

Question Paper Preview

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 :	ELECTRICAL AND ELECTRONICS ENGINEERING 12th May 2025 Shift1
Subject Name :	Electrical and Electronics Engineering
Creation Date :	2025-05-12 13:25:56
Duration :	180
Total Marks :	200
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Actual Answer Key :	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No

ELECTRICAL AND ELECTRONICS ENGINEERING

Group Number :	1
Group Id :	50696130
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 :	506961114
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory

Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	50
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	506961135
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 5069615816 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If $A = \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$ and if $(aI + bA)^2 = A$, then $b^4 =$

Options :

1. ✖ 1

2. ✖ $\frac{1}{2}$

3. ✖ $-\frac{1}{4}$

4. ✔ $\frac{1}{4}$

Question Number : 2 Question Id : 5069615817 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If $A = \begin{pmatrix} \cos \theta & \sin \theta & 0 \\ -\sin \theta & \cos \theta & 0 \\ 0 & 0 & 1 \end{pmatrix} = F(\theta)$, then $A^{-1} =$

Options :

1. ✖ $F(\theta)$

2. ✓ $F(-\theta)$

3. ✗ $-F(\theta)$

4. ✗ $-F(-\theta)$

Question Number : 3 Question Id : 5069615818 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If (x, y, z) is the solution of linear equations $x + y + z = 6$,

$x - y + z = 2$, $2x + y - z = 1$, then $\frac{yz}{x} =$

Options :

1. ✗ $\frac{1}{6}$

2. ✗ $\frac{3}{2}$

3. ✓ 6

4. ✗ 3

Question Number : 4 Question Id : 5069615819 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If A and B are square matrices of order 3 with $|A| = 2$, $|B| = -4$, then

$|2AB| =$

Options :

1. ✓ -64

2. ✖ 16

3. ✖ 64

4. ✖ -16

Question Number : 5 Question Id : 5069615820 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If $\log_{\sqrt{27}}(x) = \frac{8}{3}$, then $x =$

Options :

1. ✖ 10

2. ✖ 16

3. ✔ 81

4. ✖ 27

Question Number : 6 Question Id : 5069615821 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If $\frac{x^3}{(x-1)(x+2)} = Ax + B + \frac{C}{x-1} + \frac{D}{x+2}$, then $C + D =$

Options :

1. ✖ -3

2. ✔ 3

3. ✖ 2

4. ✖ 0

Question Number : 7 Question Id : 5069615822 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\frac{\sin^2 33^\circ - \sin^2 57^\circ}{\sin 21^\circ - \cos 21^\circ} =$$

Options :

1. ✖ $\frac{\sqrt{3}}{2}$

2. ✖ $\frac{1}{2}$

3. ✔ $\frac{1}{\sqrt{2}}$

4. ✖ 1

Question Number : 8 Question Id : 5069615823 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $A + B = \frac{\pi}{3}$ and $\cos A + \cos B = 1$, then $3\cos(A - B) =$

Options :

1. ✔ -1

2. ✖

2

3. ✖ -2

4. ✖ 1

Question Number : 9 Question Id : 5069615824 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $2 \tan^{-1} \left(\frac{2}{3} \right) = \tan^{-1}(k)$, then $k =$

Options :

1. ✖ $\frac{5}{12}$ 2. ✖ $\frac{4}{3}$ 3. ✔ $\frac{12}{5}$ 4. ✖ $\frac{3}{4}$

Question Number : 10 Question Id : 5069615825 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\tan^{-1} \left(\frac{1-x}{1+x} \right) = \frac{1}{2} \tan^{-1}(x)$, $x > 0$, then $x =$

Options :

1. ✖

$$\frac{\sqrt{3}}{2}$$

2. ✓ $\frac{1}{\sqrt{3}}$

3. ✗ $\frac{1}{2}$

4. ✗ 1

Question Number : 11 Question Id : 5069615826 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\cosh x = \frac{3}{2}$, then $\cosh 2x =$

Options :

