

Telangana State Council of Higher Education

TS ECET [FDH & B.Sc. (Mathematics)] - 2018

Date of Examination: 09-05-2018

Time of Examination: 10.00 A.M. to 1.00 P.M.

Master Question Paper Copy

Civil Engineering

Notations :

1. Options shown in green color and with ✓ icon are correct.
2. Options shown in red color and with ✗ icon are incorrect.

Question Number : 1 Question Id : 5105295613 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If A is square matrix of order 3 and if the matrix obtained by replacing the elements of A with

their corresponding cofactors is $\begin{bmatrix} 1 & -2 & 1 \\ 4 & -5 & -2 \\ -2 & 4 & 1 \end{bmatrix}$ then determinant of A is _____

Options :

1. ✗ 9
2. ✗ 16
3. ✓ 3
4. ✗ 4

Question Number : 2 Question Id : 5105295614 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The system of equations $x + y + z = 6$, $x + 2y + 3z = 10$, $x + 2y + \lambda z = K$ is

inconsistent for $\lambda = l$ and $K \neq m$, then $(l, m) =$

Options :

1. ✘ (3, 7)
2. ✔ (3, 10)
3. ✘ (7, 10)
4. ✘ (10, 4)

Question Number : 3 Question Id : 5105295615 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If A is a square matrix of order n and $A = P + Q$, where P is symmetric and Q is non symmetric

matrices, then $P - Q =$

Options :

1. ✘ A
2. ✔ A^T
3. ✘ $A + A^T$
4. ✘ $A - A^T$

Question Number : 4 Question Id : 5105295616 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & x \\ -2 & y & -1 \end{bmatrix}$ is orthogonal then _____

Options :

1. ✔ $x = -2, y = 2$

2. ✖ $x = -2, y = -2$

3. ✖ $x = 2, y = 2$

4. ✖ $x = 2, y = -2$

Question Number : 5 Question Id : 5105295617 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $X = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & 3 \\ 1 & 3 & k \end{bmatrix}$ is singular matrix then $k =$

Options :

1. ✖ 2

2. ✖ 3

3. ✖ 4

4. ✔ 5

Question Number : 6 Question Id : 5105295618 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $\frac{7x-17}{(x-1)(x-3)} = \frac{m}{x-1} + \frac{k}{x-3}$, then $m - k - 1 =$

Options :

1. ✖ 1

2. ✔ 2

3. ✖ 3

4. ✖ -2

Question Number : 7 Question Id : 5105295619 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A complex number 'z' having least modulus value and satisfying $|z - 2 + 2i| = 1$ is _____

Options :

$$\left(2 - \frac{1}{\sqrt{2}}\right)(1+i)$$

1. ✘

$$\left(2 + \frac{1}{\sqrt{2}}\right)(1+i)$$

2. ✘

$$\left(2 - \frac{1}{\sqrt{2}}\right)(1-i)$$

3. ✔

$$\left(2 + \frac{1}{\sqrt{2}}\right)(1-i)$$

4. ✘

Question Number : 8 Question Id : 5105295620 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The solution of the simultaneous equations $x + y = \frac{2\pi}{3}$ and $\cos x + \cos y = \frac{3}{2}$ where x and y

are real is _____

Options :

$$x = \frac{\pi}{3}, y = \pi$$

1. ✘

$$x = \pi, y = \frac{\pi}{3}$$

2. ✘

$$x = \pi, y = \frac{\pi}{2}$$

3. ✘

does not exist.

4. ✔

Question Number : 9 Question Id : 5105295621 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If both the distinct roots of the equation $|\sin x|^2 + |\sin x| + b = 0$ in $[0, \pi]$ are real then all the values of b lie in the interval _____

Options :

1. ✘ $[-2, 0]$
2. ✘ $(-2, 0)$
3. ✘ $[-2, 0)$
4. ✔ $(-2, 0]$

Question Number : 10 Question Id : 5105295622 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\frac{a \cos A + b \cos B + c \cos C}{2s} =$$

Options :

1. ✘ Δ
2. ✘ $\frac{1}{R}$
3. ✔ $\frac{r}{R}$
4. ✘ $\frac{\Delta}{R}$

Question Number : 11 Question Id : 5105295623 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $\cos A = \frac{3}{4}$, then the value of $32 \sin \frac{A}{2} \cdot \sin \frac{5A}{2}$

Options :

1. ✔ 11

2. ✘ 36

3. ✘ 27

4. ✘ 10

Question Number : 12 Question Id : 5105295624 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $z_1 = 3 (\cos 15^\circ + i \sin 15^\circ)$ and $z_2 = 5 (\cos 63^\circ + i \sin 63^\circ)$ then $\frac{z_1}{z_2} =$

Options :

1. ✘ $\frac{3}{5} [\cos 48^\circ + i \sin 48^\circ]$

2. ✔ $\frac{3}{5} [\cos 48^\circ - i \sin 48^\circ]$

3. ✘ $\frac{3}{5} [\cos 78^\circ + i \sin 78^\circ]$

4. ✘ $\frac{5}{3} [\cos 78^\circ - i \sin 78^\circ]$

Question Number : 13 Question Id : 5105295625 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$2 \tan \frac{1}{7} + \tan^{-1} \frac{1}{13} =$

Options :

1. ✔ $\tan^{-1} \frac{23}{61}$

2. ✘ $\tan^{-1} \frac{14}{61}$

3. ✘ $\tan^{-1} \frac{32}{61}$

4. ✘ $\tan^{-1} \frac{3}{51}$

Question Number : 14 Question Id : 5105295626 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\text{If } \cos 20^\circ \cos 40^\circ \cos 80^\circ = p, \text{ then } p =$$

Options :

1. ✘ $\frac{1}{2}$

2. ✘ $\frac{1}{4}$

3. ✔ $\frac{1}{8}$

4. ✘ 1

Question Number : 15 Question Id : 5105295627 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\sin A \sin (120^\circ - A) \sin (120^\circ + A) =$$

Options :

1. ✘ $\frac{1}{4} \sin A$

2. ✔ $\frac{1}{4} \sin 3A$

3. ✘ $\frac{1}{4} \cos A$

4. ✘ $\frac{1}{4} \cos 3A$

Question Number : 16 Question Id : 5105295628 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\cos 5^\circ - \sin 25^\circ =$$

Options :

1. ✘ $\sin 30^\circ$

2. ✓ $\sin 35^\circ$

3. ✗ $\sin 45^\circ$

4. ✗ $\sin 55^\circ$

Question Number : 17 Question Id : 5105295629 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If n is the length of perpendicular from the point $(3, -2)$ to the straight line

$L \equiv 12x - 5y + 6 = 0$ and m is distance of that line $L=0$ from $12x - 5y - 7 = 0$, then _____

Options :

1. ✗ $n + m = 2$

2. ✗ $n = m$

3. ✗ $n = 2m$

4. ✓ $n = 4m$

Question Number : 18 Question Id : 5105295630 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The equation of the straight line passing through $(2, 3)$ and perpendicular to the line

$4x - 3y = 10$ is _____

Options :

1. ✗ $3x + 4y + 18 = 0$

2. ✓ $3x + 4y - 18 = 0$

3. ✗ $3x - 4y - 18 = 0$

4. ✗ $3x - 4y + 18 = 0$

Question Number : 19 Question Id : 5105295631 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

L is a straight line passing through the point P(1, 2) such that P bisects the portion of the line intercepted between the coordinate axes, then the perpendicular distance of line L from the origin is _____

Options :

1. ✘ $\frac{1}{\sqrt{5}}$

2. ✘ $\frac{2}{\sqrt{5}}$

3. ✘ $\frac{3}{\sqrt{5}}$

4. ✔ $\frac{4}{\sqrt{5}}$

Question Number : 20 Question Id : 5105295632 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the focus of the parabola $(y-2)^2 = 4(x-1)$ is (a, b), then a+b =

Options :

1. ✘ (-1, -2)

2. ✘ (1, 2)

