V$

Question Number : 3 Question Id : 2203604323 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\nabla^2(r^n) =$ _____ where $r = \left|\bar{R}\right|, \bar{R} = x\bar{i} + y\bar{j} + z\bar{k}$.

Options :

1. $n.r^{n-1}$

2. $n.r^{n-2}$

3. $n(n+1).r^{n-2}$

4. $n(n-1).r^{n-2}$

Question Number : 4 Question Id : 2203604324 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An integrating factor of $y^2dx + (1+xy)dy = 0$, is_____.

Options :

1. e^y

2. e^x

3. e^{xy}

4. e^{-xy}

Question Number : 5 Question Id : 2203604325 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The two-dimensional heat equation in steady state condition is _____.

Options :

1. $$\frac{\partial^2 u}{\partial x^2} = C^2 \frac{\partial u}{\partial t}$$

2. $$\left(\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} \right) C^2 = \frac{\partial^2 u}{\partial t^2}$$

3. $$\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = C^2 \frac{\partial u}{\partial t}$$

4. $$\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0$$

Question Number : 6 Question Id : 2203604326 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The function $f(z) = xy + iy$ is

Options :

1. Continuous everywhere but not analytic.

2. Discontinuous but analytic everywhere.

3. Continuous and analytic everywhere.

4. Neither Continuous nor analytic.

Question Number : 7 Question Id : 2203604327 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $f(t)$ is a probability density function of a continuous random variable 't' defined by $f(t) = \begin{cases} 1+t, & -1 \le t \le 0 \\ 1-t, & 0 \le t \le 1 \end{cases}$, then the standard deviation of random variable is __

Options :

1. $\frac{1}{\sqrt{3}}$

2. $\frac{1}{\sqrt{6}}$

3. $\frac{1}{3}$

4. $\frac{1}{6}$

Question Number : 8 Question Id : 2203604328 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The density function of a random variable X is given by $f(x)=\begin{cases} e^{-x}, & x>0 \\ 0, & Otherwise \end{cases}$ then the variance of X is

Options :

1. 0

2. 1

3. 2

4. $\frac{1}{2}$

Question Number : 9 Question Id : 2203604329 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of $y' = y + x, y(0) = 1$, by Euler's method for y at $x = 0.2$ is _____.

Options :

1. 1.2

2. 1.07

3. 1.15

4. 1.48

Question Number : 10 Question Id : 2203604330 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Newton-Raphson iterative formula is ____, $n = 0,1,2\ldots$

Options :

1. $x_{n+1} = x_n - \frac{f'(x_n)}{f(x_n)}$

2. $x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$

3. $x_{n+1} = x_n + \frac{f(x_n)}{f'(x_n)}$

4. $x_{n+1} = x_n + \frac{f'(x_n)}{f(x_n)}$

Question Number : 11 Question Id : 2203604331 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a prismatic bar under uni-axial tension, the aspect angle defining the oblique section on which the normal and shear stresses are equal is

Options :

1. 90°

2. 45°

3. 60°

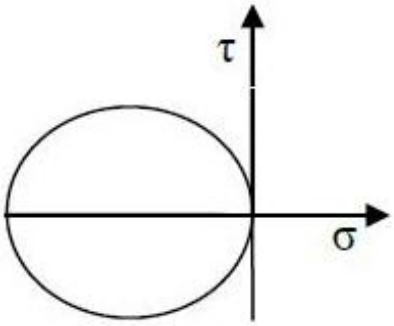
90°

4.

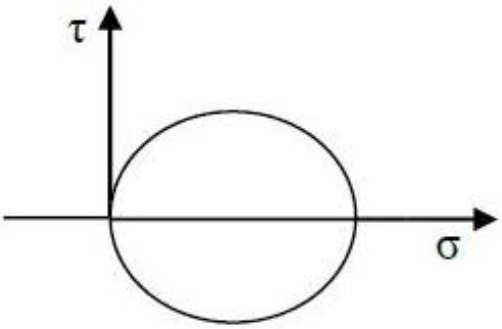
Question Number : 12 Question Id : 2203604332 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The state of pure shear is represented by one of the following Mohr's circles. Identify the correct one.

