Andhra Pradesh State Council of Higher Education

Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

Question Paper Name :	Civil Engineering 23rd Apr 2026 Shift 1
Subject Name :	Civil Engineering
Creation Date :	2026-04-23 15:16:23
Duration :	180
Total Marks :	200
Display Marks:	No
Change Font Color :	No
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Civil Engineering

Group Number :	1
Group Id :	77951857
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	200

Mathematics

Section Id :	779518221
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	50

Number of Questions to be attempted :	50
Section Marks :	50
Section Negative Marks :	0
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	779518237
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 77951811209 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 4 & 9 \end{bmatrix}$, the minor M_{23} of the a_{23} is

Options :

1. ✖ 10

2. ✔ -10

3. ✖ -6

4. ✖ 6

Question Number : 2 Question Id : 77951811210 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\begin{vmatrix} 2x & 5 \\ 8 & x \end{vmatrix} = \begin{vmatrix} 6 & -2 \\ 7 & 3 \end{vmatrix}$ then the value of x is

Options :

1. ✖ 3

2. ✔ ±6

3. ✖ -3

4. ✖

±2

Question Number : 3 Question Id : 77951811211 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If A is a square matrix of order 3 and $|A| = 5$, then the value of $|2A^T|$ is

Options :

1. ✖ -10

2. ✖ 10

3. ✔ 40

4. ✖ -40

Question Number : 4 Question Id : 77951811212 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following systems has non trivial solution ?

Options :

1. ✖ $AX = 0\ ,\ |A| = 4$

2. ✖ $AX = 0\ ,\ |A| = -4$

3. ✔ $AX = 0\ ,\ |A| = 0$

4. ✖ $AX = B\ ,\ |B| = 5$

Question Number : 5 Question Id : 77951811213 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\begin{bmatrix} x+y & 2 \\ 1 & x-y \end{bmatrix} = \begin{bmatrix} 4 & 2 \\ 1 & 2 \end{bmatrix}$, then the values of x and y are:

Options :

1. ✔ $x = 3, y = 1$

2. ✖ $x = 1, y = 3$

3. ✖ $x = 2, y = 3$

4. ✖ $x = 1, y = 1$

Question Number : 6 Question Id : 77951811214 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\frac{x+4}{(x+2)^2(x+3)} = \frac{A}{(x+2)^2} + \frac{B}{(x+2)} + \frac{C}{(x+3)}$ then A + B +C =

Options :

1. ✔ 2

2. ✖ 1

3. ✖ -1

4. ✖ 3

Question Number : 7 Question Id : 77951811215 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\frac{x}{(x-1)^2(x+2)} = \frac{A}{(x-1)^2} + \frac{2}{9(x-1)} + \frac{B}{(x+2)}$ then A + B =

Options :

1. ✖ 1/3

2. ✔

3. ✖ -1/3

4. ✖ 2/3

Question Number : 8 Question Id : 77951811216 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $tan\,A = \frac{1}{2}$ *and* $\tan B = \frac{1}{3}$, then A + B =

Options :

1. ✖ 30^o

2. ✔ 45^o

3. ✖ 60^o

4. ✖ 90^o

Question Number : 9 Question Id : 77951811217 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $2sin^{-1}x = sin^{-1}k$ then k =

Options :

1. ✔ $2x\sqrt{1-x^2}$

2. ✖ $2x$

3. ✖ x^2

4. ✖ $1-2x^2$

Question Number : 10 Question Id : 77951811218 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $sin^{-1}\frac{5}{x} + sin^{-1}\frac{12}{x} = \frac{\pi}{2}$, then x =

Options :

1. ✖ 12

2. ✖ 7

3. ✔ 13

4. ✖ 15

Question Number : 11 Question Id : 77951811219 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The number of solutions of the equation sin 2x - cos 2x = 2 - sin 2x lying in the interval $[0, \pi]$ is

Options :

1. ✖ 0

2. ✖ 1

3. ✔ 2

4. ✖ 3

Question Number : 12 Question Id : 77951811220 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\tan\theta + \sec\theta = \sqrt{3}$ then the principal value of θ in $[0, 2\pi]$ is

Options :

1. ✖ $\pi/4$

2. ✔ $\pi/6$

3. ✖ $\pi/2$

4. ✖ $2\pi/3$

Question Number : 13 Question Id : 77951811221 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$\frac{\tan x-1+\sec x}{\tan x-\sec x+1} =$

Options :

1. ✖ $\frac{1-\sin x}{\cos x}$

2. ✔ $\frac{1+\sin x}{\cos x}$

3. ✖ $\frac{1+\cos x}{\sin x}$

4. ✖ $\frac{1-\cos x}{\sin x}$

Question Number : 14 Question Id : 77951811222 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$tan9^o - tan\ 27^o - tan\ 63^o + tan\ 81^o =$

Options :

1. ✖ 2

2. ✖ 1

3. ✔ 4

4. ✖ 3

Question Number : 15 Question Id : 77951811223 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\cos\theta = \frac{1}{2}\left(a + \frac{1}{a}\right)$, then $4\cos^3\theta - 3\cos\theta =$

Options :

1. ✖ $a^3 + \frac{1}{a^3}$

2. ✔ $\frac{1}{2}(a^3 + \frac{1}{a^3})$

3. ✖ $\frac{1}{4}(a^3 + \frac{1}{a^3})$

4. ✖ $\frac{1}{3}(a^3 + \frac{1}{a^3})$

Question Number : 16 Question Id : 77951811224 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$\cos 6^o \sin 24^o \cos 72^o =$

Options :

1. ✖ 1/4

2. ✖ -1/8

3. ✖ -1/4

4. ✔ 1/8

Question Number : 17 Question Id : 77951811225 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

$tan^{-1}1 + tan^{-1}2 + tan^{-1}3 =$

Options :

1. ✖ $3\pi/4$

2. ✖ $\pi/2$

3. ✔ π

4. ✖ 2π

Question Number : 18 Question Id : 77951811226 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $z_1 = 4i^{40} - 5i^{35} + 6i^{17} + 2,\ z_2 = -1 + i$ then $|z_1 + z_2| =$

Options :

1. ✔ 13

2. ✖ 5

3. ✖ 15

4. ✖ 12

Question Number : 19 Question Id : 77951811227 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The conjugate of $(1 + i)^3$ is

Options :

1. ✖ $1 + 2i$

2. ✖ $-2 + 2i$

3. ✔ $-2-2i$

4. ✖ $1-2i$

Question Number : 20 Question Id : 77951811228 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The equation of a circle whose Centre is (-3, 2) and area is 176 units is

Options :

1. ✖ $x^2+y^2+6x-4y-36=0$

2. ✔ $x^2+y^2+6x-4y-43=0$

3. ✖ $x^2+y^2-6x+4y-36=0$

4. ✖ $x^2+y^2-6x+4y-43=0$

Question Number : 21 Question Id : 77951811229 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The equation of a circle whose Centre is (2, -1) and which passes through the point (3,6) is

Options :

1. ✖ $x^2+y^2+4x+2y-45=0$

2. ✖ $x^2+y^2-2x+2y-50=0$

3. ✖ $x^2+y^2+2x+2y-50=0$

4. ✔ $x^2+y^2-4x+2y-45=0$

Question Number : 22 Question Id : 77951811230 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the parabola $y^2 = 4ax$ passes through the point $(3, 2)$ then the length of its latus rectum is:

Options :

1. ✔ $4/3$

2. ✖ 4

3. ✖ $2/3$

4. ✖ $1/3$

Question Number : 23 Question Id : 77951811231 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The line $y = mx + 2$ is a tangent to the parabola $y^2 = 8x$ if

Options :

1. ✔ $m = 1$

2. ✖ $m = 2$

3. ✖ $m = 3$

4. ✖ $m = 4$

Question Number : 24 Question Id : 77951811232 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The length of the latusrectum and eccentricity of the Hyperbola $9x^2 - 16y^2 = 144$ are

Options :

1. ✖ $(\frac{9}{4}, \frac{5}{4})$

2. ✔ $(\frac{9}{2}, \frac{5}{4})$

3. ✖ $(\frac{9}{2}, \frac{5}{2})$

4. ✖ $(9, \frac{5}{2})$

Question Number : 25 Question Id : 77951811233 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The equation of the ellipse with foci at $(\pm 3, 0)$ and the eccentricity as 1/3 is :

Options :