3. ✘ (2, 1)

4. ✔ (2, 2)

Question Number : 21 Question Id : 5105295633 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The function $y = |x|$ $-\infty < x < \infty$ is _____

Options :

1. ✘ Differentiable at x=0

2. ✘ not continuous at $x=0$
3. ✔ continuous and differentiable at $x \neq 0$
4. ✘ continuous but not differentiable at $x \neq 0$

Question Number : 22 Question Id : 5105295634 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\lim_{x \rightarrow 0} \left(\frac{\sqrt{1 - \cos 2x}}{x} \right)$$

Options :

1. ✔ Does not exist
2. ✘ 1
3. ✘ -1
4. ✘ 0

Question Number : 23 Question Id : 5105295635 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $f(x) = |x^2 - 3x + 2|$ then $\frac{df}{dx} =$

Options :

1. ✔ $2x-3$ when $x > 2$
2. ✘ $3-2x$, when $x < 1$
3. ✘ $3-2x$ when $x > 2$
4. ✘ $2x+3$, when $1 < x < 2$

Question Number : 24 Question Id : 5105295636 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $Z = \text{Log}_e \left(\frac{xy}{x+y} \right)$, then $x \frac{\partial Z}{\partial x} + y \frac{\partial Z}{\partial y} =$

Options :

1. ✘ 0

2. ✘ $2Z$

3. ✔ 1

4. ✘ $\frac{Z}{2}$

Question Number : 25 Question Id : 5105295637 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Two cars with equal speed V started from a place are such that one is moving towards East and the other is moving towards North. The rate at which they are separated from each other when they travel same distance is _____

Options :

1. ✔ $V\sqrt{2}$

2. ✘ $\frac{V}{\sqrt{2}}$

3. ✘ $\frac{\sqrt{2}}{V}$

4. ✘ $2V^2$

Question Number : 26 Question Id : 5105295638 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The derivative of $\sin x^2$ with respect to x^5 is _____

Options :

1. ✘ $\frac{\cos x^2}{5x^4}$

2. ✘ $\frac{2 \cos x^2}{5x^4}$

3. ✔ $\frac{2 \cos x^2}{5x^3}$

4. ✘ $\frac{2 \sin x^2}{5x^4}$

Question Number : 27 Question Id : 5105295639 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $y = x^y$ then $\frac{dy}{dx} =$

Options :

1. ✘ $\frac{y}{x(1-y \log x)}$

2. ✔ $\frac{y^2}{x(1-y \log x)}$

3. ✘ $\frac{y^2}{x(1+y \log x)}$

4. ✘ $\frac{y}{(1-y \log x)}$

Question Number : 28 Question Id : 5105295640 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $x = at^2, y = 2at$, then $\frac{d^2y}{dx^2} =$

Options :

1. ✘ $-\frac{1}{t^2}$

2. ✘ $-\frac{1}{2at}$

3. ✔ $-\frac{1}{2at^2}$

4. ✘ $-\frac{1}{2at^4}$

Question Number : 29 Question Id : 5105295641 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $I_1 = \int_0^{\infty} e^{-x} x^n dx$, then $\int_0^{\infty} e^{-x^2} x^{2n+1} dx =$

Options :

1. ✘ 0

2. ✔ $\frac{I_1}{2}$

3. ✘ $\frac{I_1}{3}$

4. ✘ $2I_1$

Question Number : 30 Question Id : 5105295642 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $\int \frac{\sin 2x}{\sin 5x \sin 3x} dx = A \log \sin 3x + B \log \sin 5x + C$, then $A + B =$

Options :

1. ✘ $2/7$

2. ✘ $1/3$

3. ✘ $-2/5$

4. ✔ $2/15$

Question Number : 31 Question Id : 5105295643 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The area of the region bounded by the curve $y = x^2 - x$, x-axis and the line $x=2$ is _____

Options :

1. ✘ $\frac{5}{4}$

2. ✘ $\frac{5}{3}$

3. ✔ $\frac{5}{6}$

4. ✘ $\frac{5}{2}$

Question Number : 32 Question Id : 5105295644 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $0 < x < \frac{\pi}{2}$, then $\int \frac{\sin x + \cos x}{\sqrt{1 + \sin 2x}} dx =$

Options :

1. ✘ $\frac{1}{x} + c$

2. ✔ $x + c$

3. ✘ $2x + c$

4. ✘ $\frac{2}{x} + c$

Question Number : 33 Question Id : 5105295645 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$\int \frac{x^4 + 1}{x^2 + 1} dx =$

Options :

1. ✘ $\frac{x^3}{3} + x + 2 \tan^{-1} x + c$

2. ✘ $\frac{x^3}{3} + x + \tan^{-1}x + c$

3. ✔ $\frac{x^3}{3} - x + 2\tan^{-1}x + c$

4. ✘ $\frac{x^3}{3} - x + \tan^{-1}x + c$

Question Number : 34 Question Id : 5105295646 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\int \frac{e^x(1-x)}{x^2} dx =$$

Options :

1. ✘ $-\frac{1}{xe^x} + C$

2. ✘ $\frac{1}{xe^x} + C$

3. ✔ $-\frac{1}{x}e^x + C$

4. ✘ $xe^x + C$

Question Number : 35 Question Id : 5105295647 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\int_0^{\pi/2} \frac{\sin x}{\sin x + \cos x} dx =$$

Options :

1. ✔ $\frac{\pi}{4}$

2. ✘ $\frac{\pi}{6}$

3. ✘ $\frac{\pi}{8}$

4. ✘ π

Question Number : 36 Question Id : 5105295648 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\int_0^{\pi/2} \sin^4 x \cos^2 x \, dx =$$

Options :

1. ✘ $\frac{\pi}{12}$

2. ✔ $\frac{\pi}{32}$

3. ✘ $\frac{\pi}{42}$

4. ✘ $\frac{\pi}{2}$

Question Number : 37 Question Id : 5105295649 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The solution of $(x + 2y^3) \frac{dy}{dx} = y$

Options :

1. ✘ $y = x^3 + cx$

2. ✔ $x = y^3 + cy$

3. ✘ $x = y^2 + cy$

4. ✘ $y = x^3 + cy^2$

Question Number : 38 Question Id : 5105295650 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The general solution of $\frac{dy}{dx} = \frac{x^2 + 4x - 9}{x + 2}$ is _____

Options :

1. ✘ $y = (x + 2)^2 - 13 \log|x + 2| + c$

2. ✘ $y = (x + 2)^2 - 5 \log|x + 2| + c$

3. ✘ $y = \frac{x^2}{2} + 2x + 13 \log|x + 2| + c$

4. ✔ $y = \frac{x^2}{2} + 2x - 13 \log|x + 2| + c$

Question Number : 39 Question Id : 5105295651 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The differential equation representing the family of curves $y^2 = 2c(x + \sqrt{c})$, where c being a positive parameter is of _____

Options :

1. ✘ Order 3

2. ✘ Order 2

3. ✔ degree 3

4. ✘ degree 1

Question Number : 40 Question Id : 5105295652 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The differential equation formed by eliminating the arbitrary constants a and b from the

Equation $\frac{x}{a} + \frac{y}{b} = 1$ is _____

Options :

1. ✘ $x y' = 1$

2. ✘ $x y'' = 0$

3. ✔ $y'' = 0$

4. ✘ $y'' = 1$

Question Number : 41 Question Id : 5105295653 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The solution of the differential equation $\frac{dy}{dx} = (1+x^2)(1+y^2)$ is _____

Options :

1. ✔ $\tan^{-1}y = x + \frac{x^3}{3} + c$

2. ✘ $\tan^{-1}y = x - \frac{x^3}{3} + c$

3. ✘ $\cot^{-1}y = x + \frac{x^3}{3} + c$

4. ✘ $\sin^{-1}y = x + \frac{x^3}{3} + c$

Question Number : 42 Question Id : 5105295654 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The solution of the differential equation $y dx - x dy + \log x dx$ is _____

Options :