1. ✗ $\frac{1}{3}$

2. ✓ $\frac{7}{2}$

3. ✗ $\frac{5}{2}$

4. ✗ $\frac{11}{3}$

Question Number : 12 Question Id : 5069615827 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\left(\frac{\sqrt{3}+i}{2}\right)^6 + \left(\frac{\sqrt{3}-i}{2}\right)^6 =$$

Options :

1. ✖ 3

2. ✖ -3

3. ✖ 2

4. ✔ -2

Question Number : 13 Question Id : 5069615828 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The distance between the lines $y = 2x + 4$ and $6x - 3y = 5$ is (in units)

Options :

1. ✖ $\frac{13}{2\sqrt{5}}$

2. ✔ $\frac{17}{3\sqrt{5}}$

3. ✖ $\frac{17}{2\sqrt{5}}$

4. ✖ $\frac{14}{3\sqrt{5}}$

Question Number : 14 Question Id : 5069615829 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If the radius of the circle $x^2 + y^2 - 4x + 6y - k = 0$ is 4, then $k =$

Options :

1. ✓ 3

2. ✗ -3

3. ✗ 2

4. ✗ $\frac{1}{2}$

Question Number : 15 Question Id : 5069615830 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If the angle between the lines $3x - 4y + 1 = 0$ and $ax + by - 7 = 0$ is 90° , then $3a - 4b =$

Options :

1. ✗ 12

2. ✗ -1

3. ✓ 0

4. ✗

7

Question Number : 16 Question Id : 5069615831 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The equation of the tangent to the circle $x^2 + y^2 - 6x + 4y - 12 = 0$ at $(-1,1)$ is

Options :

1. ✖ $4x + 3y + 1 = 0$

2. ✖ $2x - 3y + 5 = 0$

3. ✖ $2x + 3y - 1 = 0$

4. ✔ $4x - 3y + 7 = 0$

Question Number : 17 Question Id : 5069615832 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The eccentricity of the ellipse whose latus rectum is equal to half of its major axis is

Options :

1. ✖ $\sqrt{3}$

2. ✔ $\frac{1}{\sqrt{2}}$

3. ✖ $\sqrt{2}$

4. ✖ $\frac{1}{\sqrt{3}}$

Question Number : 18 Question Id : 5069615833 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

$$\frac{d}{dx} \left(\sqrt{\sin(x^2)} \right) =$$

Options :

1. ✖ $\frac{x^2 \cos(x^2)}{\sqrt{\sin(x^2)}}$

2. ✖ $\frac{x \cos(x^2)}{2\sqrt{\sin(x^2)}}$

3. ✔ $\frac{x \cos(x^2)}{\sqrt{\sin(x^2)}}$

4. ✖ $\frac{x \sin(x^2)}{\sqrt{\cos(x^2)}}$

Question Number : 19 Question Id : 5069615834 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

$$\frac{d}{dx} \tan^{-1} \left(\frac{\sin x}{1 + \cos x} \right) =$$

Options :

1. ✖ 2

2. ✖ 4

3. ✖ 1

4. ✔ $\frac{1}{2}$

Question Number : 20 Question Id : 5069615835 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✔ $\frac{y(\cos y - x \log y)}{x(x + y \sin y \log x)}$

2. ✖ $\frac{y(\cos y + x \log y)}{x(x + y \sin y \log x)}$

3. ✖ $\frac{y(\cos y - x \log y)}{x(x - y \sin y \log x)}$

4. ✖ $\frac{(\cos y - x \log y)}{(x + y \sin y \log x)}$

Question Number : 21 Question Id : 5069615836 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

$$\lim_{x \rightarrow 3} \frac{x^2 - x - 6}{x^2 + x - 12} =$$

Options :

1. ✖ $\frac{1}{6}$

2. ✖ $\frac{2}{3}$

3. ✖ $\frac{3}{4}$

4. ✔ $\frac{5}{7}$

Question Number : 22 Question Id : 5069615837 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The equation of the normal to the curve $y = x^3 - 3x$ at the point P(2, 2) is

Options :

1. ✖ $x + 9y - 2 = 0$

2. ✖ $x + 9y - 22 = 0$

3. ✔ $x + 9y - 20 = 0$

4. ✖ $x + 9y - 12 = 0$

Question Number : 23 Question Id : 5069615838 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The maximum value of $y = (x - 1)^2 e^x$ is