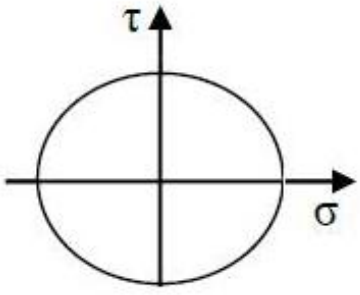
Options :



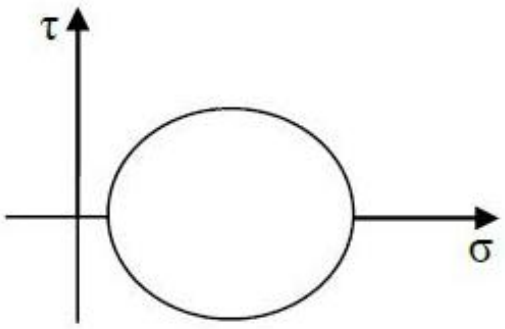
1.



2.



3.

4. 

Question Number : 13 Question Id : 2203604333 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cement with more Tricalcium silicate gives

Options :

1. early strength of concrete

2. later strength of concrete

3. workability of concrete

4. creep of concrete

Question Number : 14 Question Id : 2203604334 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a fillet weld, the weakest section is the

Options :

1. smaller side of the fillet

2. throat of the fillet

3. side perpendicular to force

4. side parallel to force

Question Number : 15 Question Id : 2203604335 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Rankine Gordon formula for buckling is valid for

Options :

1. short and long columns.

2. long column

3. short column

4. very long column

Question Number : 16 Question Id : 2203604336 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When a thin cylindrical shell is subjected to an internal pressure, there is

Options :

1. a decrease in diameter and length of the shell

2. an increase in diameter and decrease in length of the shell

3. a decrease in diameter and increase in length of the shell

4. an increase in diameter and length of the shell.

Question Number : 17 Question Id : 2203604337 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A simply supported rectangular beam of span 'l' and depth "D" carries a central load 'W'. The ratio of maximum deflection to maximum bending stress is (where E denotes the elasticity of the material of the beam)

Options :

1. $\frac{l^2}{6ED}$

2. $\frac{l^2}{8ED}$

3. $\frac{l^2}{48ED}$

4. $\frac{l^2}{12ED}$

Question Number : 18 Question Id : 2203604338 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cantilever beam of span 'L' is loaded with a concentrated load 'W' at the free end. The ratio of bending moment at mid-span to the maximum bending moment is

Options :

1. 2

2. 1/2

3. L

4. L/2

Question Number : 19 Question Id : 2203604339 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Separation of water from the concrete mix is known as

Options :

1. Bleeding

2. Shrinkage

3. Segregation

4. Creep

Question Number : 20 Question Id : 2203604340 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In RCC beams, as the percentage area of tension steel increases

Options :

1. depth of neutral axis increases

2. depth of neutral axis decreases

3. depth of neutral axis does not change

4. lever arm increases

Question Number : 21 Question Id : 2203604341 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a reinforced concrete beam section, the shape of the shear stress distribution diagram is

Options :

1. parabolic over the whole section with maximum value at the neutral axis

2. parabolic above the neutral axis and rectangular below the neutral axis

3. linearly varying with distance from the neutral axis

4. dependent on the magnitude of shear reinforcement provided

Question Number : 22 Question Id : 2203604342 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The shape of the cross–section which has the largest shape factor is

Options :

1. rectangular

2. I-section

3. diamond

4. solid circular

Question Number : 23 Question Id : 2203604343 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The kinematic indeterminacy of a fixed beam is

Options :

1. 4

2. zero

3. 3

4. 2

Question Number : 24 Question Id : 2203604344 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a member carries a tensile force P on its area of cross section A, the normal stress introduced on an inclined plane making an angle θ with its transverse plane, is

Options :

1. $(P/A)\sin^2\theta$

2. $(P/A)\cos^2\theta$

3. $(P/A)\tan^2\theta$

4. $(P/2A)\sin^2\theta$

Question Number : 25 Question Id : 2203604345 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

U_1 and U_2 are the strain energies stored in a prismatic bar due to axial forces P_1 and P_2 respectively. If the strain energy stored in the same bar due to combined action of P_1 and P_2 is denoted by U, then which of the following is correct?

Options :

1. $U = U_1 + U_2$

2. $U = U_1U_2$

3. $U < (U_1 + U_2)$

4. $U > (U_1 + U_2)$

Question Number : 26 Question Id : 2203604346 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Why are intermediate vertical stiffeners provided in plate girders?