1. ✘ $c x + y + (1 - \log x) = 0$

2. ✔ $c x - y - (1 + \log x) = 0$

3. ✘ $c y + x + \log x - 1 = 0$

4. ✘ $c x - y + (1 + \log x) = 0$

Question Number : 43 Question Id : 5105295655 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The general solution of the equation $(D^2 - D - 2)y = \sin 2x$, $(D = \frac{d}{dx})$ is _____

Options :

1. ✓ $y = c_1 e^{-x} + c_2 e^{2x} + \frac{1}{20}(\cos 2x - 3\sin 2x)$
2. ✗ $y = c_1 e^{-x} + c_2 e^{-2x} + \frac{1}{20}(\cos 2x + 3\sin 2x)$
3. ✗ $y = c_1 e^{-x} + c_2 e^{2x} + \frac{1}{20}(\cos 2x - 3\sin 3x)$
4. ✗ $y = c_1 e^x + c_2 e^{-2x} + \frac{1}{20}(\cos 2x + 3\sin 2x)$

Question Number : 44 Question Id : 5105295656 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The particular integral of $(D^2 - 5D + 6)y = e^{4x}$ is _____

Options :

1. ✗ e^{4x}
2. ✗ $-e^{4x}$
3. ✓ $\frac{1}{2}e^{4x}$
4. ✗ $\frac{1}{4}e^{4x}$

Question Number : 45 Question Id : 5105295657 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $L[f(t)]$ denotes the Laplace Transform of $f(t)$, then $L[t^2 e^{-2t}] =$

Options :

1. ✗ $\frac{1}{(s+2)^3}$

2. ✓ $\frac{2}{(s+2)^3}$

3. ✗ $\frac{1}{(s+2)^2}$

4. ✗ $\frac{2}{(s+2)^2}$

Question Number : 46 Question Id : 5105295658 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$f : \mathbb{R} \rightarrow \mathbb{R}$, $f(x) = x^2$, $-\pi \leq x \leq \pi$ and $f(x+2\pi) = f(x)$, $\forall x \in \mathbb{R}$. If the Fourier series of

$f(x)$ is represented as $f(x) = \sum_{n=0}^{\infty} a_n \cos nx$, then $a_0 =$ _____

Options :

1. ✗ $\frac{2\pi^2}{3}$

2. ✓ $\frac{\pi^2}{3}$

3. ✗ $\frac{4\pi^2}{3}$

4. ✗ $\frac{5\pi^2}{3}$

Question Number : 47 Question Id : 5105295659 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$f(t) = 2t^2 - 5$, $-2 \leq t \leq 2$ and $f(t+4) = f(t)$. If $2t^2 - 5 = \sum_{n=0}^{\infty} A_n \cos\left(\frac{n\pi t}{2}\right)$, then $A_1 =$

Options :

1. ✗ 0

2. ✓ $\frac{-32}{\pi^2}$

3. ✗ $\frac{1-(-1)^n}{n} \frac{2}{\pi^2}$

4. ✗ $\frac{16}{\pi^2}$

Question Number : 48 Question Id : 5105295660 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the Laplace transform of a function $f(t)$ is $F(S)$, then $\int_0^{\infty} f(t)dt =$

Options :

1. ✗ $F(1)$

2. ✗ $F(\infty)$

3. ✓ $F(0)$

4. ✗ $F(S-1)$

Question Number : 49 Question Id : 5105295661 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Mean deviation from median for the data 340, 150, 210, 240, 300, 310, 320

is approximately equal to _____

Options :

1. ✓ 52.8

2. ✗ 54.8

3. ✗ 53.8

4. ✗ 51.8

Question Number : 50 Question Id : 5105295662 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Two numbers are chosen at random from $\{1, 2, 3, 4, 5, 6, 7, 8\}$ at a time. The probability that smaller of the two numbers is not more than 3 is

Options :

1. ✘ $\frac{7}{14}$

2. ✔ $\frac{9}{14}$

3. ✘ $\frac{8}{14}$

4. ✘ $\frac{10}{14}$

Display Number Panel:

Yes

Group All Questions:

No

Question Number : 51 Question Id : 5105295663 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The dimensional formula for angular momentum is _____

Options :

1. ✘ $M L T^{-1}$

2. ✘ $M L^{-1} T^{-1}$

3. ✔ $M L^2 T^{-1}$

4. ✘ $M^1 L^2 T^{-2}$

Question Number : 52 Question Id : 5105295664 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following has not been expressed in proper unit?

Options :

1. ✘ stress/strain = N/m^2
2. ✘ surface tension = N/m
3. ✔ energy = $\text{Kg} \times \text{m/s}$
4. ✘ pressure = N/m^2

Question Number : 53 Question Id : 5105295665 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Two adjacent sides of a parallelogram are represented by the two vectors $\mathbf{I}+2\mathbf{J}+3\mathbf{K}$ and $3\mathbf{I}-2\mathbf{J}+\mathbf{K}$. What is the area of the parallelogram?

Options :

1. ✘ 8
2. ✔ $8\sqrt{3}$
3. ✘ $3\sqrt{8}$
4. ✘ 192

Question Number : 54 Question Id : 5105295666 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Given the points $A = (0, a)$ and $B = (1, 2)$, what is the value of a if the magnitude of the vector \overline{AB} is 1?

Options :

1. ✘ 3
2. ✔ 1
3. ✘ 4
4. ✘ 2

Question Number : 55 Question Id : 5105295667 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If A and B are perpendicular, vector $A = 5i+7j-3k$ and $B = 2i+2j-ak$. What is the value of a?

Options :

1. ✘ -2

2. ✘ 8

3. ✘ -7

4. ✔ -8

Question Number : 56 Question Id : 5105295668 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A block of mass 2 Kg rests on a rough inclined plane making an angle of 30° with the horizontal. The coefficient of static friction between the block and plane is 0.7. The frictional force on the block is _____

Options :

1. ✘ 9.8 N

2. ✔ $0.7 \times 9.8 \times \sqrt{3}$ N

3. ✘ $9.8 \times \sqrt{3}$ N

4. ✘ 0.7×0.9 N

Question Number : 57 Question Id : 5105295669 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A body sliding on a smooth inclined plane required 4 seconds to reach the bottom starting from rest at the top. How much time does it take to cover one-fourth the distance starting from rest at top?

Options :

1. ✘ 1 second

2. ✓ 2 seconds
3. ✗ 4 seconds
4. ✗ 16 seconds

Question Number : 58 Question Id : 5105295670 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A body of mass 2 Kg is hung on a spring balance mounted vertically in a lift. If the lift descends with an acceleration equal to the acceleration due to gravity g , the reading on the spring balance will be changed by _____

Options :

1. ✗ 2 Kg
2. ✗ 4 Kg
3. ✗ $2/g$ Kg
4. ✓ zero

Question Number : 59 Question Id : 5105295671 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If g is the acceleration due to gravity at the earth surface, the gain in the potential energy of an object of mass m is raised, then the surface of the earth to a height equal to the radius R of earth is _____

Options :

1. ✓ $(\frac{1}{2})mgR$
2. ✗ $2mgR$
3. ✗ mgR
4. ✗ $(\frac{1}{4})mgR$

Question Number : 60 Question Id : 5105295672 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A ship of mass $3 \times 10^7 \text{ Kg}$ initially at rest is pulled by a force of $5 \times 10^4 \text{ N}$ through a distance of 3 m. Assume that the resistance due to water is negligible, the speed of the ship is _____

Options :

1. ✘ 1.5 m/s
2. ✘ 60m/s
3. ✔ 0.1 m/s
4. ✘ 5 m/s

Question Number : 61 Question Id : 5105295673 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Clock A is based on oscillations of a spring and clock B is based on pendulum motion. Both clocks run at the same rate on earth. On a planet having the same density as earth but twice the radius, _____

Options :

1. ✘ A will run faster than B
2. ✔ B will run faster than A
3. ✘ both run at the same rate as on earth
4. ✘ both run at equal rates but not the same as on earth

Question Number : 62 Question Id : 5105295674 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The potential energy at a point r when a particle is moving under the central force

$F = -Kr^2$ is _____

Options :

1. ✘ K^2/r

2. ✘ K/r
3. ✘ K/r^2
4. ✔ $-K/r$

Question Number : 63 Question Id : 5105295675 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

When the body is acted upon by a resultant force, then work done by the resultant force is equal to _____

Options :

1. ✘ its initial kinetic energy
2. ✘ its initial potential energy
3. ✘ change in the kinetic energy
4. ✔ change in momentum

Question Number : 64 Question Id : 5105295676 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A Jet engine works on the principle of _____

Options :

1. ✘ conservation of energy
2. ✘ conservation of mass
3. ✔ conservation of linear momentum
4. ✘ conservation of angular momentum

Question Number : 65 Question Id : 5105295677 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A Particle is vibrating in simple harmonic motion with an amplitude of 4 cm. At what displacement from the equilibrium position is its energy half potential and half kinetic?