Options :

1. ✓ $\frac{4}{e}$

2. ✗ $\frac{2}{e}$

3. ✗ $\frac{1}{e}$

4. ✗ $\frac{9}{e}$

Question Number : 24 Question Id : 5069615839 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $f(x, y) = (x + y)e^{xy}$, then at P(2,2) the value of $\frac{\partial f}{\partial x} =$

Options :

1. ✗ $8e^4$

2. ✗ $4e^4$

3. ✓ $9e^4$

4. ✗ $16e^4$

Question Number : 25 Question Id : 5069615840 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If $u(x, y) = \sin^{-1} \left(\frac{x^4 + y^4}{x^2 + y^2} \right)$, then $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} =$

Options :

1. ✖ $2 \cot u$

2. ✔ $2 \tan u$

3. ✖ $2 \sin u$

4. ✖ $2 \cos u$

Question Number : 26 Question Id : 5069615841 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

$\int \frac{1}{(1 - \cos x)} dx =$

Options :

1. ✔ $-\cot x - \operatorname{cosec} x + c$

2. ✖ $-\cot x + \operatorname{cosec} x + c$

3. ✖ $\cot x - \operatorname{cosec} x + c$

4. ✖ $-\tan x - \sec x + c$

Question Number : 27 Question Id : 5069615842 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\int_2^4 f(x) dx =$$

Options :

1. ✖ $\int_2^4 f(6+x) dx$

2. ✖ $\int_2^4 f(4-x) dx$

3. ✖ $\int_2^4 f(2-x) dx$

4. ✔ $\int_2^4 f(6-x) dx$

Question Number : 28 Question Id : 5069615843 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\int_{-1}^1 \sin \pi x dx =$$

Options :

1. ✖ $\frac{1}{\pi}$

2. ✖ $\frac{2}{\pi}$

3. ✓ 0

4. ✗ $-\frac{2}{\pi}$

Question Number : 29 Question Id : 5069615844 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

$$\lim_{n \rightarrow \infty} \left[\frac{1}{n} + \frac{n^2}{(n+1)^3} + \frac{n^2}{(n+2)^3} + \dots + \frac{1}{8n} \right] =$$

Options :

1. ✗ $\frac{1}{8}$

2. ✗ $\frac{1}{4}$

3. ✓ $\frac{3}{8}$

4. ✗ $\frac{1}{2}$

Question Number : 30 Question Id : 5069615845 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The area of the region bounded by the lines $x = 1, x = 4, y = 4x$ and $y = x^2$ is

Options :

1. ✗ 2

2. ✖ 6

3. ✖ 16

4. ✔ 9

Question Number : 31 Question Id : 5069615846 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

According to Simpson's $\frac{1}{3}$ rule, the value of the integral $\int_1^3 \frac{1}{x} dx$ with $h = \frac{1}{2}$, is

Options :

1. ✖ 1.5

2. ✖ 0.5

3. ✔ 1.1

4. ✖ 2

Question Number : 32 Question Id : 5069615847 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The differential equation whose general solution is $y = Ax^2 + Bx$, where A and B are arbitrary constants is

Options :

1. ✖ $x^2 y'' + 2xy' - 2y = 0$

2. ✓ $x^2 y'' - 2xy' + 2y = 0$

3. ✗ $y'' - 2y' + 2y = 0$

4. ✗ $x^2 y'' - 2xy' - 2y = 0$

Question Number : 33 Question Id : 5069615848 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation
 $(e^x + 1)y \, dy + (y + 1) \, dx = 0$ is

Options :

1. ✗ $e^{x-y} = c(y + 1)(1 - e^x)$

2. ✓ $e^{x+y} = c(y + 1)(1 + e^x)$

3. ✗ $e^{2x-y} = c(y + 1)(1 - e^x)$

4. ✗ $e^{x+y} = cy(1 + e^x)$

Question Number : 34 Question Id : 5069615849 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If the differential equation $(x^2 + y^2)dx + kxy \, dy = 0$ is exact, then k =

