# 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.

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|---|---|
| **Question Paper Name :** | Electrical and Electronics Engineering 08th May 2024 Shift 1 |
| **Duration :** | 180 |
| **Total Marks :** | 200 |
| **Display Marks:** | No |
| **Share Answer Key With Delivery Engine :** | Yes |
| **Calculator :** | None |
| **Magnifying Glass Required? :** | No |
| **Ruler Required? :** | No |
| **Eraser Required? :** | No |
| **Scratch Pad Required? :** | No |
| **Rough Sketch/Notepad Required? :** | No |
| **Protractor Required? :** | No |
| **Show Watermark on Console? :** | Yes |
| **Highlighter :** | No |
| **Auto Save on Console?** | Yes |
| **Change Font Color :** | No |
| **Change Background Color :** | No |
| **Change Theme :** | No |
| **Help Button :** | No |
| **Show Reports :** | No |

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|---|---|
| **Show Progress Bar :** | No |
| **Is this Group for Examiner? :** | No |
| **Examiner permission :** | Cant View |
| **Show Progress Bar? :** | No |

# Mathematics

| | |
|---|---|
| **Section Id :** | 210688166 |
| **Section Number :** | 1 |
| **Mandatory or Optional :** | Mandatory |
| **Number of Questions :** | 50 |
| **Section Marks :** | 50 |
| **Enable Mark as Answered Mark for Review and Clear Response :** | Yes |
| **Maximum Instruction Time :** | 0 |
| **Is Section Default? :** | null |

**Question Number : 1 Question Id : 2106888407 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If each element of a row or column of a determinant is multiplied by a constant K then the value of the determinant is

**Options :**

1. ✖ Added by k

2. ✔ Multiplied by k

3. ✖ Subtracted by k

4. ✖ Divided by k.

**Question Number : 2 Question Id : 2106888408 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If $A=\begin{bmatrix}1 & 2 & 3\\ -2 & 1 & 4\end{bmatrix}$ and $B=\begin{bmatrix}2 & 3 & 1\\ 5 & 4 & 2\\ 1 & 5 & 3\end{bmatrix}$ then AB=

**Options :**

1. ✖ $[15 \quad 26 \quad 4]$

2. ✔ $\begin{bmatrix}15 & 26 & 14\\ 5 & 18 & 12\end{bmatrix}$

3. ✖ $\begin{bmatrix}15 & 5\\ 26 & 18\\ 14 & 12\end{bmatrix}$

4. ✖ BA

**Question Number : 3 Question Id : 2106888409 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The elements on the main diagonal of a skew symmetric matrix are all

**Options :**

1. ✔ zeros

2. ✖ One's

3. ✖ Unequal

4. ✖ $>1$

**Question Number : 4 Question Id : 2106888410 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If $\omega$ is one of the imaginary cube roots of unity, find the value of the determinant

$$\begin{vmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix} =$$

**Options :**

1. ✔ zero

2. ✖ one

3. ✖ $\omega^2$

4. ✖ $\omega$

**Question Number : 5 Question Id : 2106888411 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Every square matrix can be written as the sum of

**Options :**

1. ✖ Diagonal matrix & square matrix

2. ✖ Two rectangular marices

3. ✖ Square ad non-square matrices

4. ✔ Symmetric and skew symmetric matrix

**Question Number : 6 Question Id : 2106888412 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

An improper fraction can be reduced to proper fraction by

**Options :**

1. ✖ Multiplication

2. ✔ Division

3. ✖ subtraction

4. ✖ Addition

**Question Number : 7 Question Id : 2106888413 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

$$\frac{x}{(x+2)(x-3)} =$$

**Options :**

1. ✖ $\frac{2}{5(x+2)} + \frac{3}{5(x-2)}$

2. ✖ $\frac{2}{5(x+2)} - \frac{3}{5(x-3)}$

3. ✔ $\frac{2}{5(x+2)} + \frac{3}{5(x-3)}$

4. ✖ $\frac{2}{5(x-3)} + \frac{3}{5(x+2)}$

**Question Number : 8 Question Id : 2106888414 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The value of $\sin 210^0$

**Options :**

1. ✖ $\frac{1}{2}$

2. ✔ $-\frac{1}{2}$

3. ✖ $\frac{1}{\sqrt{2}}$

4. ✖ $-\frac{1}{\sqrt{2}}$

**Question Number : 9 Question Id : 2106888415 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

$\cos n\pi =$

**Options :**

1. ✖ -1

2. ✖ -n

3. ✔ $(-1)^n$

4. ✖ $(n)^{-1}$

**Question Number : 10 Question Id : 2106888416 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

$a \neq 0 \neq b, \sin x + \sin y = a, \cos x + \cos y = b$ then $\tan\frac{x+y}{2} =$

**Options :**

1. ✖ $\frac{b}{a}$

2. ✔ $\frac{a}{b}$

3. ✖ $\frac{a+b}{2}$

4. ✖ $\frac{a-b}{2}$

**Question Number : 11 Question Id : 2106888417 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

f(x) is a periodic function of period k then the period of periodic function f(ax+b) is

**Options :**

1. ✖ $\frac{k}{a}$,a $\neq 0$

2. ✖ $\frac{ak}{|b|}$,b $\neq 0$

3. ✖ $\frac{k+b}{a}$ ,a $\neq 0$

4. ✔ $\frac{k}{|a|}$ ,a $\neq 0$

**Question Number : 12 Question Id : 2106888418 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If $7sin^2\theta + 3cos^2\theta = 4$, then $\theta =$

**Options :**

1. ✖ $\pm\frac{\pi}{3}$

2. ✔ $\pm\frac{\pi}{6}$

3. ✖ $\pm\frac{\pi}{4}$

4. ✖ $\pm\frac{\pi}{2}$

**Question Number : 13 Question Id : 2106888419 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The range of $cos^{-1}x$ is

**Options :**

1. ✔ $[0,\pi]$

2. ✖ $[-\pi,\pi]$

3. ✖ $[0,-\pi]$

4. ✖ $(0,\pi)$

**Question Number : 14 Question Id : 2106888420 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Assume x>0,y>0. Then which one of the following is true ?

**Options :**

1. ✔ If xy<1 then $tan^{-1}x + tan^{-1}y = tan^{-1}\left(\frac{x+y}{1-xy}\right)$

2. ✖ If xy>1 then $tan^{-1}x + tan^{-1}y = tan^{-1}\left(\frac{x+y}{1-xy}\right)$

3. ✖ If xy =1 then $tan^{-1}x + tan^{-1}y = tan^{-1}\left(\frac{x+y}{1-xy}\right)$

4. ✖ If xy =1 then $tan^{-1}x - tan^{-1}y = tan^{-1}\left(\frac{x+y}{1-xy}\right)$

**Question Number : 15 Question Id : 2106888421 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In $\Delta ABC$ (a+b+c)(b+c-a) =3bc , then angle A =

**Options :**

1. ✖ $90^0$

2. ✖ $120^0$

3. ✔ $60^0$

4. ✖ $45^0$

**Question Number : 16 Question Id : 2106888422 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In $\Delta ABC$, $tan\frac{A}{2} = \frac{5}{6}$ , $tan\frac{C}{2} = \frac{2}{5}$ then a,b,c are in

**Options :**

1. ✖ Geometric progression

2. ✔ Arithmetic progression

3. ✖ Harmonic progression

4. ✖ Arithmetico – Geometric progression

**Question Number : 17 Question Id : 2106888423 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In any $\Delta ABC, \tan\frac{B-C}{2} =$

**Options :**

1. ✖ $.b \pm c \cot\frac{A}{2}$

2. ✔ $\frac{b-c}{b+c}\cot\frac{A}{2}$

3. ✖ $(b-c)\tan\frac{A}{2}$

4. ✖ $\tan\frac{C}{2}$

**Question Number : 18 Question Id : 2106888424 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Conjugate of $\frac{1-i}{1+i}$ is

**Options :**

1. ✖ $-3i$

2. ✖ $-i$

3. ✔ $i$

4. ✖ $6i$

**Question Number : 19 Question Id : 2106888425 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Standard form of $(-1+2i)+\left(\frac{1}{2}-i\right)$ is