Options :

1. ✘ 1 cm
2. ✘ $\sqrt{2}$ cm
3. ✘ 2 cm
4. ✔ $2\sqrt{2}$ cm

Question Number : 66 Question Id : 5105295678 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The walls of Hall built for music concerns should _____

Options :

1. ✘ amplify sound
2. ✘ reflect sound
3. ✘ transmit sound
4. ✔ absorb sound

Question Number : 67 Question Id : 5105295679 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

When a surrounding body and listener approach each other the pitch appears to rise and when they move away from each other pitch appears to decrease. This is known as _____

Options :

1. ✔ Doppler's principle
2. ✘ Newton's formula
3. ✘ Interference
4. ✘ Sabine's formula

Question Number : 68 Question Id : 5105295680 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

An engine driver moving towards a wall with a velocity of 50 m/sec., emits a note of 1.2 KHz. Speed of sound in air is 350 m/sec. The frequency of the note after reflection from the wall as heard by the engine driver is _____

Options :

1. ✘ 1.2 KHz
2. ✔ 1.6 KHz
3. ✘ 0.24 KHz
4. ✘ 2.4 KHz

Question Number : 69 Question Id : 5105295681 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

What is the maximum number of syllables a person can speak in one second?

Options :

1. ✘ 1
2. ✘ 3
3. ✘ 4
4. ✔ 5

Question Number : 70 Question Id : 5105295682 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The speed of sound in air at NTP is 300m/s, if the air pressure becomes four times then the speed of sound will be _____

Options :

1. ✘ 150 m/s
2. ✘ 300 m/s
3. ✔ 600 m/s
4. ✘ 1200 m/s

Question Number : 71 Question Id : 5105295683 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For the efficiency of the Carnot cycle to be maximum, _____

Options :

1. ✓ the temperature of the source should be infinity
2. ✗ the temperature of the sink should be infinity
3. ✗ the temperature of the source should be zero
4. ✗ both should be infinity

Question Number : 72 Question Id : 5105295684 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Specific heat of a gas at constant volume C_v and at constant pressure C_p are related as

Options :

1. ✗ $C_p/C_v = 1-R/J$
2. ✓ $C_p - C_v = R/J$
3. ✗ $C_p - C_v = J/R$
4. ✗ $C_p + C_v = R/J$

Question Number : 73 Question Id : 5105295685 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the pressure remains constant the volume of the gas will _____

Options :

1. ✓ increase with the increase in temperature
2. ✗ decrease with the increase in temperature
3. ✗ not change with the temperature
4. ✗ become zero

Question Number : 74 Question Id : 5105295686 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A super conducting material when placed in a magnetic field will _____

Options :

1. ✘ attract the magnetic field towards its centre
2. ✘ attract the magnetic field but transfer it into a concentrated zone
3. ✔ repel all the magnetic lines of force passing through it
4. ✘ not influence the magnetic field

Question Number : 75 Question Id : 5105295687 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For long distance communication _____

Options :

1. ✘ grand index fibers are more suitable
2. ✔ single mode step index fibers are more suitable
3. ✘ step index fibers are more suitable
4. ✘ silica fibers are more suitable

Display Number Panel:

Yes

Group All Questions:

No

Question Number : 76 Question Id : 5105295688 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The set of quantum number for the 19th electron in chromium is _____

Options :

1. ✔ $n=4, l=0, m=0, S=+1/2$ or $-1/2$
2. ✘ $n=3, l=2, m=1, S=+1/2$ or $-1/2$

3. ✘ $n=3, l=2, m = -1, S=+1/2$ or $-1/2$

4. ✘ $n=4, l=1, m = 0, S=+1/2$ or $-1/2$

Question Number : 77 Question Id : 5105295689 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In which of the following compounds, is coordinate covalent bond present?

Options :

1. ✘ PH_3

2. ✘ H_2O

3. ✔ NH_4OH

4. ✘ HBr

Question Number : 78 Question Id : 5105295690 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Variable valency is shown by _____

Options :

1. ✘ N and O

2. ✔ P and S

3. ✘ F and Cl

4. ✘ N and S

Question Number : 79 Question Id : 5105295691 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In the following balanced equation



The values of x, Y, Z would be _____

Options :

1. ✘ $x=4, Y=8, Z=5$
2. ✘ $x=6, Y=3, Z=4$
3. ✔ $x=8, Y=4, Z=4$
4. ✘ $x=3, Y=5, Z=4$

Question Number : 80 Question Id : 5105295692 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

50cc of decinormal NaOH solution will be completely neutralised by 'x' ml of
decimolar H_2SO_4 solution. The value of 'x' is _____

Options :

1. ✘ 10
2. ✔ 25
3. ✘ 50
4. ✘ 1

Question Number : 81 Question Id : 5105295693 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Arrange the following in the decreasing order of acidity:

I) H_2SO_3 II) H_3PO_4 III) $HClO_3$

Options :

1. ✘ I > II > III
2. ✘ II > III > I
3. ✔ III > II > I

4. ✘ I > III > II

Question Number : 82 Question Id : 5105295694 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which anion is the weakest conjugate base?

Options :

1. ✘ $\text{C}_2\text{H}_5\text{O}^\ominus$

2. ✘ F^\ominus

3. ✘ $\text{CH}_3\text{COO}^\ominus$

4. ✔ NO_3^\ominus

Question Number : 83 Question Id : 5105295695 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In the preparation of wrought iron from cast iron, the furnace employed is _____

Options :

1. ✘ Electrical

2. ✘ Open hearth

3. ✔ Reverberatory

4. ✘ Blast

Question Number : 84 Question Id : 5105295696 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Number of coulombs of current required to convert completely one mole of MnO_4^\ominus

ions in acid medium to one mole of Mn^{+2} ions electrically _____

Options :

1. ✘ 96500
2. ✘ 96500 x 2
3. ✘ 96500 x 6
4. ✔ 5 x 96500

Question Number : 85 Question Id : 5105295697 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following elements has the highest value of the electrochemical equivalent?

Options :

1. ✘ Mg
2. ✘ Ca
3. ✔ K
4. ✘ Na

Question Number : 86 Question Id : 5105295698 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The standard reduction potential for Zn^{+2}/Zn and Cu^{+2}/Cu electrodes are

-0.76 V and +0.34 V respectively. For the cell reaction $Zn + Cu^{+2} \rightarrow Zn^{+2} + Cu$ the

standard e.m.f is _____

Options :

1. ✔ +1.10 V
2. ✘ -0.42 V

3. ✘ +0.42 V

4. ✘ -1.10 V

Question Number : 87 Question Id : 5105295699 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The type of protection against corrosion applied to marine piers and water box coolers

is _____

Options :

1. ✔ Impressed current cathodic protection

2. ✘ Metal rusting

3. ✘ Tinning

4. ✘ Metal painting

Question Number : 88 Question Id : 5105295700 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A metal is dipped separately in different pH solutions of 1, 2, 3 and 4. In which pH solution is the metal easily corroded?