1. ✔ $\frac{x^2}{81} + \frac{y^2}{72} = 1$

2. ✖ $\frac{x^2}{9} + \frac{y^2}{8} = 1$

3. ✖ $\frac{x^2}{8} + \frac{y^2}{9} = 1$

4. ✖ $\frac{x^2}{3} + \frac{y^2}{2} = 1$

Question Number : 26 Question Id : 77951811234 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$\lim_{x \to \infty} \left(1 + \frac{1}{x}\right)^x =$

Options :

1. ✖ 0

2. ✖ 1

3. ✔ e

4. ✖ ∞

Question Number : 27 Question Id : 77951811235 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$\lim_{x\to 0} \frac{\sqrt{1+x}-1}{x} =$

Options :

1. ✖ 0

2. ✔ $1/2$

3. ✖ 1

4. ✖ ∞

Question Number : 28 Question Id : 77951811236 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$If\ \ y = \frac{(a\cos x + b\sin x + C)}{\sin x} \quad \text{then } \frac{dy}{dx} =$

Options :

1. ✔ $-a\,cosec^2 x - c\ cosec\ x \cot x$

2. ✖ $-a$

3. ✖ $-a\,cosec^2 x + b\sec^2 x + c\ cosec\ x \cot x$

4. ✖ $a\,cosec^2 x - c\,cosec\,x\cot x$

Question Number : 29 Question Id : 77951811237 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$If\ \ y = \sqrt{x + \sqrt{x + \sqrt{x + \text{-----}\infty}}}$ then $\frac{dy}{dx} =$

Options :

1. ✖ $\frac{1}{2y}$

2. ✖ $\frac{1}{1-2y}$

3. ✖ $\frac{1}{2(1-2y)}$

4. ✔ $\frac{-1}{1-2y}$

Question Number : 30 Question Id : 77951811238 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Slope of the tangent to the curve $y = 9x^2 + 7x^4 + 5$ *at the point* $x = 1$ is

Options :

1. ✖ 28

2. ✖ 16

3. ✔ 46

4. ✖ 1/46

Question Number : 31 Question Id : 77951811239 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $f(x) = \begin{cases} 4(5^x) & x < 0 \\ 8k + x & x \geq 0 \end{cases}$ then $f'(-1) =$

Options :

1. ✖ $\frac{2}{5}\log 5$

2. ✔ $\frac{4}{5}\log 5$

3. ✖ $\frac{3}{5}\log 5$

4. ✖ $20 \log 5$

Question Number : 32 Question Id : 77951811240 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$If\ 2^x + 2^y = 2^{x+y}$, then $\frac{dy}{dx} =$

Options :

1. ✔ $1 - 2^y$

2. ✖ $1 - \frac{1}{2^y}$

3. ✖ $1 + 2^{-y}$

4. ✖ $1 + 2^y$

Question Number : 33 Question Id : 77951811241 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $y + sin^{-1}(1 - x^2) = e^x$, then $\frac{dy}{dx} =$

Options :

1. ✖ $e^x - \frac{2}{\sqrt{2-x^2}}$

2. ✖ $e^x - \frac{2}{\sqrt{2+x^2}}$

3. ✔ $e^x + \frac{2}{\sqrt{2-x^2}}$

4. ✖ $e^x + \frac{2}{\sqrt{2+x^2}}$

Question Number : 34 Question Id : 77951811242 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $y(x) = x^x$, $x > 0$, then $y''(2) - 2y'(2) =$

Options :

1. ✖ $4\log_e 2 - 2$

2. ✖ $4\log_e 2 + 2$

3. ✖ $4(\log_e 2)^2 + 2$

4. ✔ $4(\log_e 2)^2 - 2$

Question Number : 35 Question Id : 77951811243 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $z = x^2y^3 + e^y \sin x$, then $\frac{\partial^2 z}{\partial x \partial y} =$

Options :

1. ✔ $6xy^2 + e^y \cos x$

2. ✖ $3x^2y^2 + e^y \sin x$

3. ✖ $3x^2y^2 + e^y \cos x$

4. ✖ $6xy^2 + e^y \sin x$

Question Number : 36 Question Id : 77951811244 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$$\int \frac{dx}{sin^2x\ cos^2x} =$$

Options :

1. ✖ $tanx + \cot x + c$

2. ✔ $tanx - \cot x + c$

3. ✖ $tanx \cot x + c$

4. ✖ $tanx + \sec x + c$

Question Number : 37 Question Id : 77951811245 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$$\int \frac{dx}{\sqrt{x+1} + \sqrt{x}} =$$

Options :

1. ✔ $\frac{2}{3}[(x+1)^{\frac{3}{2}} - (x)^{\frac{3}{2}}] + c$

2. ✖ $\frac{2}{3}[(x+1)^{\frac{3}{2}} + (x)^{\frac{3}{2}}] + c$

3. ✖ $\frac{3}{2}[(x+1)^{\frac{3}{2}} - (x)^{\frac{3}{2}}] + c$

4. ✖ $\frac{3}{2}[(x+1)^{\frac{3}{2}} + (x)^{\frac{3}{2}}] + c$

Question Number : 38 Question Id : 77951811246 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $\int \frac{sin^3 x + cos^3 x}{sin^2 x\ cos^2 x}\, dx = A\ sec\ x + B\ cosec\ x + c$, then (A , B) are

Options :

1. ✖ (1, 1)

2. ✖ (-1, -1)

3. ✔ (1, -1)

4. ✖ (-1, 1)

Question Number : 39 Question Id : 77951811247 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The integral of $f(x) = 1 + x^2 + x^4$ with respect to $x^2$is

Options :

1. ✖ $x + \frac{x^3}{3} + \frac{x^5}{5} + C$

2. ✖ $\frac{x^3}{3} + \frac{x^5}{5} + C$

3. ✖ $x^2 + \frac{x^4}{4} + \frac{x^6}{6} + C$

4. ✔ $x^2 + \frac{x^4}{2} + \frac{x^6}{3} + C$

Question Number : 40 Question Id : 77951811248 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$$\int_0^{\frac{\pi}{2}} \frac{sin^{100}x}{sin^{100}x+cos^{100}x}\,dx\ =$$

Options :

1. ✖ $\pi/2$

2. ✔ $\pi/4$

3. ✖ 100

4. ✖ 50

Question Number : 41 Question Id : 77951811249 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$$\int_0^1 x\sqrt{x^2+4}\,dx\ =$$

Options :

1. ✖ $\frac{1}{3}[5\sqrt{5}-4]$

2. ✖ $\frac{1}{2}[5\sqrt{5}-8]$

3. ✔ $\frac{1}{3}[5\sqrt{5}-8]$

4. ✖ $\frac{1}{3}[5\sqrt{5}+4]$

Question Number : 42 Question Id : 77951811250 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$$\int_{-\pi/6}^{\pi/6} \frac{sin^5x\ cos^3x}{x^4}\,dx\ =$$

Options :

1. ✖ $\pi/2$

2. ✖ $\pi/4$

3. ✔ 0

4. ✖ 1

Question Number : 43 Question Id : 77951811251 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$$\int \frac{dx}{\sqrt{16-25x^2}} =$$

Options :

1. ✔ $\frac{1}{5}sin^{-1}\left(\frac{5x}{4}\right)+c$

2. ✖ $sin^{-1}\left(\frac{5x}{4}\right)+c$

3. ✖ $\frac{1}{5}sin^{-1}\left(\frac{x}{4}\right)+c$

4. ✖ $\frac{1}{5}sin^{-1}\left(\frac{4x}{5}\right)+c$

Question Number : 44 Question Id : 77951811252 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The solution of the differential equation $x\frac{dy}{dx}+y=0$ passing through the point (1,1) is y =

Options :

1. ✖ x^2

2. ✔ x^{-1}

3. ✖ x^{-2}

4. ✖ x

Question Number : 45 Question Id : 77951811253 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Degree of the differential equation $y = x\frac{dy}{dx} + a\sqrt{1 + (\frac{dy}{dx})^2}$ is

Options :

1. ✖ 4

2. ✖ 3

3. ✔ 2

4. ✖ 1

Question Number : 46 Question Id : 77951811254 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The order of the differential equation of all circles passing through the origin and having their centers on the x – axis is

Options :

1. ✖ 4

2. ✖ 3

3. ✖ 2

4. ✔ 1

Question Number : 47 Question Id : 77951811255 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If a and b are arbitrary constants, then the differential equation representing the family of curves $y = a\sin(x+b)$ is

Options :