Options :

1. To eliminate web buckling

2. To eliminate local buckling

3. To transfer concentrated loads

4. To prevent excessive deflection

Question Number : 27 Question Id : 2203604347 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

On which one of the following factors does the strength of concrete primarily depend?

Options :

1. Quality of coarse aggregate

2. Quality of fine aggregate

3. Fineness of cement

4. Water-Cement ratio

Question Number : 28 Question Id : 2203604348 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A simply supported parabolic arch with central hinge, rise, r and span, *l* is supported at its ends on pins at the same level. The horizontal thrust due to total distributed load, W is

Options :

1. $\frac{Wl}{4r}$

2. $\frac{Wl}{8r}$

3. $\frac{W^2l}{8r}$

4. $\frac{W^2l}{4r^2}$

Question Number : 29 Question Id : 2203604349 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A three-hinged semicircular arch of radius 'R' carries a concentrated load 'W' at the crown. Then the horizontal thrust acting on the arch at the hinge is

Options :

1. $W/2$

2. $W/(2\pi)$

3. $2W/3$

4. $4W/(3\pi)$

Question Number : 30 Question Id : 2203604350 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ratio of modulus of rigidity to bulk modulus for a Poission's ratio of 0.25 is

Options :

1. $2/3$

2. $3/5$

3. 1.0

4. $2/5$

Question Number : 31 Question Id : 2203604351 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When a wire is wound over a thick cylinder, the nature of the hoop stress in the cylinder is

Options :

1. tensile

2. shear

3. compressive

4. bending

Question Number : 32 Question Id : 2203604352 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

As per IS800-2007, the permissible stress in bolt in shear is

Options :

1. 120 MPa

2. 100 MPa

3. 150 MPa

4. 200 MPa

Question Number : 33 Question Id : 2203604353 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a simply supported beam of span 10 m, Influenced Line Diagram for B.M. is drawn at a section 4 m from the left support. The maximum bending moment at the section due to a moving concentrated load of 160 kN is

Options :

1. 484

2. 284

3. 384

4. 584

Question Number : 34 Question Id : 2203604354 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When both ends of a column are fixed, the buckling load is P. If one end of the column is made free, the value of buckling load changes to

Options :

1. P/4

2. 2P

3. P/16

4. P/2

Question Number : 35 Question Id : 2203604355 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The shape of the Influenced Line Diagram for horizontal thrust in a symmetric three-hinged parabolic arch is

Options :

1. rectangle

2. triangle

3. trapezoidal

4. parabolic

Question Number : 36 Question Id : 2203604356 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A beam curved in plan needs to be designed for

Options :

1. bending moment and shear only

2. bending moment and torsion only

3. shear and torsion only

4. bending moment, shear and torsion

Question Number : 37 Question Id : 2203604357 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A simply supported beam AB , 6 m long is subjected to a clockwise couple of 90 kN-m at A and an anticlockwise couple of 48 kN-m at B. The support reaction at B is

Options :

1. 10 kN

2. 12 kN

3. 7 kN

4. 11.5 kN

Question Number : 38 Question Id : 2203604358 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The deformation due to sustained loading is

Options :

1. creep

2. fracture

3. fatigue

4. yielding

Question Number : 39 Question Id : 2203604359 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A flitched beam is used to

Options :

1. change the shape of the beam

2. affect the saving in material

3. equalize the strength in tension and compression

4. increase the cross-section of the beam

Question Number : 40 Question Id : 2203604360 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The elastic curve between two points of a beam subjected to pure bending is

Options :

1. parabolic

2. circular

3. linear

4. elliptic

Question Number : 41 Question Id : 2203604361 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a soil has Liquid limit of 35%, Plastic limit of 20%, Clay fraction of 10% and Natural moisture content of 25%, then the values of Liquidity index, Plasticity index and Activity are

Options :

1. 0.67, 15 and 2.5

2. 0.67, 25 and 1.0

3. 0.33, 15 and 1.5

4. 0.33, 20 and 1.5

Question Number : 42 Question Id : 2203604362 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Soil compacted at which one of the following yields highest increase in dry density with higher compaction effort?

Options :

1. Optimum water content

2. Dry side of the optimum moisture content

3. Wet side of the optimum moisture content

4. Saturation moisture content

Question Number : 43 Question Id : 2203604363 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the standard penetration test, the split spoon sampler is penetrated into the soil stratum by giving blows from a drop weight whose weight (in kg) and free fall (in cm) are, respectively

Options :

1. 30 and 60

2. 60 and 30

3. 63.5 and 75

4. 75 and 65

Question Number : 44 Question Id : 2203604364 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Amongst the following, the smallest particle size is that of _____.