**Options :**

1. ✖ $\frac{1}{2}-i$

2. ✔ $-\frac{1}{2}+i$

3. ✖ $-\frac{1}{2}-i$

4. ✖ $\frac{1}{2}\pm i$

**Question Number : 20 Question Id : 2106888426 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If the circle is $x^2+y^2+6x-8y+c=0$ has radius 6 units, Then value of c is

**Options :**

1. ✔ -11

2. ✖ 11

3. ✖ 25

4. ✖ 6

**Question Number : 21 Question Id : 2106888427 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The equation of the parabola whose focus is (8,0) and the vertex is (0,0)is

**Options :**

1. ✖ $y^2 = 12x$

2. ✖ $y^2 = x$

3. ✔ $y^2 = 32x$

4. ✖ $y^2 = 16x$

**Question Number : 22 Question Id : 2106888428 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The eccentricity of the ellipse $x^2 + 2y^2 = 3$ is

**Options :**

1. ✖ $e=\frac{3}{\sqrt{2}}$

2. ✖ $e=\frac{1}{\sqrt{3}}$

3. ✖ $e=-\frac{1}{\sqrt{2}}$

4. ✔ $e=\frac{1}{\sqrt{2}}$

**Question Number : 23 Question Id : 2106888429 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In the Ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1, a>b$ the length of the latus rectum is _____

**Options :**

1. ✖ $\frac{2a^2}{b}$

2. ✔ $\frac{2b^2}{a}$

3. ✖ $\frac{2a^2}{b^2}$

4. ✖ 2ab

**Question Number : 24 Question Id : 2106888430 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The equation of the Hyperbola with foci $(\pm 2,0)$ and eccentricity 3/2 is

**Options :**

1. ✖ $\frac{9x^2}{16^2}+\frac{9y^2}{10^2}=1$

2. ✔

$$\frac{x^2}{16/9} - \frac{y^2}{20/9} = 1$$

3. ✖ $\frac{x^2}{16^2} - \frac{y^2}{20^2} = 1$

4. ✖ $\frac{x^2}{2^2} - \frac{y^2}{20^2} = 1$

**Question Number : 25 Question Id : 2106888431 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If the coordinates at one end of a diameter of the circle $x^2 + y^2 - 8x - 4y + c = 0$ are $(-3,\ 2)$ then the coordinates at the other end are

**Options :**

1. ✖ $(5,\ 11)$

2. ✖ $(6,\ 2)$

3. ✖ $(2,\ 11)$

4. ✔ $(11,\ 2)$

**Question Number : 26 Question Id : 2106888432 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction**

**Time : 0**

If a>0, then $\lim_{x\to 0}\frac{a^x-1}{x}$ =

**Options :**

1. ✖ $logx$

2. ✖ 1

3. ✔ $loga$

4. ✖ $\log\left(\frac{a}{x}\right)$

**Question Number : 27 Question Id : 2106888433 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Differentiation of $\sin x^n$ with respect to x.

**Options :**

1. ✔ $nx^{n-1}cosx^n$

2. ✖ $x^{n-1}cosx^n$

3. ✖ $cosx^n$

4. ✖

$ncosx^n$

**Question Number : 28 Question Id : 2106888434 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

$\frac{d}{dx}(\sin^{-1}\frac{x}{a})=$

**Options :**

1. $\frac{1}{\sqrt{a^2-x^2}}$ ✔

2. $\frac{1}{\sqrt{a^2+x^2}}$ ✖

3. $\frac{1}{\sqrt{x^2-a^2}}$ ✖

4. $\frac{-1}{\sqrt{a^2-x^2}}$ ✖

**Question Number : 29 Question Id : 2106888435 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

$\frac{d}{dx}(e^{3\log x})=$

**Options :**

1. ✖ $3x$

2. ✖ $3\log x$

3. ✖ $\log 3$

4. ✔ $3x^2$

**Question Number : 30 Question Id : 2106888436 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

$$\frac{d}{dx}[\log|x|] =$$

**Options :**

1. ✖ $\frac{1}{|x|}$

2. ✔ $\frac{1}{x}$

3. ✖ $|x|$

4. ✖ $x$

**Question Number : 31 Question Id : 2106888437 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

$y = \cos x$ then $\frac{d^2y}{dx^2}$ is

**Options :**

1. ✖ $\cos x$

2. ✖ $\sin x$

3. ✔ $-\cos x$

4. ✖ $-\sin x$

**Question Number : 32 Question Id : 2106888438 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The angle between the curves $x^2 + 4y = 0, xy = 2$ is

**Options :**

1. ✔ $\text{Tan}^{-1}3$

2. ✖ $\cot^{-1} 1$

3. ✖ $\text{Tan}^{-1}4$

4. ✖ $\cot^{-1} 3$

**Question Number : 33 Question Id : 2106888439 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The slope of the tangent to the curve $y = \frac{x-1}{x+1}$ at $(0,1)$

**Options :**

1. ✖ 4

2. ✖ -2

3. ✖ 5

4. ✔ 2

**Question Number : 34 Question Id : 2106888440 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If $z = x^2 + y^2$ then $x\frac{\partial z}{\partial y} - y\frac{\partial z}{\partial x} =$

**Options :**

1. ✖ 2y-2x

2. ✖ $2x+2y$

3. ✔ $0$

4. ✖ $4xy$

**Question Number : 35 Question Id : 2106888441 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

$z = \frac{x^3+y^3}{x+y}$, is a homogeneous function of degree _____

**Options :**

1. ✔ $2$

2. ✖ $3$

3. ✖ $0$

4. ✖ $1$

**Question Number : 36 Question Id : 2106888442 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

$$\int (x^{2/3} + 1)dx =$$

**Options :**

1. ✔ $\frac{3}{5}x^{\frac{5}{3}} + x + c$

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

3. ✖ $\frac{3}{5}x^{\frac{5}{3}} + c$

4. ✖ $\frac{3}{5}x^{\frac{3}{5}} + x + c$

**Question Number : 37 Question Id : 2106888443 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

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

**Options :**

1. ✖ $\frac{1}{16}\log\left|\frac{x-8}{x+4}\right| + c$

2. ✖ $\frac{1}{4}\log\left|\frac{x-4}{x+4}\right| + c$

3. ✔ $\frac{1}{8}\log\left|\frac{x-4}{x+4}\right| + c$

4. ✖ $\frac{1}{16}\log\left|\frac{x-4}{x+4}\right| + c$

**Question Number : 38 Question Id : 2106888444 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

$$\int \frac{\sin(\tan^{-1}x)dx}{1+x^2} =$$

**Options :**

1. ✖ $-\cos x + c$

2. ✔ $-\cos(\tan^{-1}x) + c$

3. ✖ $-\sin(\tan^{-1}x) + c$

4. ✖ $(\tan^{-1}x) + c$

**Question Number : 39 Question Id : 2106888445 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

$$\int \cos\frac{x}{2}dx \quad =$$

**Options :**

1. ✖ $2\cos\frac{x}{2}+c$

2. ✔ $2\sin\frac{x}{2}+c$

3. ✖ $2\sin 2x+c$

4. ✖ $-2\sin\frac{x}{2}+c$

**Question Number : 40 Question Id : 2106888446 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

$$\int e^x \cos x\, dx =$$

**Options :**

1. ✔ $\frac{1}{2}e^x(\cos x+\sin x)+c$

2. ✖ $\frac{1}{2}e^x(\cos x-\sin x)+c$

3. ✖ $\frac{1}{2}e^x \sin x + c$

4. ✖ $\frac{1}{2}(\cos x + \sin x) + c$

**Question Number : 41 Question Id : 2106888447 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The area of the region bounded by the curve $y = f(x), x - axis$ *and the lines* $x = a$ *and* $x = b$ (b>a) is given by

**Options :**

1. ✖ $\int_b^a y dx$

2. ✖ $-\int_a^b y dx$

3. ✖ $\int_a^b x dy$

4. ✔ $\int_a^b y dx$

**Question Number : 42 Question Id : 2106888448 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If $f(x)$ is an even function, then $\int_{-a}^{a} f(x)dx =$