Options :

1. ✓ 2

2. ✖ 1

3. ✖ -1

4. ✖ -2

Question Number : 35 Question Id : 5069615850 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖ $y \cot x = \tan x + c$

2. ✖ $y \sec x = x \sin x + c$

3. ✖ $x \sec x = \sin x + c$

4. ✔ $y \sec x = \sin x + c$

Question Number : 36 Question Id : 5069615851 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖ $2x$

2. ✖ $x^2 + 2$

3. ✔ $x^2 + 1$

4. ✖ $x^2 - 1$

Question Number : 37 Question Id : 5069615852 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation $6y'' - 5y' - 6y = 0$ is

Options :

1. ✖ $y = ae^{9x} + be^{4x}$

2. ✖ $y = ae^{-9x} + be^{-4x}$

3. ✔ $y = ae^{\frac{3x}{2}} + be^{\frac{-2x}{3}}$

4. ✖ $y = ae^{\frac{-3x}{2}} + be^{\frac{-2x}{3}}$

Question Number : 38 Question Id : 5069615853 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A particular integral of the differential equation $(4D^2 + 4D - 3)y = e^{3x}$ is

(Here $D \equiv \frac{d}{dx}$)

Options :

1. ✖ $\frac{1}{11}e^{3x}$

2. ✓ $\frac{1}{45}e^{3x}$

3. ✗ $\frac{1}{5}e^{3x}$

4. ✗ $\frac{1}{3}e^{3x}$

Question Number : 39 Question Id : 5069615854 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A particular integral of the differential equation

$$(D^2 + 4)y = 5(\cos 3x + \sin 3x) \text{ is}$$

$$\left(\text{Here } D \equiv \frac{d}{dx} \right)$$

Options :

1. ✗ $\cos 3x + \sin 3x$

2. ✗ $\cos 3x - \sin 3x$

3. ✓ $-\cos 3x - \sin 3x$

4. ✗ $\sin 3x - \cos 3x$

Question Number : 40 Question Id : 5069615855 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $L\left\{\int_0^t \cosh 3u \, du\right\} = f(s)$, then $f(4) =$

Options :

1. ✓ $\frac{1}{7}$

2. ✗ $\frac{1}{32}$

3. ✗ 0

4. ✗ $\frac{7}{32}$

Question Number : 41 Question Id : 5069615856 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Let $F(t) = \begin{cases} e^{t-1}, & t > 1 \\ 0, & t < 1 \end{cases}$. If $s > 1$ then $L\{F(t)\} =$

Options :

1. ✗ $\frac{1}{s-1}$

2. ✗ $\frac{e^{-1}}{s-1}$

3. ✓ $\frac{e^{-s}}{s-1}$

4. ✗

$$\frac{e^s}{s-1}$$

Question Number : 42 Question Id : 5069615857 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$\int_0^{\infty} t e^{-t} \sin t \, dt =$$

Options :

1. ✖ -1

2. ✔ $\frac{1}{2}$

3. ✖ 0

4. ✖ 2

Question Number : 43 Question Id : 5069615858 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$$L^{-1} \left\{ \frac{1}{s(s-1)} \right\} =$$

Options :

1. ✖ $1 - e^t$

2. ✖ $e^t + 1$

3. ✖

$$e^{-t} - 1$$

4. ✓ $e^t - 1$

Question Number : 44 Question Id : 5069615859 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

If $L^{-1} \left\{ \frac{s+1}{s^2+2s+2} \right\} = e^{at} \cos bt$, then $a^2 + b^2 =$

Options :

1. ✓ 2

2. ✗ 4

3. ✗ 0

4. ✗ 8

Question Number : 45 Question Id : 5069615860 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

The convolution of the functions 1 and $\sin t$ is

Options :

1. ✓ $1 - \cos t$

2. ✗ $1 - \sin t$

3. ✗

$\cos t$

4. ✖ $1 + \cos t$

Question Number : 46 Question Id : 5069615861 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The Laplace transform of the solution of the initial value problem

$y'' + 9y = 9u(t - 3), y(0) = 0, y'(0) = 0$ (Here $u(t - 3)$ is the unit step function) is