Options :

1. silt

2. clay

3. sand

4. colloidal

Question Number : 45 Question Id : 2203604365 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Isochrones are the curves showing the distribution of

Options :

1. excess hydrostatic pressure

2. total stress

3. effective stress

4. total settlement

Question Number : 46 Question Id : 2203604366 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The safe bearing capacity of a strip footing of 1.5 m width laid on surface of sand with $\Phi = 36°$, $\gamma = 20\ kN/m^3$, $N_c = 25$, $N_q = 30$ and $N_\gamma = 27$, with a factor of safety of 3.0 is

Options :

1. $155\ kN/m^2$

2. $405\ kN/m^2$

3. $250\ kN/m^2$

4. $135\ kN/m^2$

Question Number : 47 Question Id : 2203604367 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If ‘μ’ is the Poisson’s ratio of the soil, then coefficient of earth pressure at rest condition is

Options :

1. $\mu / (1 + \mu)$

2. $(\mu + 1) / (1 - \mu)$

3. $\mu / (1 - \mu)$

4. $(\mu + 1) / \mu$

Question Number : 48 Question Id : 2203604368 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The settlement of footings in sand is estimated based on _____.

Options :

1. Schemartmann and Hartman equation

2. Terzaghi consolidation equation

3. Fellenius equation

4. Hiley’s formula

Question Number : 49 Question Id : 2203604369 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A fully saturated soil sample has a total volume of 50 cc and dry weight of 80 g. If the water content is equal to 25%, the specific gravity of soil is

Options :

1. 2.67

2. 2.68

3. 2.78

4. 2.75

Question Number : 50 Question Id : 2203604370 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A saturated clay stratum of thickness 10 m, bounded on top and bottom by medium coarse sand layers, has a coefficient of consolidation of 0.02 cm^2/s. if this stratum is subjected to loading, it is likely that it would undergo 50% of its primary consolidation in

Options :

1. 113.6 days

2. 22.7 days

3. 28.4 days

4. 56.8 days

Question Number : 51 Question Id : 2203604371 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A direct shear test was conducted on a cohesionless soil specimen under a normal stress of 200 kPa. The specimen failed at a shear stress of 100 kPa. The angle of internal friction of soil (in degrees) is

Options :

1. 26.6

2. 29.5

3. 30

4. 32.6

Question Number : 52 Question Id : 2203604372 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A test plate 30 cm × 30 cm resting on a sand deposit settles by 10 mm under a certain loading intensity. A footing 150 cm × 150 cm resting on the same sand deposit and loaded to the same load intensity settles by

Options :

1. 10 mm

2. 27.8 mm

3. 3.02 mm

4. 50.6 mm

Question Number : 53 Question Id : 2203604373 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The total stress in a capillary zone at a point in a soil is 40 kN/m^2 and the pore pressure at that point is –15 kN/m^2, then the effective stress at that point is

Options :

1. 25.0 kN/m^2

2. 55.0 kN/m^2

3. 40.0 kN/m^2

4. 12.5 kN/m^2

Question Number : 54 Question Id : 2203604374 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following theories is used in evaluation of stress distribution in stratified soils?

Options :

1. Terazaghi's theory

2. Coulomb's theory

3. Boussinesq's theory

4. Westergaard's theory

Question Number : 55 Question Id : 2203604375 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The minimum number of bored cast-in-situ piles to be used below a column is

Options :

1. 1

2. 3

3. 2

4. 4

Question Number : 56 Question Id : 2203604376 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the foundation soil at the toe of a dam has a void ratio of 0.67 and specific gravity of 2.67, then the sand will become quick at a critical gradient of

Options :

1. 0.80

2. 0.95

3. 0.98

4. 1.00

Question Number : 57 Question Id : 2203604377 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The inclination of failure plane (α) with major principal plane in a triaxial test specimen is (where Ø is the angle of internal friction).