Options :

1. ✔ 1

2. ✘ 2

3. ✘ 3

4. ✘ 4

Question Number : 89 Question Id : 5105295701 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A raw water sample has 300 ppm calcium ions and its CaCO_3 equivalent in ppm

is ____

Options :

1. ✘ 625

2. ✔ 750

3. ✘ 1500

4. ✘ 25

Question Number : 90 Question Id : 5105295702 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A Process which removes ionic, non ionic, colloidal and organic matter from water

is _____

Options :

1. ✘ Ion exchange process

2. ✘ Permutit process

3. ✘ Zeolite process

4. ✔ Reverse osmosis

Question Number : 91 Question Id : 5105295703 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The exhausted anion exchange column in the demineralization process is regenerated

by passing a solution of _____

Options :

1. ✘ dil H₂SO₄

2. ✘ dil HCl

3. ✔ dil NaOH

4. ✘ dil NH₄OH

Question Number : 92 Question Id : 5105295704 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 an example of addition polymer?

Options :

1. ✘ Polythene

2. ✔ Terylene

3. ✘ Neoprene

4. ✘ Polystyrene

Question Number : 93 Question Id : 5105295705 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is an example of fibre polymer?

Options :

1. ✘ Rubber

2. ✘ PVC

3. ✘ Bakelite

4. ✔ Nylon-66

Question Number : 94 Question Id : 5105295706 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following can enhance the Physical properties of rubber?

Options :

1. ✘ ZnO
2. ✘ Zn stearate
3. ✔ Sulphur
4. ✘ SiO₂

Question Number : 95 Question Id : 5105295707 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The basic component of the smog may be _____

Options :

1. ✘ O₃
2. ✔ O₃ + PAN
3. ✘ PAN + SO₂
4. ✘ O₃ + PAN + SO₃

Question Number : 96 Question Id : 5105295708 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In Antarctica, Ozone depletion is due to the formation of the following

Compound(s) _____

Options :

1. ✘ Chlorine nitrate

2. ✘ PAN
3. ✔ Acrolein
4. ✘ SO₂ and SO₃

Question Number : 97 Question Id : 5105295709 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The pollutant responsible for smog formation and acid rain is _____

Options :

1. ✔ SO₂
2. ✘ CH₄
3. ✘ He
4. ✘ SO₂Cl₂

Question Number : 98 Question Id : 5105295710 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The normality of 26% (Wt/Vol) solution of ammonia (d=0.55) is approximately ____

Options :

1. ✘ 1.5
2. ✔ 15.3
3. ✘ 0.4
4. ✘ 4

Question Number : 99 Question Id : 5105295711 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Wolframite impurity in Cassiterite is removed by _____

Options :

1. ✘ Liqutation
2. ✘ Froth flotation
3. ✔ Electromagnetic separation
4. ✘ Hand picking

Question Number : 100 Question Id : 5105295712 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The highest ranking coal is _____

Options :

1. ✔ Anthracite
2. ✘ Lignite
3. ✘ Bituminous
4. ✘ Peat

Display Number Panel:

Yes

Group All Questions:

No

Question Number : 101 Question Id : 5105295713 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Ductility is a property of the material due to which it can be _____

Options :

1. ✘ Rolled into bars
2. ✘ Drawn into section

3. ✓ Drawn into wires
4. ✗ Beaten up into sheets

Question Number : 102 Question Id : 5105295714 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The temperature stress set up in the materials when _____

Options :

1. ✗ It is free to expand or contract
2. ✓ Its expansion or contraction is prevented
3. ✗ It is first heated then cooled
4. ✗ It is first cooled then heated

Question Number : 103 Question Id : 5105295715 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a simply supported beam carrying a load whose intensity varies uniformly from zero at one end to 'w' per unit run at the other end, the maximum support reaction is equal to _____

Options :

1. ✗ $wl / 8$
2. ✗ $wl / 12$
3. ✗ $wl / 24$
4. ✓ $wl / 3$

Question Number : 104 Question Id : 5105295716 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a simple tension test, Hook's law is valid up to the _____

Options :

1. ✘ Yield point
2. ✔ Limit of proportionality
3. ✘ Ultimate point
4. ✘ Breaking point

Question Number : 105 Question Id : 5105295717 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Energy stored in a body, when it is strained within the elastic limit is known as _____

Options :

1. ✘ Resilience
2. ✔ Strain energy
3. ✘ Toughness
4. ✘ Proof resilience.

Question Number : 106 Question Id : 5105295718 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A cantilever of span 4.5 m has a load 40 kN acting at the free end. The bending moment at the free end will be

Options :

1. ✔ 0
2. ✘ 200 kN-m
3. ✘ 180k N-m
4. ✘ 50 kN-m

Question Number : 107 Question Id : 5105295719 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A simply supported beam of span '6m' carries a concentrated load '100 kN' at the center,
the B.M at the mid span point will be _____

Options :

1. ✓ 150 kNm
2. ✗ 0 kNm
3. ✗ 200 kNm
4. ✗ 120 kNm

Question Number : 108 Question Id : 5105295720 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The rate of change of Bending moment is known as _____

Options :

1. ✗ Shear center
2. ✗ Section modulus
3. ✗ Intensity of load
4. ✓ Shear Force

Question Number : 109 Question Id : 5105295721 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A beam of symmetric I-section subjected to transverse shear force 'S' the maximum
shear stress is developed _____

Options :

1. ✓ At mid depth of the Web
2. ✗ At top edge of the top flange

At the bottom edge of the top flange

3. ✘

At top of the flange

4. ✘

Question Number : 110 Question Id : 5105295722 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A rectangular section with width 'b' and depth 'd' will have section modulus Z as _____

Options :

1. ✘ $bd^3/12$

2. ✘ $bd^2/16$

3. ✘ $bd^3/6$

4. ✔ $bd^2/6$

Question Number : 111 Question Id : 5105295723 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Beams subjected to Pure bending have _____

Options :

1. ✔ Zero Shear force and constant bending moment

2. ✘ Both Shear force and bending moment constant

3. ✘ Constant Shear force and zero bending moment

4. ✘ Both Shear force and bending moment is zero

Question Number : 112 Question Id : 5105295724 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A cantilever of length 'l' is carrying a uniformly distributed load of 'w' per unit run for a

distance 'a' from fixed end. EI is constant the slope at the free end is given as _____

Options :

1. ✓ $\frac{wa^3}{6EI}$

2. ✗ $\frac{wa^3}{8EI}$

3. ✗ $\frac{wa^3}{12EI}$

4. ✗ $\frac{wa^3}{24EI}$

Question Number : 113 Question Id : 5105295725 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a rectangular section of depth 'd' and breadth 'b' the maximum shear stress (τ_{\max}) at N.A
for shear force F will be _____

Options :

1. ✗ $(\tau_{\max}) = F/bd$

2. ✓ $(\tau_{\max}) = 1.5 F /bd$

3. ✗ $(\tau_{\max}) = 2F /bd$

4. ✗ $(\tau_{\max}) = 2 F /bd$

Question Number : 114 Question Id : 5105295726 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a circular section of diameter 'D' the relation between maximum
shear stress (τ_{\max}) and average shear stress (τ_{av}) is _____

Options :

1. ✗ $\tau_{\max} = 1.5\tau_{av}$

2. ✗ $\tau_{\max} = 0.33\tau_{av}$

3. ✓ $\tau_{\max} = 1.33\tau_{av}$

4. ✗ $\tau_{\max} = 2\tau_{av}$

Question Number : 115 Question Id : 5105295727 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

What is the deflection at free end of a cantilever beam of span 'L', under a concentrated load

W kN at the free end ?

Options :

1. ✗ $WL^2/2EI$

2. ✗ $WL^3/2EI$

3. ✗ $WL^2/6EI$

4. ✓ $WL^3/3EI$

Question Number : 116 Question Id : 5105295728 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

What is the rotation at the support of a simply supported beam of span 'L', subjected to

uniformly distributed load w kN/m run throughout the span?