Options :

1. ✖ $\frac{9e^{3s}}{s(s^2 - 9)}$

2. ✖ $\frac{e^{-3s}}{s^2(s^2 + 9)}$

3. ✖ $\frac{9e^{-3s}}{(s^2 + 9)^2}$

4. ✔ $\frac{9e^{-3s}}{s(s^2 + 9)}$

Question Number : 47 Question Id : 5069615862 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

$$\int_{-\frac{\pi}{2}}^{\frac{3\pi}{2}} \cos^2 4x \, dx =$$

Options :

1. ✓ π

2. ✗ 3π

3. ✗ 2π

4. ✗ $\frac{\pi}{2}$

Question Number : 48 Question Id : 5069615863 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The value of a_3 in the Fourier series expansion of the function

$$f(x) = \begin{cases} 0, & -\pi < x \leq 0 \\ x, & 0 < x \leq \pi \end{cases}$$

Options :

1. ✗ $\frac{-2}{\pi}$

2. ✗ $\frac{-2}{3\pi}$

3. ✗ $\frac{-2}{5\pi}$

4. ✓ $\frac{-2}{9\pi}$

Question Number : 49 Question Id : 5069615864 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The value of b_1 in the Fourier series expansion of $f(x) = x \sin x$ in $0 \leq x \leq 2\pi$ is

Options :

1. ✓ π

2. ✗ 2π

3. ✗ 3π

4. ✗ 4π

Question Number : 50 Question Id : 5069615865 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The period of the function $f(x) = \sin\left(\frac{\pi x}{3}\right)$ is

Options :

1. ✗ π

2. ✗ $\frac{\pi}{3}$

3. ✖ $\frac{\pi}{6}$

4. ✔ 6

Physics

Section Id :	506961115
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	506961136
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 5069615866 Question Type : MCQ Option Shuffling : Yes
 Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

Velocity (v) of water waves depends on their Wavelength (λ), Density of Water (ρ) and acceleration due to gravity (g). By the method of dimensional analysis, the relation between these quantities is given by

Options :

1. ✖ v^2 is proportional to $(\rho\lambda g)$

2. ✖ v is proportional to $\lambda g/\sqrt{\rho}$

3. ✔ v^2 is proportional to (λg)

v is proportional to $(\rho\lambda g)$

4. ✖

Question Number : 52 Question Id : 5069615867 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Force $\vec{F} = 2\hat{i} + 3\hat{j} + 7\hat{k}$ newtons (N), acting on an object causes a displacement $\vec{S} = 2\hat{i} + 3\hat{j} + 5\hat{k}$ meters (m). Then the work done is

Options :

1. ✖ 30 Nm

2. ✖ 40 Nm

3. ✔ 48 Nm

4. ✖ 25 Nm

Question Number : 53 Question Id : 5069615868 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$\vec{A} = \hat{i} + 2\hat{j} + 3\hat{k}$ and $\vec{B} = 3\hat{i} + 2\hat{j} + \hat{k}$ are the adjacent sides of a parallelogram respectively. The area of the Parallelogram is

Options :

1. ✖ $8\sqrt{2}$

2. ✔ $8\sqrt{3}$

3. ✖ $3\sqrt{8}$

4. ✖ $\sqrt{8}$

Question Number : 54 Question Id : 5069615869 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A block is placed on a rough floor and a horizontal force 'F' is applied on it. The force of friction 'f' by the floor on the block is measured for different values of 'F'. The graph between the 'f' and 'F' would be

Options :

1. ✖ The graph is a straight line of slope 45° for all 'F'
2. ✖ The graph is a straight line parallel to 'F' axis for all 'F'
3. ✔ The graph is a straight line of slope 45° for small values of 'F' and straight line parallel to 'F' axis for large 'F'
4. ✖ The graph is exponential with values of 'F'

Question Number : 55 Question Id : 5069615870 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Throughout the flight of a particle in projectile motion

Options :

1. ✔ The horizontal component of velocity is constant
2. ✖ The vertical component of velocity is constant
3. ✖ The horizontal component of velocity decreases

The horizontal component of velocity is zero

4. ✖

Question Number : 56 Question Id : 5069615871 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A motor cyclist driving with a speed of 0.6 km/minute goes over a turn of radius of curvature 10 m. His slope with vertical in degrees (take $g = 10 \text{ m/sec}^2$).