Options :

1. $\alpha = (45 + \emptyset)/2$

2. $\alpha = 45 + (\emptyset/2)$

3. $\alpha = 90 + (\emptyset/2)$

4. $\alpha = (90 - \emptyset)/2$

Question Number : 58 Question Id : 2203604378 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The specific gravity of a soil sample is 2.7 and its void ratio is 0.94. If soil is fully saturated, moisture content of the soil will be

Options :

1. 2.8%

2. 25.5%

3. 35%

4. 95%

Question Number : 59 Question Id : 2203604379 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If C is the cohesion, γ is the unit weight of soil and H is the height of the slope, stability number, N is given by the relation

Options :

1. $C\gamma/H$

2. $C/(\gamma H)$

3. $H/(\gamma C)$

4. CH/γ

Question Number : 60 Question Id : 2203604380 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The difference between maximum void ratio and minimum void ratio of a sand sample is 0.30. If the relative density of this sample is 66.6% at a void ratio of 0.40, then the void ratio of this sample at its loosest state will be

Options :

1. 0.40

2. 0.60

3. 0.70

4. 0.75

Question Number : 61 Question Id : 2203604381 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The rain fall in four successive 12 hours period on catchment are 4, 8, 9 and 3 cm. If infiltration index Φ for the storm is 0.5 cm/h, then total surface runoff will be

Options :

1. 0

2. 5 cm

3. 12 cm

4. 18 cm

Question Number : 62 Question Id : 2203604382 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not an advantage of sprinkler irrigation system?

Options :

1. Reduces seepage losses

2. Facilitates uniform application of fertilizer

3. Leaches down salts

4. Reduces evaporation losses during high temperatures

Question Number : 63 Question Id : 2203604383 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If duty is 1728 ha/cumec and base period is 120 days for an irrigated crop, then delta is given by

Options :

1. 102.8 m

2. 0.6 m

3. 1.38 m

4. 0.01 m

Question Number : 64 Question Id : 2203604384 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Stoke is a unit of

Options :

1. Density

2. Velocity gradient

3. Dynamic viscosity

4. Kinematic viscosity

Question Number : 65 Question Id : 2203604385 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The convective acceleration in the direction of x is given by

Options :

1. $u\frac{\partial u}{\partial x}+v\frac{\partial v}{\partial y}+w\frac{\partial w}{\partial z}$

2. $u\frac{\partial u}{\partial x}+u\frac{\partial u}{\partial y}+u\frac{\partial u}{\partial z}$

3. $u\frac{\partial u}{\partial x}+u\frac{\partial v}{\partial y}+u\frac{\partial w}{\partial z}$

4. $u\frac{\partial u}{\partial x}+v\frac{\partial u}{\partial y}+w\frac{\partial u}{\partial z}$

Question Number : 66 Question Id : 2203604386 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The nature of distribution of shear stress in steady laminar flow through pipe is _____.

Options :

1. parabolic

2. linear

3. logarithmic

4. exponential

Question Number : 67 Question Id : 2203604387 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The relation among hydraulic efficiency, η_h, mechanical efficiency, η_m, volumetric efficiency, η_v and overall efficiency, η_o, is

Options :

1. $\eta_h = \eta_o \times \eta_m \times \eta_v$

2. $\eta_o = \eta_h \times \eta_m \times \eta_v$

3. $\eta_o = \eta_m/(\eta_h \times \eta_v)$

4. $\eta_o = (\eta_h \times \eta_m \times \eta_v)^{1/3}$

Question Number : 68 Question Id : 2203604388 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The momentum correction factor, β is used to account for

Options :

1. change in pressure

2. change in mean rate of flow

3. non-uniform velocity distribution

4. change in total energy due to loss

Question Number : 69 Question Id : 2203604389 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A hydraulic model of a spillway is constructed with a scale 1:16. If the prototype discharge is 2048 cumecs, then the corresponding discharge in cumecs for which model should be tested is

Options :

1. 1

2. 8

3. 4

4. 2

Question Number : 70 Question Id : 2203604390 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For pipes connected in series, hydraulic gradient line

Options :

1. always drops in the flow direction

2. always rises in the flow direction

3. may rise or fall in the flow direction

4. always remains constant

Question Number : 71 Question Id : 2203604391 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An impulse turbine

Options :

1. is most suited for low head installations

2. always operates in submerged condition

3. makes use of draft tube

4. operates with initial complete conversion of pressure head to velocity head

Question Number : 72 Question Id : 2203604392 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The velocity distribution in laminar boundary layer is assumed to have the identity $\frac{u}{U_o} = \frac{2y}{3\delta}$. The momentum thickness for this laminar boundary layer is (where U_o is ambient velocity, δ is the boundary layer thickness and u is the velocity at y distance away from the boundary)