**Options :**

1. ✖ $-\int_{-a}^{a} f(x)dx$

2. ✖ $2\int_{-a}^{a} f(x)dx$

3. ✔ $2\int_{0}^{a} f(x)dx$

4. ✖ $\int_{0}^{a} f(x)dx$

**Question Number : 43 Question Id : 2106888449 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Find maxima (or) minima for the curve $y = 2x^4 - x^2$

**Options :**

1. ✔ 'y' is minimum at $x = \pm\frac{1}{2}$

2. ✖ 'y' is maximum for $x = -\frac{1}{4}$

3. ✖ 'y' is maximum for $x = \pm\frac{1}{2}$

4. ✖ 'y'is maximum for $x = +\frac{1}{4}$

**Question Number : 44 Question Id : 2106888450 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Order of the differential equation $\left[\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^3\right]^{6/5} = 6y$ is

**Options :**

1. ✖ 3

2. ✔ 2

3. ✖ 5

4. ✖ 1

**Question Number : 45 Question Id : 2106888451 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

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

**Options :**

1. $tan^{-1}y - tan^{-1}x = c$ ✔

2. $tan^{-1}y + tan^{-1}x = c$ ✖

3. $tan^{-1}y = c$ ✖

4. $tan^{-1}y/x = c$ ✖

**Question Number : 46 Question Id : 2106888452 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The differential equation representing the family of curves y =mx where, m is arbitrary Constant is

**Options :**

1. $\frac{dy}{dx} - y = 0$ ✖

2. $\frac{dy}{dx} + y = 0$ ✖

3. $x\frac{dy}{dx} - y = 0$ ✔

4. ✖ xdx-ydy =y

**Question Number : 47 Question Id : 2106888453 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which one of the statement is true?

**Options :**

1. ✖ Order of differential equation is the order of the lowest order derivative occurring in the differential equation.

2. ✖ A function which satisfies the given differential equation is not its solution .

3. ✖ An equation involving derivatives of the dependent variable with respect to dependent variable is known as a differential equation.

4. ✔ Degree of a differential equation is defined if it is a polynomial equation in its Derivatives.

**Question Number : 48 Question Id : 2106888454 Display Question Number : Yes Is Question**

**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The Integrating factor of the differential equation $x\frac{dy}{dx} + 2y = x^2 (x \neq 0)$ is

**Options :**

1. ✖ $x$

2. ✖ $\log x$

3. ✖ $x\log x$

4. ✔ $x^2$

**Question Number : 49 Question Id : 2106888455 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The linear form of $x\log x\frac{dy}{dx} + y = 2\log x$ is

**Options :**

1. ✖ $\frac{dy}{dx} - \frac{y}{x\log x} = \frac{1}{x}$

2. ✔ $\frac{dy}{dx} + \frac{y}{x\log x} = \frac{2}{x}$

3. ✖ $\frac{dy}{dx}+\frac{y}{x\log x}=\frac{1}{x}$

4. ✖ $\frac{dy}{dx}+\frac{y}{x\log x}=1$

**Question Number : 50 Question Id : 2106888456 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The particular integral of $\frac{d^2y}{dx^2}-4y=e^{2x}$ is

**Options :**

1. ✖ $\frac{1}{4}e^{2x}$

2. ✖ $\frac{1}{4x}e^{2x}$

3. ✔ $\frac{1}{4}xe^{2x}$

4. ✖ $0$

## Physics

**Section Id :** 210688167

| | |
|---|---|
| **Section Number :** | 2 |
| **Mandatory or Optional :** | Mandatory |
| **Number of Questions :** | 25 |
| **Section Marks :** | 25 |
| **Enable Mark as Answered Mark for Review and Clear Response :** | Yes |
| **Maximum Instruction Time :** | 0 |
| **Is Section Default? :** | null |

**Question Number : 51 Question Id : 2106888457 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

$N\ Kg^{-1}$ is the unit of

**Options :**

1. ✖ Velocity

2. ✔ Acceleration

3. ✖ Force

4. ✖ Momentum

**Question Number : 52 Question Id : 2106888458 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A system has basic dimensions as density 'D', velocity 'V' and area 'A'. The dimensional representation of force in this system is

**Options :**

1. ✔ $A V^2 D$

2. ✖ $A V D^2$

3. ✖ $A^2 V D$

4. ✖ $A^0 V^2 D$

**Question Number : 53 Question Id : 2106888459 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If The magnitude of vectors **A**, **B** and **C** are 5, 4 and 3 units respectively and **A** = **B** + **C**, then the angle between vectors **A** and **C** is

**Options :**

1. ✖ $\text{Cos}^{-1}(4/5)$

2. ✖ $\Pi$

3. ✔ $\text{Cos}^{-1}(3/5)$

4. ✖ $\text{Sin}^{-1}(3/4)$

**Question Number : 54 Question Id : 2106888460 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If the sum of two unit vectors is also a unit vector, then the magnitude of their difference is

**Options :**

1. ✖ $1$

2. ✖ $1/2$

3. ✖ $1/\sqrt{2}$

4. ✔ $\sqrt{3}$

**Question Number : 55 Question Id : 2106888461 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A particle starting from rest moves in a straight line with uniform acceleration $a$. The average velocity of the particle in first 's' distance is

**Options :**

1. ✔ $\sqrt{\frac{as}{2}}$

2. ✖ $\sqrt{\frac{3as}{2}}$

3. ✖ $\sqrt{2as}$

4. ✖ $as$

**Question Number : 56 Question Id : 2106888462 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A projectile is thrown with speed **u** making angle θ with the horizontal at t = 0. It just crosses two points of equal height at time t = 1s and t = 3s respectively. The maximum height attained by the projectile is (take $g = 10\ ms^{-2}$)

**Options :**

1. ✖ 10m

2. ✔ 20m

3. ✖ 15m

4. ✖ 22m

**Question Number : 57 Question Id : 2106888463 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

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

**Options :**

1. ✔

$\frac{T}{\sqrt{2}}$

2. ✖ $\sqrt{2}\,T$

3. ✖ $\sqrt{3}\,T$

4. ✖ $\frac{T}{\sqrt{3}}$

**Question Number : 58 Question Id : 2106888464 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A body sliding on ice with a velocity 8 $ms^{-1}$ comes to rest after travelling 40 m. The coefficient of friction between the body and ice is ($g = 10\ ms^{-2}$)

**Options :**

1. ✖ 0.02

2. ✖ 0.05

3. ✔ 0.08

4. ✖ 0.2

**Question Number : 59 Question Id : 2106888465 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If a body placed on a rough inclined plane of gradient 1 in 4, just begins to slide, then coefficient of friction between the plane and body is

**Options :**

1. ✖ $\frac{2}{\sqrt{15}}$

2. ✖ $\frac{1}{\sqrt{2}}$

3. ✖ $\frac{1}{\sqrt{5}}$

4. ✔ $\frac{1}{\sqrt{15}}$

**Question Number : 60 Question Id : 2106888466 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A cube of 10 N weight rests on a rough inclined plane of slope 3 in 5. If the coefficient of friction between plane and cube is 0.6, then minimum force required to start the cube moving up the plane is

**Options :**

1. ✖ 2N

2.

✖ 6N

3. ✔ 10.8N

4. ✖ 4.5N

**Question Number : 61 Question Id : 2106888467 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A pump can take out 7200 Kg of water per hour from a 100 m deep well. If the efficiency of the pump is 50% then power of the pump is ($g = 10\ ms^{-2}$)

**Options :**

1. ✖ 2 KW

2. ✔ 4 KW

3. ✖ 7.2 KW

4. ✖ 3.6 KW

**Question Number : 62 Question Id : 2106888468 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

When a force $\mathbf{F} = \mathbf{i} + 2\mathbf{j} + 3\mathbf{k}$ acts on a body to move it from $\mathbf{r}_1 = \mathbf{i} + \mathbf{j} + \mathbf{k}$ to $\mathbf{r}_2 = \mathbf{i} - \mathbf{j} + 2\mathbf{k}$, then the work done by the force is

**Options :**

1. ✖ -3 J

2. ✔ -1 J

3. ✖ 2 J

4. ✖ 3 J

**Question Number : 63 Question Id : 2106888469 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The K.E. of a body moving with a speed of 10 m/s is 30 J. If its speed becomes 30 m/s, then its K.E. will be

**Options :**

1. ✖ 10 J

2. ✖ 90 J

3. ✖ 180 J

4. ✔ 270 J

**Question Number : 64 Question Id : 2106888470 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The maximum speed of a particle executing SHM is 1 m/s and maximum acceleration is 1.57 $m/s^2$. Its time period is

**Options :**

1. ✔ 4 sec

2. ✖ 1.57 sec

3. ✖ 2 sec

4. ✖ $\frac{1}{1.57}$

**Question Number : 65 Question Id : 2106888471 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A girl is swinging on a swing in the sitting position. If the girl stands up, the time period of the string will

**Options :**

1. ✖ Increase

2. ✔

Decrease

3. ✖ Remains same

4. ✖ Becomes erratic

**Question Number : 66 Question Id : 2106888472 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A light spring supports 200 gm weight at its lower end; it oscillates with a period of 1 sec. How much weight must be removed from the lower end to reduce the period to 0.5 sec?