Options :

1. ✗ $wL^2/16EI$

2. ✗ $wL^3/48EI$

3. ✓ $wL^3/24EI$

4. ✗ $wL^3/30EI$

Question Number : 117 Question Id : 5105295729 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A fixed beam of span 5 m is subjected to uniformly distributed load of 24 kN/m throughout the span, what is the moment developed at the fixed end?

Options :

1. ✓ 50 kNm
2. ✗ 40 kNm
3. ✗ 60 kNm
4. ✗ 75 kNm

Question Number : 118 Question Id : 5105295730 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A rectangular column of depth 'd' and breadth 'b' under any load is to have compressive stresses throughout .The eccentricity of load along axis of the depth or along axis of the breadth should not exceed _____

Options :

1. ✗ One-fourth depth or breadth
2. ✓ One-sixth of depth or breadth.
3. ✗ One-third of depth or breadth.
4. ✗ One-eighth of depth or breadth

Question Number : 119 Question Id : 5105295731 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Euler's crippling load for a column of length 'L' with hinged-hinged ends is _____

Options :

1. ✓ $\frac{\pi^2 EI}{L^2}$
2. ✗ $\frac{4\pi^2 EI}{L^2}$

3. ✘ $\Pi^2 EI / 4L^2$

4. ✘ $2\Pi^2 EI / L^2$

Question Number : 120 Question Id : 5105295732 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For stable determinate plane truss, the number of members 'm' and number of joints 'j' are related by equation _____

Options :

1. ✘ $m = 3j - 3$

2. ✔ $m = 2j - 3$

3. ✘ $m = 2j + 3$

4. ✘ $m = 2j$

Question Number : 121 Question Id : 5105295733 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Partial safety factor for concrete in limit state of collapse flexure is _____

Options :

1. ✘ 1.2

2. ✘ 1.3

3. ✘ 1.4

4. ✔ 1.5

Question Number : 122 Question Id : 5105295734 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If f_{ck} is characteristic compressive strength of concrete, then the modulus of elasticity of concrete (E) as per IS:456-2000 is given by _____

Options :

1. ✘ $E = 4000 f_{ck}$
2. ✘ $E = 4000 \sqrt{f_{ck}}$
3. ✔ $E = 5000 \sqrt{f_{ck}}$
4. ✘ $E = 5000 f_{ck}$

Question Number : 123 Question Id : 5105295735 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In Limit state design, plane sections remains plane implies that _____

Options :

1. ✘ Stress varies linearly
2. ✔ Strain varies linearly
3. ✘ Both stress and strain vary linearly
4. ✘ Strain varies parabolically

Question Number : 124 Question Id : 5105295736 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Separation of coarse aggregate from the concrete mix is known as _____

Options :

1. ✘ Bleeding
2. ✘ Shrinkage
3. ✔ Segregation
4. ✘ creep

Question Number : 125 Question Id : 5105295737 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A reinforced concrete slab of thickness 200 mm. Maximum diameter of the main bar that can be used is _____mm

Options :

1. ✘ 12
2. ✘ 16
3. ✘ 20
4. ✔ 25

Question Number : 126 Question Id : 5105295738 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following does not come under Limit state of serviceability ?

Options :

1. ✔ Stability
2. ✘ Cracking
3. ✘ Excessive deflection
4. ✘ Durability

Question Number : 127 Question Id : 5105295739 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Diameter of lateral ties in columns should not be less than _____ of the longest longitudinal bar but in no Case less than 6mm.

Options :

1. ✘ 1/2
2. ✘ 1/3
3. ✘ 2/3

4. ✓ 1/4

Question Number : 128 Question Id : 5105295740 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Minimum grade of concrete to be used in Reinforced concrete as per IS:456-2000 is _____

Options :

1. ✗ M30

2. ✗ M15

3. ✗ M10

4. ✓ M20

Question Number : 129 Question Id : 5105295741 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

As per is IS 456 : 2000, the minimum number of longitudinal bars for a circular column should be

Options :

1. ✗ 4

2. ✓ 6

3. ✗ 8

4. ✗ 10

Question Number : 130 Question Id : 5105295742 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

According to IS:456-2000, minimum reinforcement in a column to be provided is _____

Options :

1. ✗ 0.5% of gross c/s area

2. ✗ 0.6% of gross c/s area

3. ✘ 0.7% of gross c/s area

4. ✔ 0.8% of gross c/s area

Question Number : 131 Question Id : 5105295743 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The critical section for one way shear in isolated footing is at a distance _____

Options :

1. ✔ d from the face of the column

2. ✘ 2d from the face of the column

3. ✘ d/2 from the face of the column

4. ✘ 1.5d from the face of the column

Question Number : 132 Question Id : 5105295744 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Minimum percentage of reinforcement to be provided in a footing for HYSD bars is _____

Options :

1. ✘ 0.15% of gross c/s area

2. ✔ 0.12% of gross c/s area

3. ✘ 0.4% of gross c/s area

4. ✘ 0.3% of gross c/s area

Question Number : 133 Question Id : 5105295745 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

According to IS:456-2000, minimum slenderness ratio for a short column is _____

Options :

1. ✓ less than 12
2. ✗ less than 18
3. ✗ less than 24
4. ✗ less than 30

Question Number : 134 Question Id : 5105295746 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The factor of safety for steel and concrete as per IS 456 : 2000 are respectively _____

Options :

1. ✗ 1.5 and 1.5
2. ✓ 1.15 and 1.5
3. ✗ 1.7 and 1.8
4. ✗ 2 and 2.5

Question Number : 135 Question Id : 5105295747 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The ratio of permissible stress in direct compression and bending compression is _____

Options :

1. ✓ Less than 1
2. ✗ Between 1 and 1.5
3. ✗ Between 1.5 and 2.0
4. ✗ Greater than 2

Question Number : 136 Question Id : 5105295748 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Length of revenue chain is _____

Options :

1. ✘ 33 ft
2. ✔ 66 ft
3. ✘ 100 ft
4. ✘ 120 ft

Question Number : 137 Question Id : 5105295749 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The rise and fall method of levelling provides a complete check on _____

Options :

1. ✘ Back sight
2. ✔ Intermediate sight
3. ✘ Fore sight
4. ✘ Turning point

Question Number : 138 Question Id : 5105295750 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the fore bearing of a line is $N60^{\circ}30'E$, its back bearing is;

Options :

1. ✘ $S240^{\circ}30'W$
2. ✘ $N240^{\circ}30'E$
3. ✔ $S60^{\circ}30'W$
4. ✘ $N60^{\circ}30'E$

Question Number : 139 Question Id : 5105295751 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The angle of intersection of a contour and the ridge line is _____

Options :

1. ✘ 30°
2. ✔ 60°
3. ✘ 90°
4. ✘ 120°

Question Number : 140 Question Id : 5105295752 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Removal of parallax error in a theodolite may be achieved by adjusting _____

Options :

1. ✘ Bubble tube
2. ✘ Plumb bob
3. ✔ Objective lens and eye piece
4. ✘ Foot screws

Question Number : 141 Question Id : 5105295753 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If i is the stadia distance, f is the focal length and d is the distance between the objective

and the vertical axis of the Tacheometer, the multiplicative constant is _____

Options :

1. ✔ f/i
2. ✘ $f \times i$

3. ✘ $(f + d)$

4. ✘ (f / d)

Question Number : 142 Question Id : 5105295754 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The angle of intersection of a curve is the angle between _____

Options :

1. ✔ Back tangent and the forward tangent

2. ✘ Back tangent and the long chord

3. ✘ Long chord and the forward tangent

4. ✘ Long chord and the normal chord

Question Number : 143 Question Id : 5105295755 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Number of satellites required to determine position using GPS is _____

Options :

1. ✘ One

2. ✘ Ten

3. ✘ Twenty four

4. ✔ Three

Question Number : 144 Question Id : 5105295756 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A jet of water (specific gravity=1.0) is coming out of nozzle area 0.02 m^2 with a velocity of 10 m/s . If it strikes normally on a stationary plate, the force exerted on the plate is _____

Options :

1. ✘ 1906 N
2. ✘ 15606 N
3. ✔ 1600 N
4. ✘ 19581 N

Question Number : 145 Question Id : 5105295757 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A hydraulically efficient trapezoidal section of open channel flow carries water at the optimal depth of 0.6. The Chezy's coefficient is 75 and bed slope is 1 in 250. What is discharge through the channel ?