Options :

1. $\frac{\delta}{9}$

2. $\frac{4\delta}{27}$

3. $\frac{5\delta}{27}$

4. $\frac{2\delta}{27}$

Question Number : 73 Question Id : 2203604393 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an elementary profile of a gravity dam for reservoir empty condition the normal stress at toe is (W is the weight of the dam, b is the base width of the elementary profile)

Options :

1. W/b

2. 2W/b

3. zero

4. 1.0

Question Number : 74 Question Id : 2203604394 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The period between first watering at the time of sowing and last watering before harvesting of the crop is known as

Options :

1. Duty

2. Delta

3. Base period

4. Kor period

Question Number : 75 Question Id : 2203604395 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A tank containing water has two orifices of the same size at depths of 40 cm and 90 cm below the free surface of water. Assuming that they have same value of coefficient of discharge, the ratio of discharges through these orifices is

Options :

1. 2 : 3

2. 4: 9

3. 1: 1

4. 16: 81

Question Number : 76 Question Id : 2203604396 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The flow-duration curve is a plot of

Options :

1. accumulated flow against time

2. discharge against time in chronological order

3. the base flow against the percentage of times the flow is exceeded

4. the stream discharge against the percentage of times the flow is equalled or exceeded

Question Number : 77 Question Id : 2203604397 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The specific capacity of a well in a confined aquifer under equilibrium conditions and within the working limits of drawdown,

Options :

1. is a constant

2. decreases as the drawdown is increased

3. increases as the drawdown is increased

4. is infinite

Question Number : 78 Question Id : 2203604398 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The lacey's silt factor (f) is equal to

Options :

1. $\frac{3V^2}{2R}$

2. $\frac{5V^2}{2R}$

3. $\frac{7V^2}{2R}$

4. $\frac{9V^2}{2R}$

Question Number : 79 Question Id : 2203604399 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Archimedes principle states that the weight lost in partially or fully submerged bodies in a fluid is equal to

Options :

1. weight of the equal volume of fluid

2. weight of the displaced volume of fluid

3. volume of weight of the displaced fluid

4. specific weight of the displaced fluid

Question Number : 80 Question Id : 2203604400 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bernoulli's equation is based on

Options :

1. conservation of mass

2. conservation of linear momentum

3. conservation of energy

4. conservation of angular momentum

Question Number : 81 Question Id : 2203604401 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The hydraulically most efficient trapezoidal section (where B is base width, y is depth of flow, z is side slope and R is hydraulic radius) has the condition that

Options :

1. $B = 2y$

2. $B + 2yz = y\sqrt{z^2 + 1}$

3. $R = y/2$

4. $B + 2y\sqrt{1 + z^2} = (B + 2y)/2$

Question Number : 82 Question Id : 2203604402 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following terms represents the process of loosing water from leaves of plants into atmosphere?

Options :

1. Deep percolation

2. Water surface evaporation

3. Precipitation

4. Transpiration

Question Number : 83 Question Id : 2203604403 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a given value of specific force the two possible depths of flow in an open channel are known as

Options :

1. conjugate depths

2. alternate depths

3. scour depths

4. submergence depths

Question Number : 84 Question Id : 2203604404 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the duration of unit hydrograph approaches zero, the resulting unit hydrograph is known as

Options :

1. S-curve hydrograph

2. Synthetic unit hydrograph

3. Instantaneous unit hydrograph

4. Constant unit hydrograph

Question Number : 85 Question Id : 2203604405 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The crop ratio is the ratio of the area irrigated _____.

Options :

1. under perennial crop to total crop

2. under perennial crop to non-perennial crop

3. in Rabi season to Kharif season

4. in Kharif season to Rabi season

Question Number : 86 Question Id : 2203604406 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A rectangular plane of size 3 m × 2 m is kept in water (specific weight = 10 kN/m^3) at 45° with the horizontal such that its 3 m edge touches the free surface. What is the hydrostatic force in kN acting on the plane area?