**Options :**

1. ✖ 100 gm.

2. ✖ 50 gm.

3. ✔ 150 gm.

4. ✖ 200 gm.

**Question Number : 67 Question Id : 2106888473 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The velocity of sound in any medium depends upon

**Options :**

1. ✖ Intensity and elasticity

2. ✖ Amplitude and density

3. ✔ elasticity and density

4. ✖ Amplitude and elasticity

**Question Number : 68 Question Id : 2106888474 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The beat frequency produced by the vibrations of $x_1 = A \sin(320\pi t)$ and $x_2 = A \sin(326\pi t)$ is

**Options :**

1. ✖ 6

2. ✖ 4

3. ✖ 2

4. ✔ 3

**Question Number : 69 Question Id : 2106888475 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The Boyle's law is stated by PV = C, C depends on

**Options :**

1. ✖ Nature of gas

2. ✖ Atomic weight of gas

3. ✖ Temperature of gas

4. ✔ Quantity and temperature of gas

**Question Number : 70 Question Id : 2106888476 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The equation of state for 5g of oxygen($O_2$) at pressure P and temperature T, when occupying a volume V, will be (R is universal gas constant)

**Options :**

1. ✖ $PV = 5RT$

2. ✖ $PV = \frac{5}{2} RT$

3. ✖

$PV = \frac{5}{16} RT$

4. ✔ $PV = \frac{5}{32} RT$

**Question Number : 71 Question Id : 2106888477 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The volume of a gas at constant pressure of $10^3$ N/m$^2$ expands by 0.25m$^3$. The work done in this process is

**Options :**

1. ✖ 25J

2. ✖ 50J

3. ✔ 250J

4. ✖ 5J

**Question Number : 72 Question Id : 2106888478 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

For an adiabatic expansion of a perfect gas the value of $\frac{\Delta P}{P}$ is equal to

**Options :**

1. ✖

$\frac{\Delta V}{V}$

2. ✖ $\gamma \frac{\Delta V}{V}$

3. ✔ $-\gamma \frac{\Delta V}{V}$

4. ✖ $\gamma - \frac{\Delta V}{V}$

**Question Number : 73 Question Id : 2106888479 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

First law of Thermodynamics is a special case of

**Options :**

1. ✖ Boyle's law

2. ✖ Charles law

3. ✖ Law of conservation of mass

4. ✔ Law of conservation of energy

**Question Number : 74 Question Id : 2106888480 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If the critical angle for total internal reflection from a medium to vacuum is 30°, the velocity of light in the medium is

**Options :**

1. ✖ $3 \times 10^8$ m/s

2. ✔ $1.5 \times 10^8$ m/s

3. ✖ $\sqrt{3} \times 10^8$ m/s

4. ✖ $2 \times 10^8$ m/s

**Question Number : 75 Question Id : 2106888481 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Light rays of wave length $4.36 \times 10^{-7}$ m incident on a metal surface of work function 1.24 eV. The stopping potential required to stop the emission of photoelectrons is

**Options :**

1. ✔ 1.6 eV

2. ✖ 1.24 eV

3. ✖ 3.2 eV

4. ✖ 4.8 eV

## Chemistry

| | |
|---|---|
| **Section Id :** | 210688168 |
| **Section Number :** | 3 |
| **Mandatory or Optional :** | Mandatory |
| **Number of Questions :** | 25 |
| **Section Marks :** | 25 |
| **Enable Mark as Answered Mark for Review and Clear Response :** | Yes |
| **Maximum Instruction Time :** | 0 |
| **Is Section Default? :** | null |

**Question Number : 76 Question Id : 2106888482 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

According to Bohr`s theory of hydrogen atom, the angular momentum of electron in fourth orbit of H-atom is equal to

**Options :**

1. ✖ $\frac{h}{2\pi}$

2. ✔ $\frac{2h}{\pi}$

3. ✖ $\frac{3h}{2\pi}$

4. ✖ $\frac{4h}{\pi}$

**Question Number : 77 Question Id : 2106888483 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The quantum number which describes the shape of an atomic orbital is

**Options :**

1. ✔ Azimuthal Quantum Number

2. ✖ Principal Quantum Number

3. ✖ Spin Quantum Number

4. ✖ Magnetic Quantum Number

**Question Number : 78 Question Id : 2106888484 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Identify the element in which the ratio of s-electrons to p-electrons is 3:5

**Options :**

1. ✖ P

2. ✖ Al

3. ✔ S

4. ✖ K

**Question Number : 79 Question Id : 2106888485 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The pair of molecules in which the central atom has octet of electrons is

**Options :**

1. ✖ $BeCl_2$, $BF_3$

2. ✖ $H_2O$, $BeCl_2$

3. ✔ $H_2O$, $NH_3$

4. ✖ $NH_3$, $BF_3$

**Question Number : 80 Question Id : 2106888486 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The electronic configuration of an element M is $[Ne]3S^1$ and that of element X is $[He]2S^22P^5$. The type of bond present between M and X is

**Options :**

1. ✖ Covalent Bond

2. ✔ Electrovalent Bond

3. ✖ Co-ordinate Covalent Bond

4. ✖ Hydrogen Bond

**Question Number : 81 Question Id : 2106888487 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The absolute weight of one molecule of water (in g) is ($N_A$=6x$10^{23}$ $mol^{-1}$)

**Options :**

1. ✖ $1.5 \times 10^{-23}$

2. ✔ $3.0 \times 10^{-23}$

3. ✖ $4.5 \times 10^{-23}$

4. ✖ $2.0 \times 10^{-23}$

**Question Number : 82 Question Id : 2106888488 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The weight of sodium sulphate (molar mass 142 g $mol^{-1}$) required to prepare 500 ml of 0.03 M solution is

**Options :**

1. ✔ 2.13 g

2. ✖ 4.26 g

3. ✖ 1.065 g

4. ✖ 3.195 g

**Question Number : 83 Question Id : 2106888489 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The number of $H^+$ ions present in 100 ml of 0.05 M $H_2SO_4$ solution is ($N_A$=6x$10^{23}$ $mol^{-1}$)

**Options :**

1. ✖ $6.0 \times 10^{24}$

2. ✖ $6.0 \times 10^{22}$

3. ✔ $6.0 \times 10^{21}$

4. ✖ $3.0 \times 10^{23}$

**Question Number : 84 Question Id : 2106888490 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The conjugate acid and conjugate base of $HCO_3^-$ are respectively

**Options :**

1. ✖

$CO_3^{2-}$, $HCO_3^-$

2. ✖ $CO_3^{2-}$, $H_2CO_3$

3. ✔ $H_2CO_3$, $CO_3^{2-}$

4. ✖ $HCO_3^-$, $H_2CO_3$

**Question Number : 85 Question Id : 2106888491 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The pH of 0.005 M $H_2SO_4$ solution will be;

**Options :**

1. ✖ 5

2. ✔ 2

3. ✖ 3

4. ✖ 4

**Question Number : 86 Question Id : 2106888492 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In an electrochemical cell, the electrons flow from

**Options :**

1. ✖ Cathode to Anode

2. ✔ Anode to Cathode

3. ✖ Anode to Solution

4. ✖ Solution to Cathode

**Question Number : 87 Question Id : 2106888493 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

How many faradays are required to reduce 1 mole of $MnO_4^-$ ions to $Mn^{2+}$ ions?