Options :

1. ✘ 1.44 m³/s
2. ✔ 1.62 m³/s
3. ✘ 1.92 m³/s
4. ✘ 2.24 m³/s

Question Number : 146 Question Id : 5105295758 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A Francis turbine under a head of 25 m produces 2000 kW at a speed of 250 rpm.

What is its specific speed?

Options :

1. ✘ 50
2. ✘ 100
3. ✘ 150

4. ✓ 200

Question Number : 147 Question Id : 5105295759 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Mercury is used in the barometer and manometers because its _____

Options :

1. ✓ High mass density and very low vapour pressure
2. ✗ Negligible capillarity effect
3. ✗ Low cost and economy
4. ✗ Low compressibility

Question Number : 148 Question Id : 5105295760 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A static Pitot tube, with a coefficient of 0.98 is used to measure the velocity of water in a pipe. The stagnation pressure recorded is 3 m and the static pressure is 0.5 m.

What is the velocity of flow?

Options :

1. ✗ 7.2 m/s
2. ✓ 6.8 m/s
3. ✗ 5.9 m/s
4. ✗ 5.2 m/s

Question Number : 149 Question Id : 5105295761 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Cavitation in a turbine /centrifugal pump will take place if the pressure of flowing fluid at any point is _____

Options :

1. ✗ More than the vapour pressure of the fluid

2. ✘ Equal to the vapour pressure of the fluid
3. ✔ Less than the vapour pressure of the fluid
4. ✘ Equal to zero

Question Number : 150 Question Id : 5105295762 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The Chezy's and Manning's formulae are related by _____

Options :

1. ✘ $n = \frac{1}{C} R^{2/3}$
2. ✘ $C = nR^{1/6}$
3. ✘ $C = nR^{2/3}$
4. ✔ $C = \frac{1}{n} R^{1/6}$

Question Number : 151 Question Id : 5105295763 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

To generate 8100 kW under a head of 81 m while working at a speed of 540 rpm, what type of turbine is suitable?

Options :

1. ✔ Pelton
2. ✘ Kaplan
3. ✘ Bulb
4. ✘ Francis

Question Number : 152 Question Id : 5105295764 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The overall efficiency of a Pelton turbine is 70%. If the mechanical efficiency is 85%,
what is the hydraulic efficiency?

Options :

1. ✓ 82.4%
2. ✗ 59.5%
3. ✗ 72.3%
4. ✗ 81.5%

Question Number : 153 Question Id : 5105295765 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The total energy line (T.E.L) is always higher than the hydraulic grade line (H.G.L), the
vertical distance between TEL and HGL represents _____

Options :

1. ✓ The velocity head
2. ✗ The datum head
3. ✗ The pressure head
4. ✗ The Piezometric head

Question Number : 154 Question Id : 5105295766 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a centrifugal pump casing, the flow of water leaving the impeller is _____

Options :

1. ✗ Radial flow
2. ✗ Rotational flow

3. ✘ Tangential flow

4. ✔ Vortex flow

Question Number : 155 Question Id : 5105295767 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The discharge over an Ogee weir remains the same as that of _____

Options :

1. ✘ Triangular weir

2. ✔ Sharp crested weir

3. ✘ Cippoletti weir

4. ✘ Drowned weir

Question Number : 156 Question Id : 5105295768 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Fluid masses subjected to uniform acceleration are analyzed using _____

Options :

1. ✘ Bernoulli's equation

2. ✘ Newton's law of viscosity

3. ✔ Newton's second law of motion

4. ✘ Momentum equation

Question Number : 157 Question Id : 5105295769 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The minor losses in flow through pipes are _____

Options :

1. ✘ Due to friction in pipe
2. ✘ Significant in laminar flow only
3. ✘ Substantial in pipes of small length
4. ✔ Due to local disturbance in flow

Question Number : 158 Question Id : 5105295770 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The kor depth for rice is 190 mm and kor period is 14 days. The outlet factor for this will be _____

Options :

1. ✔ 637 hectares/m³/sec
2. ✘ 837 hectares/m³/sec
3. ✘ 972 hectares/m³/sec
4. ✘ 1172 hectares/m³/sec

Question Number : 159 Question Id : 5105295771 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The ratio of the quantity of water stored in the root zone of the crops to the quantity of water actually delivered in the field is known as _____

Options :

1. ✘ Water conveyance efficiency
2. ✔ Water application efficiency
3. ✘ Water use efficiency
4. ✘ Water overall efficiency

Question Number : 160 Question Id : 5105295772 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The amount of irrigation water required to meet the evapotranspiration needs of the crop during its full growth is called _____

Options :

1. ✘ Effective rainfall
2. ✘ Consumptive rainfall
3. ✔ Consumptive irrigation requirements
4. ✘ Net irrigation requirement

Question Number : 161 Question Id : 5105295773 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hydrograph is the graphical representation of _____

Options :

1. ✔ Runoff and time
2. ✘ Surface runoff and time
3. ✘ Ground water flow and time
4. ✘ Rainfall and time

Question Number : 162 Question Id : 5105295774 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The water stored in the reservoir below the minimum pool level is called _____

Options :

1. ✘ Useful storage
2. ✔ Dead storage
3. ✘ Valley storage

4. ✘ Surcharge storage

Question Number : 163 Question Id : 5105295775 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Trap efficiency of a reservoir is a function of _____

Options :

1. ✔ Capacity / inflow ratio
2. ✘ Capacity / outflow ratio
3. ✘ Out flow / inflow ratio
4. ✘ Inflow/outflow ratio

Question Number : 164 Question Id : 5105295776 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The major resisting force in a gravity dam is _____

Options :

1. ✘ Water pressure
2. ✘ Wave pressure
3. ✔ Self weight of dam
4. ✘ Uplift pressure

Question Number : 165 Question Id : 5105295777 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

When the reservoir is full, the maximum compressive force in a gravity dam is produced _____

Options :

1. ✔ At the toe
2. ✘ At the heel

3. ✘ Within the middle third of base

4. ✘ At center of base

Question Number : 166 Question Id : 5105295778 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Irrigation canals are generally aligned along _____

Options :

1. ✔ Straight line

2. ✘ Ridge line

3. ✘ Contour line

4. ✘ Valley line

Question Number : 167 Question Id : 5105295779 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The most suitable material for the central impervious core of a zoned embankment type dam is

Options :

1. ✘ Clay

2. ✘ Coarse sand

3. ✘ Silty clay

4. ✔ Clay mixed with fine sand

Question Number : 168 Question Id : 5105295780 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The canal structure required at a place where sudden change in bed elevation of the canal is _____

Options :

1. ✘ Canal regulator

- 2. ✘ Canal Outlet
- 3. ✔ Canal fall
- 4. ✘ Canal Escape

Question Number : 169 Question Id : 5105295781 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A runoff river plant _____

Options :

- 1. ✘ Is a medium head scheme
- 2. ✘ Generates power during peak hours only
- 3. ✔ Is suitable only on perennial river
- 4. ✘ Has no pondage at all

Question Number : 170 Question Id : 5105295782 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For the upstream face of an earthen dam, the most adverse condition for stability of slope is _____

Options :

- 1. ✔ Sudden drawdown
- 2. ✘ Steady seepage
- 3. ✘ During construction
- 4. ✘ Sloughing of slope

Question Number : 171 Question Id : 5105295783 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

An aqueduct is planned to construct to carry a discharge of $(Q) = 25\text{m}^3/\text{s}$. How much is the linear waterway for this condition?