1. ✖ $\frac{d^2y}{dx^2} - y = 0$

2. ✔ $\frac{d^2y}{dx^2} + y = 0$

3. ✖ $\frac{d^2y}{dx^2} - y^2 = 0$

4. ✖ $\frac{dy}{dx} - y = 0$

Question Number : 48 Question Id : 77951811256 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The differential equation is $\frac{dy}{dx} + \frac{y}{x} = 0$ and $y(1) = 2$. Then the value of $y(3) =$

Options :

1. ✖ 2

2. ✖ 3

3. ✔ 2/3

4. ✖ 1

Question Number : 49 Question Id : 77951811257 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation $\frac{dy}{dx} = e^{x-y} + x^2e^{-y}$ is

Options :

1. ✖ $e^{-y} = e^x + \frac{x^3}{3} + c$

2. ✔ $e^y = e^x + \frac{x^3}{3} + c$

3. ✖ $e^y = e^x + x^3 + c$

4. ✖ $e^y = e^x + c$

Question Number : 50 Question Id : 77951811258 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The differential equation is $\frac{dy}{dx} + y\tan x = \sec x$ and $y(0) = 1$. Then the value of $y\left(\frac{\pi}{4}\right) =$

Options :

1. ✖ 0

2. ✔ $\sqrt{2}$

3. ✖ 1

4. ✖ -1

Physics

Section Id :	77951822
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Section Negative Marks :	0
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	779518238
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 77951811259 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If P = F. v Sin βt where **F** is force and **v** is velocity then the dimensions of P and β are

Options :

1. ✔ ML^2T^{-3}, T^{-1}

2. ✖ $ML\,T^{-2}, T^{-2}$

3. ✖ ML^2T^{-1}, T^{-1}

4. ✖ ML^2T^3, T^{-2}

Question Number : 52 Question Id : 77951811260 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If velocity V, energy E and time T are chosen as fundamental quantities then dimensional representation of surface tension in this system will be

Options :

1. ✔ $E^1V^{-2}T^{-2}$

2. ✖ $E^1V^{-1}T^{-2}$

3. ✖ $E^{-2}V^{-1}T^{-3}$

4. ✖ $E^{1}V^{-2}T^{-1}$

Question Number : 53 Question Id : 77951811261 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $|\mathbf{A} + \mathbf{B}| = |\mathbf{A} - \mathbf{B}|$, then the angle between the two vectors **A** and **B** is

Options :

1. ✖ 0°

2. ✖ 180°

3. ✖ 120°

4. ✔ 90°

Question Number : 54 Question Id : 77951811262 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

An aeroplane is moving in a circular path with a speed of 450 Kmph. What is the change in velocity in half revolution?

Options :

1. ✖ 0 Kmph

2. ✖ 450 Kmph

3. ✖ 250 Kmph

4. ✔ 900 Kmph

Question Number : 55 Question Id : 77951811263 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The ratio between maximum and minimum values of two vectors $\vec{A}$ and $\vec{B}$ $(\vec{A} > \vec{B})$ is 1:4. Then the ratio between the magnitudes of two vectors is

Options :

1. ✖ 3:2

2. ✔ 5:3

3. ✖ 2:3

4. ✖ 3:5

Question Number : 56 Question Id : 77951811264 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The magnitudes of three vectors $\vec{A}, \vec{B}$ and $\vec{C}$ are 12, 5 and 13 units respectively and $\vec{A} + \vec{B} = \vec{C}$. The angle between $\vec{A}$ and $\vec{B}$ is

Options :

1. ✖ $0°$

2. ✖ $120°$

3. ✔ $90°$

4. ✖ $45°$

Question Number : 57 Question Id : 77951811265 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A body falling from height 'H' takes time 'T' seconds to reach the ground. The time taken to cover the second half of height is

Options :

1. ✖ $\frac{T}{\sqrt{2}}$

2. ✖ $\sqrt{2}\,T$

3. ✔ $(\frac{\sqrt{2}-1}{\sqrt{2}})$ T

4. ✖ $(\frac{1}{\sqrt{2}-1})$ T

Question Number : 58 Question Id : 77951811266 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

With what speed a body be thrown upwards so that the distances covered in the 5^{th} second and 6^{th} second are equal?

Options :

1. ✖ 75 m/s

2. ✖ $\sqrt{98}$ m/s

3. ✔ 49 m/s

4. ✖ 19.8 m/s

Question Number : 59 Question Id : 77951811267 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A body of mass 1 kg starts moving from rest under the action of a force which varies with displacement as $F = 2x + 5$ (in newtons). The work done by this force to displace the body from $x = 0$ to $x = 2$ m is:

Options :

1. ✖ 8 J

2. ✖ 10 J

3. ✖

12 J

4. ✔ 14 J

Question Number : 60 Question Id : 77951811268 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The potential energy of a particle is given by $U(x) = 20 + (x-2)^2$, where U is in joules and x in meters. The minimum potential energy and the position where it occurs are:

Options :

1. ✔ 20 J at $x = 2$

2. ✖ 2 J at $x = 20$ m

3. ✖ 22 J at $x = 2$ m

4. ✖ 0 J at $x = 2$ m

Question Number : 61 Question Id : 77951811269 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Power supplied to a particle of mass 2 kg varies with time as $P = 3t^2/2$ watt, where t is in seconds. If velocity at $t = 0$ is zero, the velocity at $t = 2$ s is:

Options :

1. ✖ 1 m/s

2. ✔ 2 m/s

3. ✖ $\sqrt{2}$ m/s

4. ✖

4 m/s

Question Number : 62 Question Id : 77951811270 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A pump is used to deliver water at a certain rate from a given pipe. To obtain **twice** the volume of water from the same pipe in the same time, by what factor must the power of the motor pump be increased? (Assume ideal conditions, $g = 10\ ms^{-2}$)

Options :

1. ✖ 4

2. ✔ 8

3. ✖ 16

4. ✖ 32

Question Number : 63 Question Id : 77951811271 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Two identical piano wires, when tuned to a fundamental frequency of 400 Hz, produce no beats. One wire is then slightly tightened, and the beat frequency heard is 2 Hz. What is the new fundamental frequency of the tightened wire?

Options :

1. ✖ 398 Hz

2. ✔ 402 Hz

3. ✖ 404 Hz

4. ✖ 396 Hz

Question Number : 64 Question Id : 77951811272 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A source of sound of frequency 500Hz is moving towards an observer with velocity 30m/s. The speed of sound is 330m/s. The frequency heard by the observer will be:

Options :

1. ✖ 450 Hz

2. ✔ 550 Hz

3. ✖ 600 Hz

4. ✖ 500 Hz

Question Number : 65 Question Id : 77951811273 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In Acoustics, 'Noise' is generally characterized by:

Options :

1. ✔ Irregular and non-periodic vibrations.

2. ✖ A constant pitch and frequency

3. ✖ Vibrations that follow a harmonic series

4. ✖ Regular and periodic vibrations

Question Number : 66 Question Id : 77951811274 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the volume of a room is doubled and the total absorption is halved, the reverberation time will:

Options :

1. ✖ Remain unchanged

2. ✖ Be doubled

3. ✔ Become four times

4. ✖ Be halved

Question Number : 67 Question Id : 77951811275 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

. In a closed hall of volume 5000 m^3, the total absorption of the interior surfaces is 200 metric sabin . The reverberation time is:

Options :

1. ✖ 1 s

2. ✖ 2 s

3. ✖ 3 s

4. ✔ 4 s

Question Number : 68 Question Id : 77951811276 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In an Isothermal process

Options :

1. ✖ Internal energy of the system never remains constant

2. ✖ Total heat energy of the system remains constant

3. ✖ Volume of the system remains constant

4. ✔ Temperature of the system remains constant

Question Number : 69 Question Id : 77951811277 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the pressure of an ideal gas is doubled and its absolute temperature is halved; the volume will become:

Options :

1. ✔ 1/4 of initial volume

2. ✖ 1/2 initial volume

3. ✖ Same as initial volume

4. ✖ 2 times of initial volume

Question Number : 70 Question Id : 77951811278 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

At constant temperature, the product PV is plotted against pressure P for an ideal gas. The graph obtained is:

Options :

1. ✔ Straight line parallel to P-axis

2. ✖ Straight line with positive slope

3. ✖ Straight line through origin

4. ✖ Parabola

Question Number : 71 Question Id : 77951811279 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A bubble of an ideal gas rises from the bottom of a lake to the surface. At the bottom, the pressure is 3 Atm. and the temperature is 7 °C. At the surface, the pressure is 1 atm. and the temperature is 27°C. If the initial volume of the bubble was V_0 what is its volume V_f at the surface?