Options :

1. ✖ 0°

2. ✖ 30°

3. ✔ 45°

4. ✖ 60°

Question Number : 57 Question Id : 5069615872 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two wires of lengths in the ratio 2:3 taken from same material and having the same mass are stretched by same force. Then their elongations are in the ratio of

Options :

1. ✖ 2:3

2. ✖ 3:2

3. ✖ 1:2

4. ✔

4:9

Question Number : 58 Question Id : 5069615873 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following statements is wrong?

Options :

1. ✖ Surface Tension of a liquid decreases with increase of temperature
2. ✖ Surface Tension of a liquid increases or decreases depending on the type of impurities added to the liquid
3. ✔ Angle of Contact depends on the inclination of the solid rod placed in the liquid
4. ✖ A drop of oil placed on the surface of water will spread as a thin layer

Question Number : 59 Question Id : 5069615874 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A streamline flow is maintained across the two capillary tubes A and B connected in series. The length of B is twice that of A and the radius of B is half that of A. The pressure across A is P. The pressure across B is

Options :

1. ✖ 4P
2. ✖ 16P
3. ✔ 32P

4. ✖ P/32

Question Number : 60 Question Id : 5069615875 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A body of mass 0.1 kg is thrown vertically upward. At a certain point above the ground, the Potential energy and Kinetic energy of the body are 3.7 J and 6.3 J. The maximum height it reaches is ($g=10\text{m/s}^2$)

Options :

- 1. ✔ 10 m
- 2. ✖ 4 m
- 3. ✖ 100 m
- 4. ✖ 0.7 m

Question Number : 61 Question Id : 5069615876 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two containers of volumes 20m^3 and 30m^3 have gases at Pressures of 40 MPa and 50 MPa. The two containers are connected by a very narrow pipe of negligible volume and the gases are allowed to intermingle. If the temperature remains constant, the final pressure in MPa is

Options :

- 1. ✔ 46
- 2. ✖ 40
- 3. ✖ 50
- 4. ✖

Question Number : 62 Question Id : 5069615877 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

During an adiabatic process, a mono atomic gas at 27°C is compressed suddenly to $1/8$ of its original volume. Then the Final temperature in $^{\circ}\text{C}$ is (The ratio of the two specific heats of gases = $5/3$)

Options :

1. ✖ 1160

2. ✖ 887

3. ✔ 927

4. ✖ 88

Question Number : 63 Question Id : 5069615878 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The time period of a simple pendulum is 3 sec. Its length is made 4 times. Then its time period is

Options :

1. ✖ 3 sec

2. ✖ 4 sec

3. ✔ 6 sec

4. ✖ 1.5 sec

Question Number : 64 Question Id : 5069615879 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A particle executes Simple Harmonic Motion with an amplitude of 5 cm. When the particle is at 4 cm from the mean position, the magnitude of its velocity in SI units is equal to that of its acceleration. Then, its periodic time in seconds is

Options :

1. ✓ $8\pi/3$

2. ✗ $4\pi/3$

3. ✗ $3\pi/8$

4. ✗ $7\pi/3$

Question Number : 65 Question Id : 5069615880 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The two equations of Simple Harmonic Motions are $Y_1 = 12 \sin(50t + \pi/2)$ and $Y_2 = 12 \sin(50t + \pi/3)$. The phase difference between two motions is

Options :

1. ✗ $\pi/2$

2. ✗ $\pi/3$

3. ✓ $\pi/6$

4. ✗ $\pi/8$

Question Number : 66 Question Id : 5069615881 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Multiple reflections leading to persistence of sound in an auditorium are

Options :

1. ✖ beats
2. ✖ echo
3. ✔ reverberation
4. ✖ stationary waves

Question Number : 67 Question Id : 5069615882 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two sources S_1 and S_2 are moving with certain velocities. The apparent frequencies observed by a stationary observer are double and half of their original frequencies respectively. If the velocity of sound is v and velocity of wind is zero, then the velocities of two sources respectively are