**Options :**

1. ✔ 5

2. ✖

2

3. ✖ 4

4. ✖ 3

**Question Number : 88 Question Id : 2106888494 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

At 298 K, the emf of the cell, $M|M^{2+}(1M) \,||\, Cu^{2+}(1M)\,|\,Cu$ is 'x' V. If $E^0_{Cu^{2+}|Cu} = +0.34V$, then $E^0_{M^{2+}|M,}$ (in V) is

**Options :**

1. ✖ $(x - 0.34)$

2. ✔ $(0.34 - x)$

3. ✖ $(0.34 + x)$

4. ✖ $\frac{0.34}{x}$

**Question Number : 89 Question Id : 2106888495 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Identify the strongest reducing agent from the following:

**Options :**

1. ✔ $E^0_{K^+|K}$ = -2.93 v

2. ✖ $E^0_{Al^{3+}|Al}$ = -1.66 v

3. ✖ $E^0_{Zn^{2+}|Zn}$ = - 0.76 v

4. ✖ $E^0_{Ag^+|Ag}$ = +0.34 v

**Question Number : 90 Question Id : 2106888496 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The formula of Zeolite can be represented as $Na_2Z$. The metal atom present in Z is

**Options :**

1. ✖ Zn

2. ✖ Ca

Mg

3. ✖

Al

4. ✔

**Question Number : 91 Question Id : 2106888497 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following salts causes maximum hardness to water sample, when they are in equal amounts?

**Options :**

$MgSO_4$ (Molecular Weight = 120u)

1. ✖

$MgCl_2$ (Molecular Weight = 95u)

2. ✔

$CaCl_2$ (Molecular Weight = 111u)

3. ✖

$Ca(HCO_3)_2$ (Molecular Weight = 162u)

4. ✖

**Question Number : 92 Question Id : 2106888498 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Permanent hardness of water cannot be removed by

**Options :**

1. ✔ Boiling the hard water

2. ✖ Treatment with washing soda

3. ✖ Passing through Zeolite

4. ✖ Passing through ion exchange resins

**Question Number : 93 Question Id : 2106888499 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following statements is not correct about stress cells?

**Options :**

1. ✖ They are formed between different parts of the same metal

2. ✔ Stressed part of the metal acts as cathode

3. ✖ Stressed part of the metal acts as anode

4. ✖ Anodic part undergoes corrosion

**Question Number : 94 Question Id : 2106888500 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Tarnishing of silver is due to the formation of

**Options :**

1. ✖ $AgCl$

2. ✖ $Ag_2CO_3$

3. ✖ $Ag_2O$

4. ✔ $Ag_2S$

**Question Number : 95 Question Id : 2106888501 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following is not a natural polymer?

**Options :**

1. ✖ Wool

2. ✖ Cellulose

3. ✖ Strach

4. ✔ Rayon

**Question Number : 96 Question Id : 2106888502 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Neoprene is an example of

**Options :**

1. ✔ Elastomer

2. ✖ Thermoplastic Polymer

3. ✖ Thermosetting Polymer

4. ✖ Co-Polymer

**Question Number : 97 Question Id : 2106888503 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction**

**Time : 0**

The element that is added to raw rubber vulcanization is

**Options :**

1. ✔ S

2. ✖ Se

3. ✖ C

4. ✖ B

**Question Number : 98 Question Id : 2106888504 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The major components of water gas are

**Options :**

1. ✔ $H_2$, CO

2. ✖ $H_2$, $CO_2$

3. ✖ CO, $N_2$

$CO_2$, $N_2$

4. ✖

**Question Number : 99 Question Id : 2106888505 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following is not a greenhouse gas?

**Options :**

1. ✖ $O_3$

2. ✖ $CO_2$

3. ✖ $CH_4$

4. ✔ $N_2$

**Question Number : 100 Question Id : 2106888506 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The acid that is believed to be mainly responsible for the damage of Taj mahal is

**Options :**

1. ✔ $H_2SO_4$

2. ✖ HF

3. ✖ $H_3PO_4$

4. ✖ HCl

## Electrical and Electronics Engineering

| | |
|---|---|
| **Section Id :** | 210688169 |
| **Section Number :** | 4 |
| **Mandatory or Optional :** | Mandatory |
| **Number of Questions :** | 100 |
| **Section Marks :** | 100 |
| **Enable Mark as Answered Mark for Review and Clear Response :** | Yes |
| **Maximum Instruction Time :** | 0 |
| **Is Section Default? :** | null |

**Question Number : 101 Question Id : 2106888507 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following is not equivalent to watts?

**Options :**

1. ✖ Amperes x volts

2. ✖ $(\text{Amperes})^2$ x ohm

3. ✔ Amperes/volt

4. ✖ Joules per second

**Question Number : 102 Question Id : 2106888508 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

While Thevenizing a circuit between two terminals, $V_{TH}$ is equal to _____

**Options :**

1. ✖ Short circuit terminal voltage

2. ✔ Open circuit terminal voltage

3. ✖ Net voltage available in the circuit

4. ✖ emf of the battery nearest to the terminals

**Question Number : 103 Question Id : 2106888509 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following does not use heating effect of electric current?

**Options :**

1. ✖ Electric furnace

2. ✖ Geyser

3. ✖ Electric iron

4. ✔ Vacuum cleaner

**Question Number : 104 Question Id : 2106888510 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which medium has least dielectric strength?

**Options :**

1. ✔ Air

2. ✖ Quartz

3. ✖ Glass

4. ✖ Paraffin wax

**Question Number : 105 Question Id : 2106888511 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

'p' number of cells are connected in series. 'q' number of such series combinations are connected in parallel. The entire set is connected through an external resistance 'R'. The internal resistance of individual cell is 'r'. The assembly will yield maximum current when _____

**Options :**

1. ✖ R=4

2. ✖ R=pr

3. ✖ R=(qr)/p

4. ✔ R=(pr)/q

**Question Number : 106 Question Id : 2106888512 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The magnetic susceptibility of a paramagnetic material is _____

**Options :**

1. ✖ Less than zero

2. ✔ Less than one but positive

3. ✖ Greater than one

4. ✖ Equal to zero

**Question Number : 107 Question Id : 2106888513 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

For a given dielectric, with increase in temperature the ionic polarizability__

**Options :**

1. ✖ Increases

2. ✖ Decreases

3. ✔ Remains same

4. ✖ Fluctuates

**Question Number : 108 Question Id : 2106888514 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Laminated yoke in DC motor can reduce_____

**Options :**

1. ✖ Speed regulation

2. ✔ Iron loss

3. ✖ Temperature rise

4. ✖ Sparking on load

**Question Number : 109 Question Id : 2106888515 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

When the shunt field of a DC compound generator is connected across both the series field and armature. Such a connection is known as _____

**Options :**

1. ✖ Short shunt

2. ✔ Long shunt

3. ✖ Cumulative compounding

4. ✖ Differential compounding

**Question Number : 110 Question Id : 2106888516 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The residual magnetism of a DC shunt generator can be regained by _____

**Options :**

1. ✔ Connecting the shunt field to a battery

2. ✖ Running the generator on no load for some time

3. ✖ Grounding the shunt field

4. ✖ Reversing the direction of rotation of the generator

**Question Number : 111 Question Id : 2106888517 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If field of one of two generators operating in parallel is made very weak, then it will _____

**Options :**

1. ✖ Not take any load

2. ✖ Take major share of load

3. ✔ Operate as a motor and run in the same direction

4. ✖ Operate as a motor and run in the opposite direction

**Question Number : 112 Question Id : 2106888518 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A DC shunt motor runs at rated speed. If its field circuit gets open circuited, then soon after this the motor speed would tend to _____

**Options :**

1. ✖ Decrease

2. ✖ Remains unchanged

3. ✔ Increase

4. ✖ Fluctuate around its previous speed

**Question Number : 113 Question Id : 2106888519 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If the speed of a DC motor increases with load torque, then it is a _____

**Options :**

1. ✖ Series motor

2. ✖ Permanent magnet

3. ✔ Differentially compounded motor

4. ✖ Cumulatively compounded motor

**Question Number : 114 Question Id : 2106888520 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The efficiency of a DC machine will be _____ when the variable losses are equal to constant losses

**Options :**

1. ✖ 100%

2. ✔ Maximum

3. ✖ Minimum

4. ✖ 50%

**Question Number : 115 Question Id : 2106888521 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Performance of large DC machines regarding commutation and temperature rise etc. at full load can be checked by _____ test

**Options :**

1. ✖ Brake

2. ✖ Swinburne's

3. ✔ Hopkinson's

4. ✖ Running down

**Question Number : 116 Question Id : 2106888522 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The term artificial aging in instrument is associated with _____

**Options :**

1. ✖ Springs

2. ✔ Permanent magnets

3. ✖ Controlling torques

4. ✖ Damping

**Question Number : 117 Question Id : 2106888523 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction**

**Time : 0**

The disadvantage of PMMC instrument is _____

**Options :**

1. ✖ High power consumption

2. ✔ High cost relative to moving iron instruments

3. ✖ Low torque/weight ratio

4. ✖ Absence of effective and efficient eddy current damping

**Question Number : 118 Question Id : 2106888524 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

For low resistance (from few micro ohms to one ohm) measurement, which bridge is used?