Options :

1. $\frac{60}{\sqrt{2}}$

2. $60\sqrt{2}$

3. 60

4. $60 \sin^2 45$

Question Number : 87 Question Id : 2203604407 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The drag force for a flow past submerged body is expressed as

Options :

1. $\frac{1}{2}\rho U^2 C_D A$

2. $\rho U^2 C_D A$

3. $2\rho U^2 C_D A$

4. $\frac{3}{2}\rho U^2 C_D A$

Question Number : 88 Question Id : 2203604408 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An isohyet is a line joining points having

Options :

1. equal evaporation value

2. equal barometric value

3. equal height above the MSL

4. equal rainfall depth in a given duration

Question Number : 89 Question Id : 2203604409 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The runoff from a drainage basin area of 8640 km^2 is estimated as 20000 cumec-days.

The depth of runoff in cm is

Options :

1. 20

2. 40

3. 43.2

4. 21.6

Question Number : 90 Question Id : 2203604410 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the expression $\eta_d = 1 - \frac{d}{D}$ where D is mean depth of water stored during irrigation and d is the average of the absolute values of deviations from the mean, η_d represents

Options :

1. Water application efficiency

2. Water-conveyance efficiency

3. Water-storage efficiency

4. Water distribution efficiency

Question Number : 91 Question Id : 2203604411 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

According to Kuichling formula, the fire demand (Q) in litres per minute is given by

Options :

1. $Q = 1135\left(\frac{P}{5} + 10\right)$

2. $Q = 2500\left(\frac{P}{5} + 10\right)$

3. $Q = 3182\sqrt{P}$

4. $Q = 5663\sqrt{P}$

Question Number : 92 Question Id : 2203604412 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The overflow rate for plain sedimentation tanks is about

Options :

1. 500 to 750 liters/hour/m^2

2. 1000 to 1250 liters/hour/m^2

3. 1250 to 1500 liters/hour/m^2

4. 1500 to 2000 liters/hour/m^2

Question Number : 93 Question Id : 2203604413 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In aerobic environment, nitrosomonas convert

Options :

1. NH_3 to NO_2

2. NO_2^- to NO_3^-

3. NH_3 to N_2O

4. NO_2^- to HNO_3

Question Number : 94 Question Id : 2203604414 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following pollutants are not generally not removed in a sewage treatment plant?

Options :

1. Inorganic suspended solids

2. Dissolved organic solids

3. Oil and grease

4. Dissolved inorganic solids

Question Number : 95 Question Id : 2203604415 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The following unit operation/process represents the preliminary treatment of sewage

Options :

1. Clarification

2. Communition

3. Chlorination

4. Filtration

Question Number : 96 Question Id : 2203604416 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The orthotolidine test indicates residual chlorine when colour of the water sample after test is

Options :

1. Blue

2. Yellow

3. Green

4. Red

Question Number : 97 Question Id : 2203604417 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The application of hypochlorites for disinfection process in water treatment tends to

Options :

1. lower the pH and drive the production of less effective OCl^-

2. rise the pH and drive the production of less effective OCl^-

3. lower the pH and drive the production of less effective $HOCl^-$

4. rise the pH and drive the production of less effective $HOCl^-$

Question Number : 98 Question Id : 2203604418 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ideal shape of sewers for combined flows (sewage and storm-water) is _____.

Options :

1. circular

2. ovoid

3. rectangular

4. semi ellipse

Question Number : 99 Question Id : 2203604419 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Detention period for oxidation ponds is normally kept as

Options :

1. 10 hours to 15 hours

2. 3 months

3. 24 hours

4. 10 days to 15 days

Question Number : 100 Question Id : 2203604420 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The time of contact for chlorination should be at least

Options :

1. 5 minutes

2. 20 minutes

3. 1 hour

4. 2 hours

Question Number : 101 Question Id : 2203604421 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following are secondary air pollutants?

Options :

1. Ozone and Carbon Monoxide

2. Peroxy-acetyl-nitrate and Ozone

3. Peroxy-acetyl-nitrate and Carbon Monoxide

4. Carbon Monoxide and Sulfur Oxide

Question Number : 102 Question Id : 2203604422 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two sources generate noise levels of 90 dB and 94 dB respectively. The cumulative effect of these two noise levels on the human ear is

Options :

1. 184 dB

2. 95.5 dB

3. 94 dB

4. 92 dB

Question Number : 103 Question Id : 2203604423 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

According to the Noise Pollution (Regulation and Control) Rules, 2000, of the Ministry of Environment and Forests, India, the day time and night time noise level limits in ambient air for residential area expressed in dB(A) L_{eq} are

Options :

1. 50 and 40

2. 55 and 45

3. 65 and 55

4. 75 and 70

Question Number : 104 Question Id : 2203604424 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The role of the bed material in a packed tower used for removing particulate matter from gaseous emissions is to

Options :

1. act as filter bed to capture the particulates within the pores

2. provide a large surface area on which the particulate matter can be collected

3. reduce the flow of gas

4. uniformly distribute the spray of water

Question Number : 105 Question Id : 2203604425 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following is not a secondary air pollutant?