Options :

1. ✗ $3\ V_0$

2. ✓ $3.21\ V_0$

3. ✗ $0.9\ V_0$

4. ✗ $5.4\ V_0$

Question Number : 72 Question Id : 77951811280 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The R.M.S. speed of oxygen molecules at 27°C is v. At 927°C, the rms speed will be:

Options :

1. ✗ v

2. ✗ v/2

3. ✓ 2v

4. ✗ 4v

Question Number : 73 Question Id : 77951811281 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a photoelectric experiment, the stopping potential for incident light of wavelength 4000 Å is 2 V.

If the wavelength is changed to 3000 Å, the new stopping potential will be approximately:

(Use $h = 4.14 \times 10^{-15}$ eV · s, $c = 3 \times 10^{8}$ m/s)

Options :

1. ✖ 2 V

2. ✔ 3.03 V

3. ✖ 4.14 V

4. ✖ 1.5 V

Question Number : 74 Question Id : 77951811282 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In Optical Fiber communication, the signal is transmitted in the form of:

Options :

1. ✖ Electrical pulses

2. ✔ Light pulses

3. ✖ Radio waves

4. ✖ Sound waves

Question Number : 75 Question Id : 77951811283 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a superconducting ring, a persistent current has been flowing without decay for years. This is possible because:

Options :

1. ✔ Resistance is exactly zero and flux is quantized

2. ✖ Resistance is very small but finite

3. ✖ The ring is at absolute zero temperature

4. ✖ Magnetic field lines are expelled

Chemistry

Section Id :	779518223
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Section Negative Marks :	0
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	779518239
Question Shuffling Allowed :	Yes

Question Number : 76 Question Id : 77951811284 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The pair of orbitals with electron density maximum along the axes is

Options :

1. ✖ d_{xy}, d_{yz}

2. ✔ d_{z^2} , $d_{x^2-y^2}$

3. ✖ d_{xz}, d_{z^2}

4. ✖

d_{xz}, P_z

Question Number : 77 Question Id : 77951811285 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The angular momentum of an electron in an orbit $\underline{X}$ of hydrogen atom is $^{2h}/_{\pi}$.

Maximum number of orbitals possible in X is

Options :

1. ✖ 4

2. ✖ 9

3. ✔ 16

4. ✖ 25

Question Number : 78 Question Id : 77951811286 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The four quantum numbers for the electron in the outermost orbital of potassium (Z=19) are

Options :

1. ✖ n=4, l=2, m= -1, s= +1/2

2. ✔ n=4, l=0, m=0, s= +1/2

3. ✖ n=3, l=0, m=1, s= + 1/2

4. ✖ n=4, l=3, m= -2, s=-1/2

Question Number : 79 Question Id : 77951811287 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In which of the following, the number of bonding electrons and non-bonding electrons are in 3:2 ratio?

Options :

1. ✔ N_2

2. ✖ O_2

3. ✖ HCl

4. ✖ F_2

Question Number : 80 Question Id : 77951811288 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which one of the following statements is not correct?

Options :

1. ✖ Ionic bond is non directional bond

2. ✖ The maximum number of bond pairs between two atoms is 3

3. ✔ Covalent compounds conduct electricity in fused state

4. ✖ Ionic compounds are generally soluble in water

Question Number : 81 Question Id : 77951811289 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

12.6 g of oxalic acid, $H_2C_2O_4.2H_2O$ (M.wt 126) is present in 1500 mL of solution. The normality of that solution is

Options :

1. ✖ 0.266 N

2. ✔ 0.133 N

3. ✖ 0.399 N

4. ✖ 0.430 N

Question Number : 82 Question Id : 77951811290 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following has highest equivalent weight?
(Given: At.wt H=1, C=12, O=16, S=32, Na=23, Ca=40)

Options :

1. ✖ Sulphuric acid

2. ✖ Sodium carbonate

3. ✔ Sodium sulphate

4. ✖ Calcium carbonate

Question Number : 83 Question Id : 77951811291 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Identify the pair of gases which have same number of molecules at S.T.P ?

Options :

1. ✖ 11 g of CO_2 and 14 g of N_2

2. ✖ 16 g of O_3 and 16 g of CH_4

3. ✔ 5 g of H_2 and 40 g of CH_4

4. ✖ 28 g of N_2 and 22 g of CO_2

Question Number : 84 Question Id : 77951811292 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

100 mL of 0.1M HCl and 100 mL of 0.05 M H_2SO_4 are mixed and the solution is diluted to 2.0 L by adding water. The pH of the resulting solution is

Options :

1. ✖ 1

2. ✖ 3

3. ✔ 2

4. ✖ 4

Question Number : 85 Question Id : 77951811293 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

According to Arrhenius theory of acids and bases, which of the following is an example of Arrhenius base?

Options :

1. ✖ H_2SO_4

2. ✖ NH_3

3. ✔ NaOH

4. ✖ CaO

Question Number : 86 Question Id : 77951811294 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Electrolysis of an aqueous solution of Na_2SO_4 between Pt electrodes liberate a gas $\underline{X}$ at anode and gas $\underline{Y}$ at cathode. X and Y respectively are

Options :

1. ✖ H_2, O_2

2. ✔ O_2, H_2

3. ✖ SO_2, H_2

4. ✖ H_2, SO_2

Question Number : 87 Question Id : 77951811295 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The wrong statement regarding Galvanic cell is

Options :

1. ✖ In this spontaneous redox reaction occurs

2. ✖ Salt bridge maintains electrical neutrality between the two solutions

3. ✔ Anode is represented by (+) and cathode by (-)

4. ✖ At anode oxidation occurs

Question Number : 88 Question Id : 77951811296 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following is a weak electrolyte?

Options :

1. ✔ H_2CO_3

2. ✖ H_2SO_4

3. ✖ NaCl

4. ✖ NaOH

Question Number : 89 Question Id : 77951811297 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The exhausted anion-exchange resin is regenerated with

Options :

1. ✔ dilute NaOH solution

2. ✖ dilute NaCl solution

3. ✖ dilute HCl solution

4. ✖ dilute Na_2SO_4 solution

Question Number : 90 Question Id : 77951811298 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A sample of water is known to contain $Mg(HCO_3)_2$ =7.3 mg/L, $Ca(HCO_3)_2$= 8.1 mg/L and 27.2 mg/L of $CaSO_4$.

The total hardness associated with water sample (in ppm) in equivalents of $CaCO_3$ is
(At.wt H=1, C=12, O=16, Mg = 24, Ca=40, S=32)

Options :

1. ✖ 20

2. ✖

3. ✔ 30

4. ✖ 40

Question Number : 91 Question Id : 77951811299 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The type of functional group associated with cation exchange resin is

Options :

1. ✖ - OH

2. ✔ - SO_3H

3. ✖ - NH_2

4. ✖ - CHO

Question Number : 92 Question Id : 77951811300 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Identify the incorrect statement about the corrosion

Options :

1. ✖ In the composition type of galvanic cell, metal with lower standard reduction potential undergoes corrosion

2. ✖ In stress cell type of galvanic cell, corrosion occurs at the stressed area of the metal

3. ✔ The rate of corrosion is more, when the area of cathode is smaller

4. ✖ In concentration cell type of galvanic cell, the metal below the water level undergoes corrosion readily

Question Number : 93 Question Id : 77951811301 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In galvanised iron

Options :

1. ✔ Zn acts as anode and Fe acts as cathode

2. ✖ Zn acts as cathode and Fe acts as anode

3. ✖ Sn acts as anode and Fe acts as cathode

4. ✖ Sn acts as cathode and Fe acts as anode

Question Number : 94 Question Id : 77951811302 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

During Vulcanization of raw rubber, the chemical added to it is

Options :

1. ✔ Sulphur

2. ✖ Phosphorus

3. ✖ Iodine

4. ✖ Sodium

Question Number : 95 Question Id : 77951811303 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following is a natural polymer?