**Options :**

1. ✖ Wheatstone bridge

2. ✔ Kelvin bridge

3. ✖ Guarded Wheatstone bridge

4. ✖ Maxwell bridge

**Question Number : 119 Question Id : 2106888525 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The circuit generally used in digital instruments to convert sine waves into rectangular pulses is a

**Options :**

1. ✖ Saw tooth generator

2. ✖ Differential amplifier

3. ✖ Sample and hold circuit

4. ✔ Schmitt trigger

**Question Number : 120 Question Id : 2106888526 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Unit of inductive reactance is _____

**Options :**

1. ✖ Henry

2. ✖ Milli henry

3.

✖ Wb

4. ✔ Ohm

**Question Number : 121 Question Id : 2106888527 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In an RLC circuit, supplied from an AC source, the reactive power is proportional to the _____

**Options :**

1. ✖ Average energy stored in the electric field

2. ✖ Average energy stored in the magnetic field

3. ✖ Sum of the average energy stored in the electric field and that stored in the magnetic field

4. ✔ Difference between the average energy stored in the electric field and that stored in the magnetic field

**Question Number : 122 Question Id : 2106888528 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A parallel circuit is said to be in resonance when the admittance is purely___

**Options :**

1. ✖ Capacitive

2. ✖ Inductive

3. ✖ Susceptive

4. ✔ Conductive

**Question Number : 123 Question Id : 2106888529 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A 3-phase star connected symmetrical load consumes P watts of power from a balanced supply. If the same load is connected in delta to the same supply, the power consumption will be _____

**Options :**

1. ✖ P

2. ✖ $\sqrt{3}$ P

3. ✔ 3P

4. ✖ P/3

**Question Number : 124 Question Id : 2106888530 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

While measuring power in a 3-phase load by 2 watt meter method, the readings of two watt meters are equal and opposite when _____

**Options :**

1. ✖ pf is unity

2. ✖ Load is balanced

3. ✖ Phase angle is between $60^0$ and $90^0$

4. ✔ The load is pure inductive

**Question Number : 125 Question Id : 2106888531 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Open circuit test in a transformer is performed with _____

**Options :**

1. ✔ Rated transformer voltage

2. ✖ Rated transformer current

3. ✖ Direct current

4. ✖ High frequency supply

**Question Number : 126 Question Id : 2106888532 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In a transformer, zero voltage regulation at full load is _____

**Options :**

1. ✖ Not possible

2. ✔ Possible at leading power factor load

3. ✖ Possible at lagging power factor load

4. ✖ Possible at unity power factor load

**Question Number : 127 Question Id : 2106888533 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A 500 kVA transformer has constant loss of 500 W and copper losses at full load are 2000 W. Then at what load is the efficiency maximum?

**Options :**

1. ✔ 250 kVA

2. ✖ 500 kVA

3. ✖ 1000 kVA

4. ✖ 125 kVA

**Question Number : 128 Question Id : 2106888534 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which part of transformer is subjected to maximum heating?

**Options :**

1. ✖ Frame

2. ✖ Core

3. ✔ Winding

4. ✖ Oil

**Question Number : 129 Question Id : 2106888535 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

For successful parallel operation of two single phase transformers, the most essential condition is that their _____

**Options :**

1. ✖ Percentage impedances are equal

2. ✔ Polarities are properly connected

3. ✖ Turn ratios are exactly equal

4. ✖ kVA ratings are equal

**Question Number : 130 Question Id : 2106888536 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following connection of transformer will give the highest secondary voltage?

**Options :**

1. ✖ Delta primary, delta secondary

2. ✔ Delta primary, star secondary

3. ✖ Star primary, star secondary

4. ✖ Star primary, delta secondary

**Question Number : 131 Question Id : 2106888537 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

An auto transformer having a transformation ratio of 0.8 supplies a load of 10 kW. The power transformed inductively from the primary to secondary is ___

**Options :**

1. ✖ 10 kW

2. ✖ 8 kW

3. ✔ 2 kW

4. ✖ Zero

**Question Number : 132 Question Id : 2106888538 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In a synchronous alternator, which of the following coils will have emf closer to sine wave form?

**Options :**

1. ✖ Concentrated winding in full pitch coils

2. ✖ Concentrated winding in short pitch coils

3. ✖ Distributed winding in full pitch coils

4. ✔ Distributed winding in short pitch coils

**Question Number : 133 Question Id : 2106888539 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Slip test is performed to determine _____

**Options :**

1. ✖ Slip

2. ✔ Direct axis reactance and quadrature axis reactance

3. ✖ Positive sequence reactance and negative sequence reactance

4. ✖ Sub transient reactance

**Question Number : 134 Question Id : 2106888540 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which one of the following methods gives more accurate result for determination of voltage regulation of an alternator?

**Options :**

1. ✖ MMF method

2. ✖ Synchronous impedance method

3. ✔ Potier triangle method

4. ✖ American institution standard method

**Question Number : 135 Question Id : 2106888541 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which motor can conveniently operate at lagging as well as leading power factor?

**Options :**

1. ✖ Squirrel cage induction motor

2. ✖ Wound rotor induction motor

3. ✔ Synchronous motor

4. ✖ DC shunt motor

**Question Number : 136 Question Id : 2106888542 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In a synchronous machine, damper windings are used to _____

**Options :**

1.

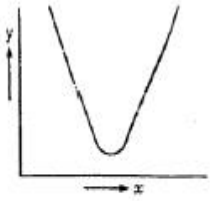
✖ Help in starting as a motor

2. ✖ Run it as an induction motor

3. ✔ Help in starting as a motor and to reduce hunting

4. ✖ Increase efficiency

**Question Number : 137 Question Id : 2106888543 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**




In the 'V' curve shown in the figure for a synchronous motor, the parameter of x and y coordinates are _____

**Options :**

1. ✔ Armature current and field current

2. ✖ Power factor and field current

3. ✖ Armature current and torque

4. ✖ Torque and field current

**Question Number : 138 Question Id : 2106888544 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In a 3-phase induction motor, the maximum torque _____

**Options :**

1. ✔ Is independent of rotor circuit resistance

2. ✖ Varies as rotor resistance

3. ✖ Varies as the square of rotor resistance

4. ✖ Varies inversely as rotor circuit resistance

**Question Number : 139 Question Id : 2106888545 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The core losses, and friction and windage losses in case of an induction motor are determined from the _____ test

**Options :**

1. ✔ No-load

2. ✖ Blocked rotor

3.

✖ Load

4. ✖ Stator resistance

**Question Number : 140 Question Id : 2106888546 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The purpose of the starter is to _____

**Options :**

1. ✔ Limit the starting current

2. ✖ Limit the speed

3. ✖ Protect against over voltage

4. ✖ Produce back emf

**Question Number : 141 Question Id : 2106888547 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In case of voltage injection method of speed control, the injected emf should be of _____

**Options :**

1. ✖ Supply frequency (f)

2. ✔ Slip frequency (sf)

3. ✖ (1-s)f

4. ✖ (2-s)f

**Question Number : 142 Question Id : 2106888548 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following motors does not use a centrifugal switch?