Options :

1. ✖ $v/2$ and $2v$
2. ✖ v and $v/2$
3. ✖ $3v/2$ and $2v$
4. ✔ $v/2$ and v

Question Number : 68 Question Id : 5069615883 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Moment of couple acting on a bar magnet kept at an angle 30° to the direction of uniform magnetic field of induction 2 Tesla is equal to

Options :

1. ✖ Pole Strength of the Magnet
2. ✖ Length of the Magnet
3. ✖ Magnetic Flux
4. ✔ Magnetic Moment of the Magnet

Question Number : 69 Question Id : 5069615884 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a Meter Bridge, R_1 and R_2 are the resistances connected in the left and right gaps respectively. The bridge is balanced at the balancing point of 60 cm from left. When a resistance of $30\ \Omega$ is connected in parallel to R_2 , the balancing point shifted to 90 cm. The values of R_1 and R_2 respectively are (in Ω)

Options :

1. ✖ 30 and 50
2. ✖ 200 and 350
3. ✔ 225 and 150
4. ✖ 100 and 75

Question Number : 70 Question Id : 5069615885 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

When 220 V AC is applied across a step-up transformer, it draws a current of 3A in the secondary. If the number of turns in the primary coil of the transformer is 100 and that of secondary coil is 2000. The output power of the transformer is

Options :

1. ✖ 8800 W
2. ✔ 13200 W
3. ✖ 4400 W
4. ✖ 2200 W

Question Number : 71 Question Id : 5069615886 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A photon of frequency ν is incident on a photosensitive metal surface whose threshold frequency is ν_0 . The kinetic energy of emitted photo electron is

Options :

1. ✖ $h^*\nu$
2. ✖ $h^*\nu_0$
3. ✔ $h^*(\nu - \nu_0)$
4. ✖ $h^*(\nu + \nu_0)$

Question Number : 72 Question Id : 5069615887 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In LASER, the condition of Population Inversion mean

Options :

1. ✖ The number of atoms in the lower energy state are more than the higher energy state
2. ✔ The number of atoms in the higher energy state are more than the lower energy state
3. ✖ The number of atoms in the lower and higher energy states are same
4. ✖ The number of atoms in higher energy state are zero

Question Number : 73 Question Id : 5069615888 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a Graded Index Optical Fibre

Options :

1. ✖ The Refractive Index of the core remains constant and will be greater than that of the cladding
2. ✖ The Refractive Index of the core remains constant and will be less than that of the cladding
3. ✖ The Refractive Indices of both core and cladding remain constant and are equal
4. ✔ The Refractive Index of the core varies with maximum at the centre and decreases as the radial distance increases from the axis of the core

Question Number : 74 Question Id : 5069615889 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following statements is correct, if n_e and n_h are the concentrations of the Electrons and Holes respectively

Options :

1. ✓ In an intrinsic semiconductor, $n_e = n_h$ and both these charge carriers contribute to current equally
2. ✗ In p-type semiconductor, $n_e > n_h$ and the current due to electrons is more than that of holes
3. ✗ In n-type semiconductor, $n_p > n_e$ and current due to holes is more than that of electrons
4. ✗ In an extrinsic semiconductor, $n_e = n_h$ and both these charge carriers contribute to current equally

Question Number : 75 Question Id : 5069615890 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The semiconductors used for fabrication of visible LEDs have band gap

Options :

1. ✗ Close to 1.5 eV
2. ✗ Close to 1.1 eV
3. ✗ About 1.0 eV to 1.6 eV
4. ✓ About 1.8 eV to 3 eV

Chemistry

Section Id :	506961116
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	506961137
Question Shuffling Allowed :	Yes

Question Number : 76 Question Id : 5069615891 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

According to Aufbau principle, which orbital is filled immediately after each of the 3p, 4p, 4f and 5d?