Options :

1. Ozone

2. Nitrogen oxide

3. Formaldehyde

4. PAN

Question Number : 106 Question Id : 2203604426 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The composition of biogas is as follows

Options :

1. Methane, Carbon dioxide, H_2O, and SO_2

2. Methane, Carbon dioxide, H_2S, and N_2

3. Methane, Carbon monoxide, and SO_2

4. Methane, Carbon monoxide, SO_2 and hydrocarbons

Question Number : 107 Question Id : 2203604427 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following pollutants are formed due to photochemical reactions?

Options :

1. CO and HC

2. O_3 and PAN

3. PAN and NH_3

4. NH_3 and CO

Question Number : 108 Question Id : 2203604428 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The pollutants try to enter through _____ and diffuse to the surface of the cells within the leaf causing damage to the plants.

Options :

1. Chloroplasts

2. Stomata

3. Larynx

4. Alveolu

Question Number : 109 Question Id : 2203604429 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A vehicle is travelling at an average speed of 100 kmph with an upward gradient of 1.98%. Assume that the perception and breaking reaction time is 2.5 seconds and coefficient of friction between tyres and road surface is 0.35. The safe stopping sight distance is

Options :

1. 182 m

2. 176 m

3. 189 m

4. 168 m

Question Number : 110 Question Id : 2203604430 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The plate load test is conducted to determine the

Options :

1. California Bearing Ratio value

2. Resilient Modulus

3. Complex Modulus

4. Modulus of Subgrade reaction

Question Number : 111 Question Id : 2203604431 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The current Indian practice to design rotaries suggests the design speeds of _____ for rural areas and urban areas respectively.

Options :

1. 30 and 40 kmph

2. 40 and 30 kmph

3. 40 and 50 kmph

4. 30 and 50 kmph

Question Number : 112 Question Id : 2203604432 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Range of Camber in areas of Heavy Rainfall to Light Rainfall for Gravel Roads is

Options :

1. 2% to 1.7%

2. 2.5% to 2%

3. 3% to 2.5%

4. 4% to 3%

Question Number : 113 Question Id : 2203604433 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The sectioned area of the pavement that is effective in resisting the maximum bending moment developed is known as

Options :

1. Radius of relative stiffness

2. Modulus of subgrade reaction

3. Equivalent radius of resisting section

4. Critical load section

Question Number : 114 Question Id : 2203604434 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The modulus of subgrade reaction is obtained from the plate bearing test in the form of load-deformation curve. The pressure corresponding to which of the following settlement values should be used for computing modulus of subgrade reaction?

Options :

1. 0.375 cm

2. 0.175 cm

3. 0.125 cm

4. 0.250 cm

Question Number : 115 Question Id : 2203604435 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The flexible pavement design according to Indian Roads Congress is based on the following subgrade soil property.

Options :

1. Shear strength

2. Effective CBR

3. Effective modulus of subgrade reaction

4. Unconfined compressive strength

Question Number : 116 Question Id : 2203604436 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When the path travelled along the road surface is more than the circumferential movement of the wheels due to rotation, then it results in

Options :

1. Slipping

2. Skidding

3. Turning

4. Revolving

Question Number : 117 Question Id : 2203604437 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ is used as sighting device and drawing the lines in plane table surveying.

Options :

1. Compass

2. Alidade

3. Theodolite

4. Dumpy Level

Question Number : 118 Question Id : 2203604438 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Angles of 45° with a chain line may be set out with

Options :

1. Optical square

2. Open cross staff

3. French cross staff

4. Prismatic square

Question Number : 119 Question Id : 2203604439 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The angle which the magnetic lines of force make with the surface of the earth is called

Options :

1. Meridian

2. Declination

3. Angle of dip

4. Variation

Question Number : 120 Question Id : 2203604440 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A truly analytic telescope is used in

Options :

1. Simple external-focusing telescope

2. External-focusing telescope

3. Internal-focusing telescope

4. External-internal focusing telescope