**Options :**

1. ✔ Shaded pole motor

2. ✖ Split phase motor

3. ✖ Capacitor start capacitor run motor

4. ✖ Repulsion start induction motor

**Question Number : 143 Question Id : 2106888549 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following types of motors are not the commutator motors?

**Options :**

1. ✖ AC series motors

2. ✔ Reluctance motors

3. ✖ Universal motors

4. ✖ Repulsion motors

**Question Number : 144 Question Id : 2106888550 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The enlarged body of water just above the intake and used as a regulating reservoir in a hydropower station is called as

**Options :**

1. ✖ Spillways

2. ✔ Forebay

3. ✖ Reservoir

4. ✖ Penstock

**Question Number : 145 Question Id : 2106888551 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Graphite is used in nuclear power plant as a _____

**Options :**

1. ✖ Fuel

2. ✖ Coolant

3. ✔ Moderator

4. ✖ Electrode

**Question Number : 146 Question Id : 2106888552 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

For stable operation of interconnected system, the passive element that can be used as the interconnecting element is _____

**Options :**

1. ✔ Reactor

2. ✖ Resistor

3. ✖ Capacitor

4. ✖ Resistor and capacitor

**Question Number : 147 Question Id : 2106888553 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Domestic consumers are usually charged _____

**Options :**

1. ✖ Flat demand tariff

2. ✔ Block rate tariff

3. ✖ Flat rate tariff

4. ✖ Off peak tariff

**Question Number : 148 Question Id : 2106888554 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Advantages of the improved power factor are _____

**Options :**

1. ✖ Decrease in operating efficiency of the power system

2. ✖ Decrease in voltage regulation

3. ✖ Increase in overall cost per unit

4. ✔ Better utilization of kW capacities of prime movers, transformers, switchgear and the lines

**Question Number : 149 Question Id : 2106888555 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

It is difficult to interrupt a capacitive circuit because _____

**Options :**

1. ✖ The current has a leading power factor

2. ✔ The restriking voltage can be high

3. ✖ Current magnitude is very small

4. ✖ Stored energy in the capacitor is very high

**Question Number : 150 Question Id : 2106888556 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Series reactors are used to _____

**Options :**

1. ✖ Improve the transmission efficiency

2. ✖ Improve the power factor of the power system

3. ✖ Improve the voltage regulation

4. ✔ Bring down the fault level within the capacity of the switchgear

**Question Number : 151 Question Id : 2106888557 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which is the main relay for protecting up to 90% of the transmission line length in the forward direction?

**Options :**

1. ✖ Directional overcurrent relay

2. ✔ Mho relay

3. ✖ Carrier current protective relay

4. ✖ Impedance relay

**Question Number : 152 Question Id : 2106888558 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A lightning arrester connected between the line and earth in a power system __

**Options :**

1. ✔ Protects the terminal equipment against travelling surges

2. ✖ Protects the terminal equipment against direct lightning stroke

3. ✖ Suppresses high frequency oscillations in the line

4. ✖ Reflects back the travelling waves approaching it

**Question Number : 153 Question Id : 2106888559 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The method of neutral grounding affects the _____

**Options :**

1. ✖ Positive sequence network

2. ✖ Negative sequence network

3. ✔ Zero sequence network

4. ✖ Both positive and zero sequence networks

**Question Number : 154 Question Id : 2106888560 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The rated voltage of a 3-phase power system is given as _____

**Options :**

1. ✖ rms phase voltage

2. ✖ Peak phase voltage

3. ✔ rms line to line voltage

4. ✖ Peak line to line voltage

**Question Number : 155 Question Id : 2106888561 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Transmission lines are transposed to _____

**Options :**

1. ✖ Reduce corona loss

2. ✖ Reduce skin effect

3. ✔ Prevent interference with neighboring telephone lines

4. ✖ Prevent short circuit between any two lines

**Question Number : 156 Question Id : 2106888562 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

When is the Ferranti effect on long overhead lines experienced?

**Options :**

1. ✔ The line is lightly loaded

2. ✖ The line is heavily loaded

3. ✖ The line is fully loaded

4. ✖ The power factor is unity

**Question Number : 157 Question Id : 2106888563 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Critical voltage limit of a transmission line is increased by _____

**Options :**

1. ✔ Increasing the radius of the conductors

2. ✖ Increasing the spacing between conductors

3. ✖ Reducing the spacing between conductors

4. ✖ Reducing the radius of the conductors

**Question Number : 158 Question Id : 2106888564 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In the case of an HVDC system, there is _____

**Options :**

1. ✖ Charging current but no skin effect

2. ✖ No charging current but skin effect

3. ✔ Neither charging current nor skin effect

4. ✖ Both charging current and skin effect

**Question Number : 159 Question Id : 2106888565 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The sag of a transmission line is least affected owing to _____

**Options :**

1. ✖ Weight of the conductor

2. ✔ Current through the conductor

3. ✖ Atmospheric temperature

4. ✖ Ice deposition on the conductor

**Question Number : 160 Question Id : 2106888566 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In three unit insulator string, voltage across the lowest unit is 17.5 kV and string efficiency is 84.28%. The total voltage across the string will be equal to _____

**Options :**

1. ✖ 8.285 kV

2. ✔ 44.25 kV

3. ✖ 88.25 kV

4. ✖ 442.5 kV

**Question Number : 161 Question Id : 2106888567 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In underground cables, the electrostatic stress is _____

**Options :**

1. ✔ Maximum at conductor surface and minimum at the sheath

2. ✖ Minimum at conductor surface and maximum at the sheath

3. ✖ Same at the conductor and sheath

4. ✖ Zero at the conductor as well as on the sheath

**Question Number : 162 Question Id : 2106888568 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The main criterion for selection of the size of a distributor for a radial distribution system is _____

**Options :**

1. ✔ Voltage drop

2. ✖ Corona loss

3. ✖ Temperature rise

4. ✖ Capital cost

**Question Number : 163 Question Id : 2106888569 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The distributors in residential areas are _____

**Options :**

1. ✖ Single phase, two wire

2. ✖ Three phase, three wire

3. ✔ Three phase, four wire

4. ✖ Two phase, four wire

**Question Number : 164 Question Id : 2106888570 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The most vital factor against electric traction is _____

**Options :**

1. ✖ Its high maintenance cost

2. ✖ Possibility of power failure

3. ✔ High initial cost in laying out overhead electric supply system

4. ✖ Necessity of providing a negative booster

**Question Number : 165 Question Id : 2106888571 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In Kando system of track electrification_____

**Options :**

1. ✖ Single phase AC is converted into DC

2. ✔ Single phase AC is converted into 3-phase AC

3. ✖ 3-phase AC is converted into DC

4. ✖ 3-phase AC is converted into single phase AC

**Question Number : 166 Question Id : 2106888572 Display Question Number : Yes Is Question**

**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Quadrilateral speed time curve is the close approximation for _____

**Options :**

1. ✖ Urban service only

2. ✖ Suburban service only

3. ✔ Either Urban/Suburban service

4. ✖ Main line service

**Question Number : 167 Question Id : 2106888573 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Longer coasting period for a train results in _____

**Options :**

1. ✖ Lower schedule speed

2. ✔ Lower specific energy consumption

3. ✖ Higher retardation

4. ✖ Higher acceleration

**Question Number : 168 Question Id : 2106888574 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The value of coefficient of adhesion will be high when rails are _____

**Options :**

1. ✖ Wet

2. ✔ Cleaned with sand

3. ✖ Greased

4. ✖ Sprayed with oil

**Question Number : 169 Question Id : 2106888575 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Specific energy consumption is maximum in _____ services

**Options :**

1. ✔ Urban

2. ✖ Suburban

3. ✖ Main line

4. ✖ Equal for all types

**Question Number : 170 Question Id : 2106888576 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The speed-time curve for urban service has no _____

**Options :**

1. ✖ Coasting period

2. ✔ Free running period

3. ✖ Breaking period

4. ✖ Acceleration period

**Question Number : 171 Question Id : 2106888577 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The DC series motor is most suitable for traction services but more particularly for urban/suburban services because_____

**Options :**

1. ✖ DC series motors are suitable for regenerative breaking

DC series motors are capable of withstanding rapid fluctuations in supply voltage

2. ✖

3. ✔ DC series motors are capable of developing high torque at start

DC series motors are capable of withstanding temporary interruption of supply without undue rush of current

4. ✖

**Question Number : 172 Question Id : 2106888578 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Third pin in a 3-pin plug is provided so as to _____

**Options :**

1. ✔ Provide an earth connection

2. ✖ Provide a 3-phase supply, when required

3. ✖ Provide a spare phase when required

4. ✖ Prevent the plug being reversed in the socket

**Question Number : 173 Question Id : 2106888579 Display Question Number : Yes Is Question**

**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which support for overhead transmission line has the least life?

**Options :**

1. ✔ Wooden poles

2. ✖ Fabricated steel structure

3. ✖ RCC poles

4. ✖ Steel poles

**Question Number : 174 Question Id : 2106888580 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following site will be preferred for earthing?