Options :

1. ✘ 4.75 m
2. ✘ 5 m
3. ✔ 23.75 m
4. ✘ 25 m

Question Number : 172 Question Id : 5105295784 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a rural area where the rain fall is light a water bound macadam road of 3.75 m wide is to be constructed. Select the appropriate camber recommended by Indian Road Congress for the above case and what will be height of crown with respect to the edges?

Options :

1. ✘ 1 in 20 and height of crown is 0.045 m
2. ✔ 1 in 40 and height of crown is 0.047 m
3. ✘ 1 in 50 and height of crown is 0.050 m
4. ✘ 1 in 30 and height of crown is 0.052 m

Question Number : 173 Question Id : 5105295785 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Marking a centre line on road is called _____

Options :

1. ✘ Pavement marking
2. ✔ Alignment
3. ✘ Level marking

4. ✖ Bench marking

Question Number : 174 Question Id : 5105295786 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The order of engineering surveys conducted to finalize the alignment is _____

Options :

1. ✖ Reconnaissance, Detailed Study and Preliminary study and Map study
2. ✖ Reconnaissance, Map study, Detailed Study and Preliminary study
3. ✖ Preliminary study Map study, Preliminary study and Map study
4. ✔ Map Study, Reconnaissance, Preliminary study and Detailed Study

Question Number : 175 Question Id : 5105295787 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The background colour of the informatory sign board is _____

Options :

1. ✖ Red
2. ✔ Yellow
3. ✖ Green
4. ✖ White

Question Number : 176 Question Id : 5105295788 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The simplest method of finding spot speed is _____

Options :

1. ✖ Enometer
2. ✖ Enotelemeter

3. ✓ Enoscope

4. ✗ Multimeter

Question Number : 177 Question Id : 5105295789 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Who is the father of soil mechanics?

Options :

1. ✗ Marcel Dekker

2. ✓ Karl Terzaghi

3. ✗ Finnemore

4. ✗ Oosthuizen

Question Number : 178 Question Id : 5105295790 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The maximum design gradient for vertical profile of a road is _____

Options :

1. ✗ Ruling gradient

2. ✓ Limiting gradient

3. ✗ Exceptional gradient

4. ✗ Minimum gradient

Question Number : 179 Question Id : 5105295791 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

AS per IRC, standard axle load is _____

Options :

1. ✓ 80 kN

- 2. ✘ 90 kN
- 3. ✘ 86 kN
- 4. ✘ 100 kN

Question Number : 180 Question Id : 5105295792 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Coincident draft in relation to water demand, is based on _____

Options :

- 1. ✘ Maximum daily demand and Peak hour demand
- 2. ✔ Maximum daily demand and fire demand
- 3. ✘ Maximum daily demand and domestic demand
- 4. ✘ Maximum daily demand and commercial demand

Question Number : 181 Question Id : 5105295793 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The presence of excess amount of nitrates in drinking water may cause a disease called _____

Options :

- 1. ✘ Minamata disease
- 2. ✘ Poliomyelitis
- 3. ✔ Methemoglobinemia
- 4. ✘ Itai-itai disease

Question Number : 182 Question Id : 5105295794 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The safe permissible limit of sulphates in domestic water supplies is _____

Options :

1. ✘ 100 mg/l
2. ✔ 200 mg/l
3. ✘ 400 mg/l
4. ✘ 1000 mg/l

Question Number : 183 Question Id : 5105295795 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

At break point chlorination, the residual chlorine is _____

Options :

1. ✘ Zero
2. ✘ Maximum
3. ✔ Minimum
4. ✘ Constant

Question Number : 184 Question Id : 5105295796 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The layout of distribution system in which water flows towards the outer periphery is _____

Options :

1. ✘ Ring System
2. ✔ Radial System
3. ✘ Dead End System
4. ✘ Grid Iron System

Question Number : 185 Question Id : 5105295797 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The self cleansing velocity for all the sewers in India is usually _____

Options :

1. ✘ Less than 1 m/s
2. ✔ 1 m/s to 1.2 m/s
3. ✘ 1.5 m/s to 2.0 m/s
4. ✘ 3.0 m/s to 3.5 m/s

Question Number : 186 Question Id : 5105295798 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Lamp holes are provided to _____

Options :

1. ✔ facilitate inspection of sewers
2. ✘ clean the sewers
3. ✘ admit storm water to sewers
4. ✘ provide support to the sewers

Question Number : 187 Question Id : 5105295799 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If a sewer carrying a discharge of 3 cumec outfalls into a river having a discharge of 10 cumec and DO equal to 9.1 mg/l, the resultant DO of the mix will be equal to _____

Options :

1. ✘ 5 mg/l
2. ✘ 6 mg/l
3. ✔ 7 mg/l

4. ✘ 8 mg/l

Question Number : 188 Question Id : 5105295800 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Partial combustion of a carbonaceous fuel to generate a combustible fuel gas, rich in carbon monoxide and oxygen is called _____

Options :

1. ✔ Gasification

2. ✘ Incineration

3. ✘ Pyrolysis

4. ✘ Thermal cracking

Question Number : 189 Question Id : 5105295801 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The minimum length of butt weld shall be _____ times the size of the weld.

Options :

1. ✘ 2

2. ✘ 3

3. ✔ 4

4. ✘ 5

Question Number : 190 Question Id : 5105295802 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a steel plate with bolted connections, the rupture of the net section is a mode of failure under _____

Options :

1. ✔ Tension

- 2. ✘ Compression
- 3. ✘ Flexure
- 4. ✘ Shear

Question Number : 191 Question Id : 5105295803 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A fillet weld is known as standard fillet weld if the cross section of the fillet weld is a triangle
of the angle _____

Options :

- 1. ✘ 20°
- 2. ✘ 60°
- 3. ✘ 30°
- 4. ✔ 45°

Question Number : 192 Question Id : 5105295804 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following sections will have the highest shape factor ?

Options :

- 1. ✘ Rectangle
- 2. ✘ I-Section
- 3. ✘ Solid Circular
- 4. ✔ Diamond

Question Number : 193 Question Id : 5105295805 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The plastic section modulus for a rectangle of base 'b' and depth 'd' is _____

Options :

1. ✘ $bd^2/3$

2. ✔ $bd^2/4$

3. ✘ $bd^2/6$

4. ✘ $bd^2/12$

Question Number : 194 Question Id : 5105295806 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The plastic section modulus for a solid circular section of diameter 'd' is _____

Options :

1. ✘ $d^3/3$

2. ✘ $d^3/4$

3. ✘ $d^3/8$

4. ✔ $d^3/6$

Question Number : 195 Question Id : 5105295807 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Load factor is defined as _____

Options :

1. ✘ Ultimate load/yield load

2. ✘ Yield load/Working load

3. ✔ Ultimate load/ Working load

4. ✘ Working load/ yield load

Question Number : 196 Question Id : 5105295808 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The effective length of the battened column is increased by _____

Options :

1. ✘ 5%
2. ✔ 10%
3. ✘ 15%
4. ✘ 20%

Question Number : 197 Question Id : 5105295809 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A compound column having lacing system has to carry an axial load of 600 kN.

The lacing system has to be designed for a transverse shear force of _____ kN.

Options :

1. ✘ 6
2. ✘ 12
3. ✔ 15
4. ✘ 18

Question Number : 198 Question Id : 5105295810 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In plate girder, primarily, shear is carried by _____

Options :

1. ✔ Web
2. ✘ Flange
3. ✘ Neither web nor flange

4. ✘ Flange plate

Question Number : 199 Question Id : 5105295811 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Economical depth of plate girder concept is based on _____

Options :

1. ✔ Minimum weight
2. ✘ Minimum depth of web
3. ✘ Minimum width of flange
4. ✘ Minimum thickness of web

Question Number : 200 Question Id : 5105295812 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

As per IS 800 : 2007 battened column shall be designed for a transverse shear force
of _____ % of the axial load.

Options :

1. ✘ 1.0
2. ✘ 1.5
3. ✔ 2.5
4. ✘ 3