Options :

1. ✔ Cellulose

2. ✖ Teflon

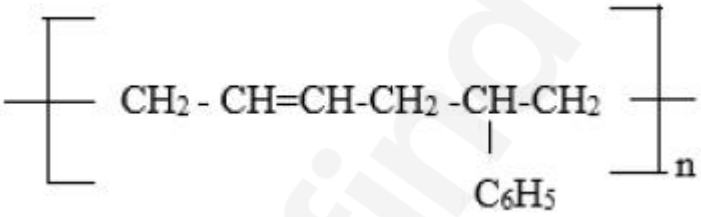
3. ✖ Polyvinylchloride

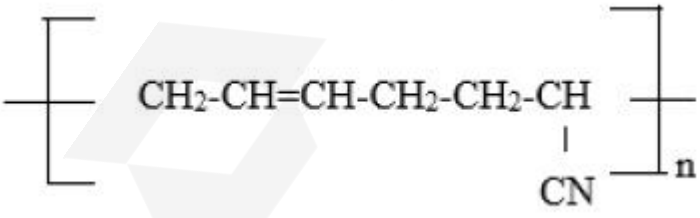
4. ✖ Neoprene rubber

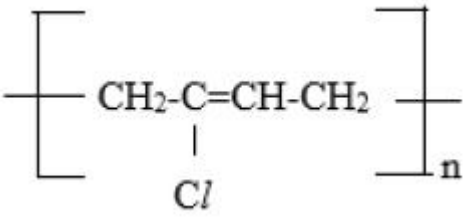
Question Number : 96 Question Id : 77951811304 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

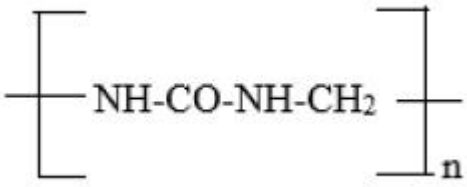
The structure of Buna –S polymer is

Options :

1. ✔ 

2. ✖ 

3. ✖ 

4. ✖ 

Question Number : 97 Question Id : 77951811305 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The polymer used in making gaskets and nono-stick coating utensils is

Options :

1. ✖ Polyvinyl chloride

2. ✖ Polystyrene

3. ✔ Polytetrafluoroethylene

4. ✖ Polythene

Question Number : 98 Question Id : 77951811306 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following in not to be considered as a primary fuel ?

Options :

1. ✖ Wood

2. ✖ Petroleum

3. ✔ Coke

4. ✖ Coal

Question Number : 99 Question Id : 77951811307 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The oxide of nitrogen responsible for depletion of ozone layer is

Options :

1. ✖ N_2O

2. ✖ NO_2

3. ✔ NO

4. ✖ N_2O_3

Question Number : 100 Question Id : 77951811308 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The BOD of highly polluted water is

Options :

1. ✔ 17 ppm

2. ✖ 10 ppm

3. ✖ 8 ppm

4. ✖ 12 ppm

Civil Engineering

Section Id : 779518224
Section Number : 4
Section type : Online

Mandatory or Optional :	Mandatory
Number of Questions :	100
Number of Questions to be attempted :	100
Section Marks :	100
Section Negative Marks :	0
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	779518240
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 77951811309 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The maximum value of Poisson's ratio is

Options :

1. ✖ 0.25

2. ✔ 0.50

3. ✖ 0.75

4. ✖ 1.0

Question Number : 102 Question Id : 77951811310 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A rectangular bar of length L and cross section $b \times d$ is subjected to a tensile stress of σ. If μ is the Poisson's ratio of the material, then the volumetric strain is

Options :

1. ✖ $\frac{\sigma}{2E}(1-\mu)$

2. ✖ $\frac{\sigma}{bdE}(1-2\mu)$

3. ✖ $\frac{\sigma}{2E}(1+2\mu)$

4. ✔ $\frac{\sigma}{E}(1-2\mu)$

Question Number : 103 Question Id : 77951811311 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The percentage elongation and reduction in an area of sample tested to failure in tension is a measure of

Options :

1. ✔ Ductility

2. ✖ Brittleness

3. ✖ Malleability

4. ✖ Hardness

Question Number : 104 Question Id : 77951811312 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A compound bar made of steel and brass of equal length is subjected to a tensile load of 100 kN. The cross-sectional area of steel bar is twice that of the brass bar. The modulus of elasticity of steel and brass are 200 GPa and 100 GPa respectively. The load taken by the brass bar is

Options :

1. ✔ 20 kN

2. ✖ 25 kN

3. ✖ 50 kN

4. ✖ 75 kN

Question Number : 105 Question Id : 77951811313 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A uniform bar of length L, cross sectional area A, modulus of elasticity E is having self-weight W is hung at one end and attached a load equal to self-weight W at the other end. The elongation of a bar compared to that due to self-weight will be

Options :

1. ✗ half

2. ✗ twice

3. ✓ thrice

4. ✗ four times

Question Number : 106 Question Id : 77951811314 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A simply supported beam of span 6 m is subjected to a uniformly distributed load of 24 kN/m over the left half of the span. The magnitude of shear force at mid-span is

Options :

1. ✗ zero

2. ✓ 18 kN

3. ✗ 36 kN

4. ✗ 54 kN

Question Number : 107 Question Id : 77951811315 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If a simply supported beam AB of span 6 m is subjected to two concentrated loads each of magnitude 40 kN acting at the middle third points, then

Options :

1. ✖ shear force is maximum at mid-span

2. ✖ bending moment varies linearly between the loads

3. ✔ bending moment is constant between the loads

4. ✖ shear force varies linearly from support to load

Question Number : 108 Question Id : 77951811316 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A simply supported beam AB of span 8 m is subjected to a uniformly distributed load of 24 kN/m throughout the length. The bending moment at 2 m from the left end A is equal to

Options :

1. ✖ 48 kNm

2. ✖ 128 kNm

3. ✔ 144 kNm

4. ✖ 192 kNm

Question Number : 109 Question Id : 77951811317 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The slope of bending moment diagram between two points gives

Options :

1. ✖ Slope

2. ✖ Couple

3. ✖ Axial force

4. ✔ Shear force

Question Number : 110 Question Id : 77951811318 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The shape of shear force diagram of a cantilever beam subjected to a concentrated load at the free end is

Options :

1. ✔ Rectangle

2. ✖ Triangle

3. ✖ Parabola

4. ✖ Ellipse

Question Number : 111 Question Id : 77951811319 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

For a beam subjected to constant bending moment M and flexural rigidity EI, then $\frac{M}{EI}$ represents

Options :

1. ✖ Flexural stress

2. ✖ Rigidity of section

3. ✖ Radius of curvature

4. ✔ Curvature

Question Number : 112 Question Id : 77951811320 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

For the same material, the ratio of flexural rigidity of beam of size $b \times d$ to that of another beam of size $b \times 2d$ is

Options :

1. ✖ $\frac{1}{2}$

2. ✖ $\frac{1}{4}$

3. ✔ $\frac{1}{8}$

4. ✖ $\frac{1}{16}$

Question Number : 113 Question Id : 77951811321 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

For a given beam length, cross sectional area and material, maximum flexural resistance occurs when

Options :

1. ✖ depth of section is maximum

2. ✔ section modulus is maximum

3. ✖ moment of inertia is maximum

4. ✖ radius of gyration is minimum

Question Number : 114 Question Id : 77951811322 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If a cantilever beam is subjected to a downward concentrated load at the free end, then the nature of stress across the cross section developed will be

Options :

1. ✔ tensile at top and compressive at bottom

2. ✖ compressive at top and tensile at bottom

3. ✖ tensile at top and compressive at neutral axis

4. ✖ compressive at top and tensile at neutral axis

Question Number : 115 Question Id : 77951811323 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the section modulus for a rectangular beam having depth of 300 mm is 3×10^6 mm^3, then the width of beam is equal to

Options :

1. ✖ 90 mm

2. ✖ 100 mm

3. ✖ 150 mm

4. ✔ 200 mm

Question Number : 116 Question Id : 77951811324 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

For a symmetrical I-section, the intensity of shear stress is maximum at

Options :

1. ✖ the extreme fibers

2. ✔ centroid of the section

3. ✖ in web at the junction of flange and web

4. ✖ in flange at the junction of flange and web

Question Number : 117 Question Id : 77951811325 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The variation of shear stress over a solid circular section of beam follows

Options :

1. ✖ an inclined line

2. ✖ a circular curve

3. ✖ an elliptical curve

4. ✔ a parabolic curve

Question Number : 118 Question Id : 77951811326 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the maximum shear stress permitted in a rectangular beam of width 100 mm and depth 200 mm is 15 N/mm^2, then the corresponding maximum shear force is equal to

Options :

1. ✖ 100 kN

2. ✖ 150 kN

3. ✔ 200 kN

4. ✗ 300 kN

Question Number : 119 Question Id : 77951811327 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the maximum and average shear stress in a solid circular section are represented by τ_{max} and τ_{avg} respectively, then