**Options :**

1. ✖ Clayey soil

2. ✖ Dry and rocky

3. ✔ Wet mashy ground

4. ✖

Damp and wet sand pit

**Question Number : 175 Question Id : 2106888581 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The insulation resistance test is performed on power line with _____

**Options :**

1. ✖ Ohmmeter

2. ✖ Earth tester

3. ✔ Meggar

4. ✖ Ammeter

**Question Number : 176 Question Id : 2106888582 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In a properly biased N-P-N transistor, most of the electrons from the emitter___

**Options :**

1. ✔ Pass to the collector through the base

2. ✖ Recombine with holes in base

3. ✖ Recombine with holes in emitter itself

4. ✖ Are stopped by the function barrier

**Question Number : 177 Question Id : 2106888583 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Ripple frequency of the output waveform of a bridge rectifier when fed with a 50 Hz sine wave is _____

**Options :**

1. ✔ 100 Hz

2. ✖ 25 Hz

3. ✖ 50 Hz

4. ✖ 200 Hz

**Question Number : 178 Question Id : 2106888584 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A major advantage of active filters is that they can be realized without using __

**Options :**

1.

1. ✖ Op-amps

2. ✔ Inductors

3. ✖ Resistors

4. ✖ Capacitors

**Question Number : 179 Question Id : 2106888585 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

An amplifier has a power gain of 200. What is its gain in dB?

**Options :**

1. ✖ 14 dB

2. ✖ 17 dB

3. ✖ 20 dB

4. ✔ 23 dB

**Question Number : 180 Question Id : 2106888586 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction**

**Time : 0**

For a transconductance amplifier, input and output resistances are respectively

**Options :**

1. ✖ $\infty$ and 0

2. ✖ 0 and $\infty$

3. ✖ 0 and 0

4. ✔ $\infty$ and $\infty$

**Question Number : 181 Question Id : 2106888587 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The Barkhausen criterion for sustained oscillations is given by _____

**Options :**

1. ✖ $A\beta=1$

2. ✔ $|A\beta|\geq 1$

3. ✖ $|A\beta|<1$

4. ✖ $\angle A\beta=180^0$

**Question Number : 182 Question Id : 2106888588 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The highest frequency stability is achieved by using an oscillator of the type__

**Options :**

1. ✖ Colpitts

2. ✔ Crystal

3. ✖ Hartley

4. ✖ RC

**Question Number : 183 Question Id : 2106888589 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The octal equivalent of decimal 98 is _____

**Options :**

1. ✖ 89

2. ✖ 98

3. ✔ 142

4. ✖ 241

**Question Number : 184 Question Id : 2106888590 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

An AND gate _____

**Options :**

1. ✖ Implements logic addition

2. ✖ Gives high output only when all inputs are low

3. ✔ Is equivalent to a series switching circuit

4. ✖ Is equivalent to a parallel switching circuit

**Question Number : 185 Question Id : 2106888591 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following Boolean expression is not true?

**Options :**

1. ✔ A+1=A

2. ✖ $A + \bar{A} = 1$

3. ✖ $A.A=A$

4. ✖ $A.\bar{A} = 0$

**Question Number : 186 Question Id : 2106888592 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In order to build a 3 bit simultaneous A/D converter, what is the number of comparator circuits required?

**Options :**

1. ✔ 7

2. ✖ 8

3. ✖ 15

4. ✖ 16

**Question Number : 187 Question Id : 2106888593 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A thyristor equivalent of a thyratron tube is _____

**Options :**

1. ✔ SCR

2. ✖ UJT

3. ✖ DIAC

4. ✖ TRIAC

**Question Number : 188 Question Id : 2106888594 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The device commonly used for triggering a traic is _____

**Options :**

1. ✖ Diode

2. ✖ Transistor

3. ✖ Zener diode

4. ✔ Diac

**Question Number : 189 Question Id : 2106888595 Display Question Number : Yes Is Question**

**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

For an UJT employed for triggering an SCR, stand-off ratio $\eta$=0.64 and DC source voltage $V_{BB}$ is 20 V. The UJT would trigger when the emitter voltage is

**Options :**

1. ✖ 6.4 V

2. ✖ 12.8 V

3. ✖ 6.55 V

4. ✔ 13.1 V

**Question Number : 190 Question Id : 2106888596 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A UJT has _____

**Options :**

1. ✔ Stable negative resistance characteristics

2. ✖ Low firing current

3. ✖ Use as a square wave generator

4. ✖ Use as a saw tooth wave generator

**Question Number : 191 Question Id : 2106888597 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which one of the following is the most suitable device for a DC-DC converter?

**Options :**

1. ✖ BJT

2. ✔ GTO

3. ✖ MOSFET

4. ✖ Thyristor

**Question Number : 192 Question Id : 2106888598 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A converter which can operate both in 3-pulse and 6-pulse modes is a _____

**Options :**

1. ✖ 1-phase full converter

2. ✖ 3-phase half-wave converter

3. ✔ 3-phase semi converter

4. ✖ 3-phase full converter

**Question Number : 193 Question Id : 2106888599 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The output frequency of a cycloconverter is generally limited to _____

**Options :**

1. ✖ Four times the supply frequency

2. ✖ Twice that of line frequency

3. ✔ 33% to 50% line frequency

4. ✖ Less than 10% of line frequency

**Question Number : 194 Question Id : 2106888600 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A large DC motor is required to control the speed of blower from a 3-phase AC source. What is the most suitable AC to DC converter?

**Options :**

1. ✖ 3-phase fully controlled bridge converter

2. ✖ 3-phase fully controlled bridge converter with freewheeling diode

3. ✔ 3-phase half controlled bridge converter

4. ✖ A pair of 3-phase converters in sequence control

**Question Number : 195 Question Id : 2106888601 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The most suitable device for high frequency inversion in SMPS is _____

**Options :**

1. ✖ BJT

2. ✖ IGBT

3. ✔ MOSFET

4. ✖ GTO

**Question Number : 196 Question Id : 2106888602 Display Question Number : Yes Is Question**

**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

UPS is used in

**Options :**

1. ✖ Battery powered vehicle

2. ✖ Electric traction

3. ✖ HVDC

4. ✔ Computer power supply

**Question Number : 197 Question Id : 2106888603 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

When the microcontroller executes some arithmetic operation, then the flag bits of which register are affected?

**Options :**

1. ✔ PSW

2. ✖ SP

3. ✖ DPTR

4. ✖ PC

**Question Number : 198 Question Id : 2106888604 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following is true while executing data transfer instructions?

**Options :**

1. ✖ Program counter is not accessible

2. ✖ Restricted bit transfer operations are allowed

3. ✔ Both operands can be direct/indirect register operands

4. ✖ Any one of the operand can be direct data memory operand

**Question Number : 199 Question Id : 2106888605 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

How many bytes of bit addressable memory is present in 8051 based microcontrollers?

**Options :**

1. ✖ 8 bytes

2. ✖ 32 bytes

3. ✔ 16 bytes

4. ✖ 128 bytes

**Question Number : 200 Question Id : 2106888606 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

What is the total external data memory that can be interfaced to the 8051?

**Options :**

1. ✖ 256 k

2. ✔ 64 k

3. ✖ 32 k

4. ✖ 128 k