Options :

1. ✗ $\tau_{avg} = 1.33\,\tau_{max}$

2. ✓ $\tau_{avg} = 0.75\,\tau_{max}$

3. ✗ $\tau_{max} = 0.67\,\tau_{avg}$

4. ✗ $\tau_{max} = 1.5\,\tau_{avg}$

Question Number : 120 Question Id : 77951811328 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The strain energy per unit volume of a bar having modulus of elasticity E subjected to an axial tensile stress of σ is

Options :

1. ✗ $\frac{\sigma^2}{E}$

2. ✓ $\frac{\sigma^2}{2E}$

3. ✗ $\frac{\sigma^2}{4E}$

4. ✖ $\frac{\sigma^2}{8E}$

Question Number : 121 Question Id : 77951811329 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A simply supported beam of span L is subjected to a concentrated load of W acting at midspan. If the load is changed to a uniformly distributed load over the whole span, then the ratio of maximum deflection at mid-span will be

Options :

1. ✔ $\frac{8}{5}$

2. ✖ $\frac{5}{8}$

3. ✖ $\frac{1}{4}$

4. ✖ $\frac{1}{2}$

Question Number : 122 Question Id : 77951811330 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following methods are used for computing the deflections in beams

Options :

1. ✖ Moment area method and Mohr's circle method

2. ✔ Moment area method and double integration method

3. ✖ Macaulay's method and Mohr's circle method

4. ✖ Macaulay's method and Hardy cross method

Question Number : 123 Question Id : 77951811331 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The slope at the free end of a cantilever beam of length 3 m subjected to a concentrated load of 25 kN is 0.01 radians. The deflection at the free end is

Options :

1. ✔ 20 mm

2. ✖ 16.6 mm

3. ✖ 12 mm

4. ✖ 8 mm

Question Number : 124 Question Id : 77951811332 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A cantilever beam of span $2L$ is subjected to a uniformly distributed load of w/m over the entire span. If the flexural rigidity of the beam is EI, then the deflection at the free end is equal to

Options :

1. ✖ $\frac{wL^4}{8EI}$

2. ✖ $\frac{wL^4}{6EI}$

3. ✖ $\frac{wL^4}{3EI}$

4. ✔

$\frac{2wL^4}{EI}$

Question Number : 125 Question Id : 77951811333 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A simply supported beam AB of span L is subjected to a concentrated load of W at a distance of $\frac{L}{3}$ from the left end A. Which of the following statement is correct?

Options :

1. ✔ Maximum slope occurs at the left support A

2. ✖ Maximum slope occurs at the right support B

3. ✖ Maximum slope occurs under the concentrated load

4. ✖ Maximum deflection occurs under the concentrated load

Question Number : 126 Question Id : 77951811334 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A cantilever beam AB is fixed at A and supported by a prop at B. If it is subjected to a uniformly distributed load of w/m over the whole span, then

Options :

1. ✖ The maximum bending moment occurs at mid-span

2. ✖ The maximum shear force occurs at the prop support B

3. ✖ The maximum sagging bending moment occurs at the support A

4. ✔ The maximum hogging bending moment occurs at the support A

Question Number : 127 Question Id : 77951811335 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a long column, the permissible stress can be increased by increasing the

Options :

1. ✖ Slenderness ratio

2. ✔ Radius of gyration

3. ✖ Length of column

4. ✖ Eccentricity

Question Number : 128 Question Id : 77951811336 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The slenderness ratio of a column is zero when its length is

Options :

1. ✖ equal to its radius of gyration

2. ✖ very large

3. ✖ equal to actual length

4. ✔ supported on all sides throughout its length

Question Number : 129 Question Id : 77951811337 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the equivalent length of a column with one end fixed and the other free is 6 m, then the actual length of column is

Options :

1. ✔ 3 m

2. ✖ 4.24 m

3. ✖ 6 m

4. ✖ 12 m

Question Number : 130 Question Id : 77951811338 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A solid circular column of 200 mm diameter and 5 m long is hinged at both ends.

Slenderness ratio of column is equal to

Options :

1. ✖ 40

2. ✖ 50

3. ✔ 100

4. ✖ 250

Question Number : 131 Question Id : 77951811339 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The buckling load for a column of length L and flexural rigidity EI with both ends hinged is

Options :

1. ✔ $\frac{\pi^2 EI}{L^2}$

2. ✖ $\frac{\pi^2 L^2}{EI}$

3. ✖ $\frac{2\pi^2 EI}{L^2}$

4. ✖ $\frac{\pi^2 EI}{2L^2}$

Question Number : 132 Question Id : 77951811340 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a simple triangular truss subjected to a vertical load at its apex, how is the load primarily transferred to the supports?

Options :

1. ✖ Entirely as vertical forces in the side members

2. ✔ An axial forces along the inclined members, creating compression and tension

3. ✖ As bending moments in the horizontal base member

4. ✖ Equally divided into shear forces at each joint

Question Number : 133 Question Id : 77951811341 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If a statically determinate pin jointed plane truss consists of 3 unknown reaction components with 5 joints, then the number of members required is

Options :

1. ✖ 5

2. ✖ 6

3. ✔ 7

4. ✖ 8

Question Number : 134 Question Id : 77951811342 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

For no tension to be developed at the base of the retaining wall of width 6 m, the resultant force will intersect the base at a distance of

Options :

1. ✔ 1 m from the center line of base

2. ✖ 1 m from the heel

3. ✖ 1 m from the toe

4. ✖ 0.75 m from the center line of base

Question Number : 135 Question Id : 77951811343 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A cantilever retaining wall of height 4 m retains soil of 18 kN/m^3 density up to top. If the coefficient of active earth pressure is $\frac{1}{3}$, then the maximum bending moment induced in the stem is

Options :

1. ✖ 72 kNm

2. ✖ 48 kNm

3. ✔ 64 kNm

4. ✖ 128 kNm

Question Number : 136 Question Id : 77951811344 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the effective length and diameter of the column are 3 m and 300 mm respectively, then the type of column is

Options :

1. ✔ Short column

2. ✖ Medium column

3. ✖ Long column

4. ✖ Slender column

Question Number : 137 Question Id : 77951811345 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The direct stress due to self-weight and extreme bending stress at the base of masonry dam are 200 kN/m^2 and 300 kN/m^2 respectively. The maximum and minimum stresses respectively are

Options :

1. ✖ 30 kN/m^2, 10 kN/m^2

2. ✖ 50 kN/m^2, 10 kN/m^2

3. ✔ 50 kN/m^2, -10 kN/m^2

4. ✖ 30 kN/m^2, -10 kN/m^2

Question Number : 138 Question Id : 77951811346 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the diameter of the column increases by two times, then Euler's buckling load

Options :

1. ✖ decreases by four times

2. ✖ increases by four times

3. ✖ decreases by eight times

4. ✔ increases by sixteen times

Question Number : 139 Question Id : 77951811347 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the crushing load of a column is 1000 kN and the Euler load is 1000 kN, then the Rankine load is

Options :

1. ✔ 500 kN

2. ✖ 1000 kN

3. ✖ 1500 kN

4. ✖ 2000 kN

Question Number : 140 Question Id : 77951811348 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If ϕ is the angle of internal friction for cohesionless soil, then the coefficient of active earth pressure is

Options :

1. ✔ $\frac{1-\sin\phi}{1+\sin\phi}$

2. ✖ $\frac{1+\sin\phi}{1-\sin\phi}$

3. ✖ $\frac{1-\tan\phi}{1+\tan\phi}$

4. ✖ $\frac{1-\cos\phi}{1+\cos\phi}$

Question Number : 141 Question Id : 77951811349 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

As per IS:456-2000, for concrete to be used in RCC works, the permissible limit of inorganic solids in water is

Options :

1. ✖ 400 mg/l

2. ✖ 500 mg/l

3. ✖ 2000 mg/l

4. ✔ 3000 mg/l

Question Number : 142 Question Id : 77951811350 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The target mean compressive strength for mix design of M25 grade concrete is

Options :

1. ✖ 25 N/mm^2

2. ✖ 29.5 N/mm^2

3. ✔ 31.6 N/mm^2

4. ✖

$33.25\ N/mm^2$

Question Number : 143 Question Id : 77951811351 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The characteristic compressive strength of M25 grade concrete is

Options :

1. ✔ 25 MPa

2. ✖ 50 MPa

3. ✖ 75 MPa

4. ✖ 100 MPa

Question Number : 144 Question Id : 77951811352 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The minimum effective depth of a cantilever beam of span 3.5 m to satisfy the vertical deflection limit is

Options :

1. ✖ 175 mm

2. ✖ 350 mm

3. ✖ 400 mm

4. ✔ 500 mm

Question Number : 145 Question Id : 77951811353 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The minimum tension reinforcement of Fe 500 grade required for the beam of width 300 mm and effective depth 500 mm is

Options :

1. ✖ $225\ mm^2$

2. ✔ $255\ mm^2$

3. ✖ $375\ mm^2$

4. ✖ $6000\ mm^2$

Question Number : 146 Question Id : 77951811354 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A rectangular beam of width 230 mm and effective depth 400 mm is reinforced with Fe 415 steel reinforcement.

The limiting depth of neutral axis is

Options :

1. ✖ 144 mm

2. ✖ 180 mm

3. ✔ 192 mm

4. ✖ 212 mm

Question Number : 147 Question Id : 77951811355 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The effective length of a cantilever beam of length 2 m having an effective depth of 400 mm embedded into a support of 300 mm width is

Options :

1. ✖ 2.15 m

2. ✔ 2.2 m

3. ✖ 2.3 m

4. ✖ 2.4 m

Question Number : 148 Question Id : 77951811356 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A T-beam behave as a rectangular beam of width equal to its flange, if its neutral axis

Options :

1. ✔ falls within the flange

2. ✖ falls below the flange

3. ✖ falls below the centroidal axis of the beam

4. ✖ coincides with the geometrical center of the beam

Question Number : 149 Question Id : 77951811357 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a rectangular beam of width 300 mm and effective depth 600 mm, if the design shear strength of concrete is 0.5 N/mm^2, then the shear capacity of beam without shear reinforcement is

Options :

1. ✖ 9 kN

2. ✔ 90 kN

3. ✖ 540 kN

4. ✖ 900 kN

Question Number : 150 Question Id : 77951811358 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The length of the straight portion of a steel bar of diameter ϕ beyond the end of the hook should not be less than

Options :

1. ✖ 2ϕ

2. ✔ 4ϕ

3. ✖ 8ϕ

4. ✖ 16ϕ

Question Number : 151 Question Id : 77951811359 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

As per IS:456-2000, maximum spacing for main reinforcement in a slab of effective depth d is

Options :

1. ✔ $3d$ or 300 mm whichever is less

2. ✖ $3d$ or 300 mm whichever is more

3. ✖ $5d$ or 450 mm whichever is less

4. ✖ $5d$ or 450 mm whichever is more

Question Number : 152 Question Id : 77951811360 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

As per IS:456-2000, for slabs spanning in two directions with corners held down, the width of middle strip is

Options :

1. ✖

half the width of the slab

2. ✖ two-third of the width of the slab

3. ✔ three-fourth of the width of the slab

4. ✖ four-fifth of the width of the slab

Question Number : 153 Question Id : 77951811361 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If σ_{cbc} is the permissible compressive stress in bending in concrete, σ_{st} is the permissible tensile stress in steel, d is effective depth of beam and x is depth of neutral axis, then which of the following relation holds in working stress method of design.

Options :

1. ✔ $\sigma_{cbc} = \frac{\sigma_{st}}{m} . \frac{x}{d-x}$

2. ✖ $\sigma_{cbc} = \frac{\sigma_{st}}{m} . \frac{d-x}{x}$

3. ✖ $\sigma_{cbc} = m.\sigma_{st} . \frac{x}{d-x}$

4. ✖ $\sigma_{cbc} = m.\sigma_{st} . \frac{d-x}{x}$

Question Number : 154 Question Id : 77951811362 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

For a singly reinforced beam, if d and x are effective depth and depth of neutral axis respectively, then the lever arm of the beam is

Options :

1. ✖

$d-\frac{x}{2}$

2. ✖ $d+\frac{x}{2}$

3. ✖ $d+\frac{x}{3}$

4. ✔ $d-\frac{x}{3}$

Question Number : 155 Question Id : 77951811363 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In working stress method of design, the allowable tensile stress in High Yield Strength Deformed steel used in reinforced cement concrete is

Options :

1. ✖ $140\ N/mm^2$

2. ✖ $180\ N/mm^2$

3. ✔ $230\ N/mm^2$

4. ✖ $415\ N/mm^2$

Question Number : 156 Question Id : 77951811364 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

As per IS:456-2000, the maximum compressive strain in concrete in axial compression is

Options :

1. ✖ 0.03

2. ✖ 0.003

3. ✖ 0.02

4. ✔ 0.002

Question Number : 157 Question Id : 77951811365 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A short axially loaded square column of size 500 mm×500 mm, the minimum area of longitudinal reinforcement as per IS: 456 is

Options :

1. ✖ $2500\ mm^2$

2. ✔ $2000\ mm^2$

3. ✖ $1250\ mm^2$

4. ✖ $375\ mm^2$

Question Number : 158 Question Id : 77951811366 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

When designing a short RCC column subjected to axial compression, the permissible stress in concrete is taken as

Options :

1. ✖ The full characteristic strength of concrete

2. ✖ Equal to the yield strength of steel reinforcement

3. ✔ A fraction of the characteristic strength, reduced by a factor of safety

4. ✖ Independent of the grade of concrete used

Question Number : 159 Question Id : 77951811367 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

According to IS:456-2000, for an RCC footing on soil, the thickness of footing at the edge shall not be less than

Options :

1. ✖ 50 mm

2. ✖ 100 mm

3. ✔ 150 mm

4. ✖ 200 mm

Question Number : 160 Question Id : 77951811368 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A square footing for a column carries an axial load of 1800 kN. The self-weight of footing is taken as 10% of the column load. If the safe bearing capacity of soil is 180 kN/m^2, then the minimum area of footing required will be

Options :

1. ✖ 10 m^2

2. ✔ 11 m^2

3. ✖ 18 m^2

4. ✖ 19 m^2

Question Number : 161 Question Id : 77951811369 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The line joining main survey stations is called

Options :

1. ✗ Tie line

2. ✗ Check line

3. ✓ Survey line

4. ✗ Proof line

Question Number : 162 Question Id : 77951811370 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

During distance measurement in chaining, the compensating error is caused by

Options :

1. ✗ sag in chain

2. ✗ bad ranging

3. ✗ pull in chain

4. ✓ careless holding and marking

Question Number : 163 Question Id : 77951811371 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The fore bearing of the line AB and BC are 30° and 150° respectively. The included angle between AB and BC is

Options :

1. ✗ 30°

2. ✓ 60°

3. ✖ 90°

4. ✖ 120°

Question Number : 164 Question Id : 77951811372 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the whole circle bearing of a line AB is $293^0 30'$, then the reduced bearing of line BA is

Options :

1. ✖ N $23^0 30'$ W

2. ✖ N $66^0 30'$ W

3. ✖ S $23^0 30'$ E

4. ✔ S $66^0 30'$ E

Question Number : 165 Question Id : 77951811373 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a fly levelling, if the staff reading of back sight is greater than the staff reading of fore sight, then the ground level indicates a

Options :

1. ✖ fall

2. ✔ rise

3. ✖ level surface

4. ✖ horizontal surface

Question Number : 166 Question Id : 77951811374 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The ratio of correction for curvature to correction for refraction is

Options :

1. ✖ 4

2. ✖ 6

3. ✔ 7

4. ✖ 9

Question Number : 167 Question Id : 77951811375 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

For measuring vertical angles, the theodolite must be levelled with reference to the

Options :

1. ✖ bubble tube on the plate level

2. ✖ altitude bubble on the telescope

3. ✔ altitude bubble on the index frame

4. ✖ altitude bubble on both telescope and the index frame

Question Number : 168 Question Id : 77951811376 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the latitude and departure of a line AB are 40 m and 30 m respectively, then the length of line AB is

Options :

1. ✖ 10 m

2. ✖ 35 m

3. ✔ 50 m

4. ✖ 70 m

Question Number : 169 Question Id : 77951811377 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the sum of north latitudes is more than the sum of south latitudes and sum of west departures is more than the sum of east departures, then the bearing of the closed line is in

Options :

1. ✔ NW quadrant

2. ✖ NE quadrant

3. ✖ SW quadrant

4. ✖ SE quadrant

Question Number : 170 Question Id : 77951811378 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In which of the following circumstances can the contour lines of different elevations intersect each other

Options :

1. ✖ Pond

2. ✔ Cave

3. ✖ Valley

4. ✖ River

Question Number : 171 Question Id : 77951811379 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following methods are used for computing the area?

Options :

1. ✖ Bowditch method and Transit method

2. ✖ Bowditch method and Trapezoidal method

3. ✖ Simpson's method and Manning's method

4. ✔ Simpson's method and Trapezoidal method

Question Number : 172 Question Id : 77951811380 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Stadia interval factor is the ratio of

Options :

1. ✔ focal length of objective to stadia interval

2. ✖ stadia interval to focal length of objective

3. ✖ multiplying constant to additive constant

4. ✖ additive constant to multiplying constant

Question Number : 173 Question Id : 77951811381 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Global positioning system can be used for

Options :

1. ✖ preparation of maps and detection of underground mines

2. ✔ preparation of maps and tracking of movement of vehicles

3. ✖ detection of underground mines and tracking of movement of vehicles

4. ✖ design of hydraulic structures and quantity surveying

Question Number : 174 Question Id : 77951811382 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following options represent the relation between fundamental lines of theodolite?

Options :

1. ✖ The trunnion axis must be parallel to the line of sight

2. ✖ The axis of the plate level must be parallel to the vertical axis

3. ✔ The axis of altitude level must be parallel to the line of collimation

4. ✖ The axis of the striding level must be perpendicular to the transit axis

Question Number : 175 Question Id : 77951811383 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The RL of point A is 100.0 m and its back sight is 2.000 m. If the next reading on the change point is 1.500 m, then the RL of change point is

Options :

1. ✖ 98.5 m

2. ✔ 100.5 m

3. ✖ 102.0 m

4. ✖ 103.5 m

Question Number : 176 Question Id : 77951811384 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Flow of fluid takes place due to

Options :

1. ✖ Viscosity

2. ✖ Surface tension

3. ✖ Compressibility

4. ✔ Deformation under shear force

Question Number : 177 Question Id : 77951811385 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A fluid whose viscosity does not change with the rate of deformation or shear strain is known as

Options :

1. ✖ Ideal fluid

2. ✖ Real fluid

3. ✔ Newtonian fluid

4. ✖ Non-Newtonian fluid

Question Number : 178 Question Id : 77951811386 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Centre of pressure on an inclined plane is

Options :

1. ✗ at metacenter

2. ✗ at the centroid

3. ✗ above the centroid

4. ✓ below the centroid

Question Number : 179 Question Id : 77951811387 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A U-tube manometer is commonly used to measure

Options :

1. ✗ The velocity of fluid flow

2. ✓ The pressure difference between two points

3. ✗ The temperature of a fluid

4. ✗ The density of a solid

Question Number : 180 Question Id : 77951811388 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Steady flow occurs when

Options :

1. ✗ fluid parameters change steadily with time

2. ✗ velocity of flow at any point remains constant

3. ✔ fluid parameters do not change with time at any point

4. ✖ fluid parameters do not change from point to point

Question Number : 181 Question Id : 77951811389 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In Bernoulli's equation, each term represents

Options :

1. ✖ Specific energy

2. ✖ Energy per unit mass

3. ✖ Energy per unit volume

4. ✔ Energy per unit weight

Question Number : 182 Question Id : 77951811390 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The minor loss due to sudden contraction is due to

Options :

1. ✖ cavitation

2. ✖ flow contraction

3. ✖ boundary friction

4. ✔ expansion of flow after sudden contraction

Question Number : 183 Question Id : 77951811391 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If the pipes are connected in parallel, the total loss of head is

Options :

1. ✔ the same in each pipe

2. ✖ equal to sum of head losses in each pipe

3. ✖ equal to sum of the squares of head losses in each pipe

4. ✖ equal to the reciprocal of the sum of head losses in each pipe

Question Number : 184 Question Id : 77951811392 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The tangent drawn to the instantaneous velocity in a flow field is called

Options :

1. ✖ Path line

2. ✖ Time line

3. ✔ Stream line

4. ✖ Streak line

Question Number : 185 Question Id : 77951811393 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Reynold's number for a laminar flow through pipes should be

Options :

1. ✔ less than 2000

2. ✖ less than 4000

3. ✖ greater than 2000

4. ✖ between 2000 and 4000

Question Number : 186 Question Id : 77951811394 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The most economical channel section has a

Options :

1. ✖ maximum area for a given flow

2. ✔ minimum wetted perimeter

3. ✖ minimum roughness coefficient

4. ✖ maximum velocity of flow

Question Number : 187 Question Id : 77951811395 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Chezy's constant

Options :

1. ✖ is dimensionless

2. ✖ has the dimension of velocity

3. ✔ has the dimension of $L^{1/2}T^{-1}$

4. ✖ has the dimension of $L^{3/2}T^{-1}$

Question Number : 188 Question Id : 77951811396 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If the depth of flow in a rectangular notch is H, then the discharge is

Options :

1. ✔ directly proportional to $H^{3/2}$

2. ✖ directly proportional to $H^{5/2}$

3. ✖ inversely proportional to $H^{3/2}$

4. ✖ inversely proportional to $H^{5/2}$

Question Number : 189 Question Id : 77951811397 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The priming of a centrifugal pump is necessary to

Options :

1. ✖ reduce pressure

2. ✖ increase discharge

3. ✖ reduce the temperature of pump

4. ✔ remove air from the parts of pump

Question Number : 190 Question Id : 77951811398 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following is an impulse turbine?

Options :

1. ✔ Pelton wheel

2. ✖

Kaplan turbine

3. ✖ Francis turbine

4. ✖ Centrifugal pump

Question Number : 191 Question Id : 77951811399 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Precipitation in the form of irregular pellets or lumps of ice of size more than 8 mm is known as

Options :

1. ✖ Fog

2. ✖ Glaze

3. ✖ Sleet

4. ✔ Hail

Question Number : 192 Question Id : 77951811400 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

For a catchment, the duration and intensity of rainfall are 2 hours and 3 cm/hour respectively. If the infiltration and evaporation losses are 16 mm and 8 mm respectively, then the runoff of catchment is

Options :

1. ✖ 68 mm

2. ✔ 36 mm

3. ✖ 28 mm

4. ✖ 12 mm

Question Number : 193 Question Id : 77951811401 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The flood absorption capacity of a reservoir is

Options :

1. ✖ equal to the dead storage

2. ✖ the water it can absorb through seepage

3. ✖ the storage between dead storage level and full supply level

4. ✔ the storage between full supply level and maximum water level

Question Number : 194 Question Id : 77951811402 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which method of irrigation has the highest irrigation efficiency?

Options :

1. ✖ Furrow irrigation

2. ✖ Sprinkler irrigation

3. ✔ Drip irrigation

4. ✖ Border strip irrigation

Question Number : 195 Question Id : 77951811403 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The saturation capacity, field capacity, optimum moisture content and permanent wilting point of a soil are 47%, 27%, 18% and 14% respectively. The available moisture for the crops grown in the soil is

Options :

1. ✖ 4%

2. ✔ 13%

3. ✖ 20%

4. ✖ 33%

Question Number : 196 Question Id : 77951811404 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The actual depth of watering in the field is 16 cm, conveyance losses are 20% and irrigation efficiency is 80%. The depth of water required at the canal outlet is

Options :

1. ✖ 16 cm

2. ✖ 20 cm

3. ✔ 25 cm

4. ✖ 100 cm

Question Number : 197 Question Id : 77951811405 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

For lined canals, the free board is measured from the

Options :

1. ✖ top of the lining to the bed of the canal

2. ✔ full supply level to the top of the lining

3. ✖ full supply level to the top of the bank

4. ✖ top of the bank to the top of the lining

Question Number : 198 Question Id : 77951811406 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A cross-drainage work in which a canal is provided above the natural drainage is called

Options :

1. ✔ an aqueduct

2. ✖ a canal syphon

3. ✖ a level crossing

4. ✖ a super passage

Question Number : 199 Question Id : 77951811407 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The sloping floor below and in continuation of the raised crest of a weir is known as

Options :

1. ✖ Downstream fall

2. ✖ Downstream slope

3. ✖ Downstream grade

4. ✔ Glacis

Question Number : 200 Question Id : 77951811408 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The function of a check dam is to

Options :

1. ✖ protect surrounding areas of a river from floods

2. ✔ reduce the runoff velocity in stream channels

3. ✖ arrest sediments and the surface runoff in agricultural lands

4. ✖ dispose of excess water from the reservoir to protect dam from overturning