Options :

1. ✖ 3d, 5s, 5d, 6p
2. ✖ 3d, 4d, 5d, 6p
3. ✔ 4s, 5s, 5d, 6p
4. ✖ 4s, 5s, 5d, 7s

Question Number : 77 Question Id : 5069615892 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which one of the following properties is not due to hydrogen bonding.

Options :

1. ✖

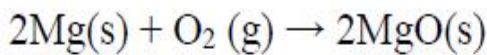
High boiling point of water

- 2. ✖ High viscosity of glycerol
- 3. ✖ Solubility of ammonia in water
- 4. ✔ Polar nature of halogen acid

Question Number : 78 Question Id : 5069615893 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0



In above reaction equation, the oxidation state of magnesium is changed from

Options :

- 1. ✔ 0 to +2
- 2. ✖ 0 to -2
- 3. ✖ +2 to -1
- 4. ✖ +2 to 0

Question Number : 79 Question Id : 5069615894 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

100 mL of ethanol, whose density is 1.2 g.mL^{-1} is diluted to 1.0 L by addition of distilled water. Molarity of the resultant solution is

Options :

1. ✖ 1.60

2. ✔ 2.60

3. ✖ 0.46

4. ✖ 2.90

Question Number : 80 Question Id : 5069615895 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Among the below options, which is not a characteristic of a colloid

Options :

Particle size between $10 \text{ \AA} - 1000 \text{ \AA}$

1. ✖

Heterogeneous

2. ✖

Can be separable by filtration

3. ✔

Diffuse slowly

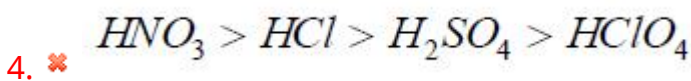
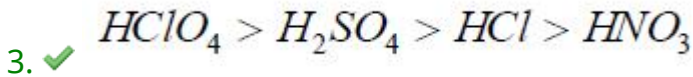
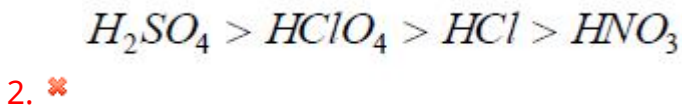
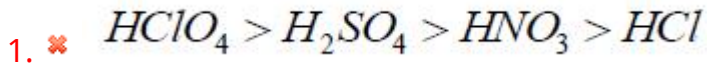
4. ✖

Question Number : 81 Question Id : 5069615896 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The correct order of decreasing strength of acids is

Options :



Question Number : 82 Question Id : 5069615897 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The solution which can resist change in its pH on the addition of an acid or a base is known as

Options :

1. ✖ Isotonic solution

2. ✖ Colloidal solution

3. ✖ Neutral solution

4. ✔ Buffer solution

Question Number : 83 Question Id : 5069615898 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The minimum level of a pollutant above which a healthy individual worker is adversely affected on exposure to it for eight hours in a day is called

Options :

1. ✖ Critical Limit Value
2. ✖ Toxic Limit Value
3. ✔ Threshold Limit Value
4. ✖ Dangerous Limit Value

Question Number : 84 Question Id : 5069615899 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The consequences of global warming are:

- (A) Increase in average temperature of the earth
- (B) Melting of Himalayan glaciers
- (C) Increased Biochemical Oxygen Demand of natural water
- (D) Eutrophication of water bodies

Choose the correct option.

Options :

1. ✖ A, D
2. ✖ A, C
3. ✔ A, B
4. ✖ A, B, C

Question Number : 85 Question Id : 5069615900 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The chemicals used for defluoridation of water by Nalgonda Technique are

Options :

1. ✖ CaO and CaOCl_2
2. ✔ Alum, CaO and CaOCl_2
3. ✖ CaH_2 , NaOCl and Alum
4. ✖ NaOCl, NaH and Alum

Question Number : 86 Question Id : 5069615901 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The process which removes non-ionic, ionic, colloidal and organic matter in water is

Options :

1. ✖ Ion exchange process
2. ✖ Lime soda process
3. ✔ Reverse osmosis process
4. ✖ Zeolite process

Question Number : 87 Question Id : 5069615902 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The set of products that are formed during electrolysis of aqueous solution of KCl between platinum electrodes is

Options :

1. ✖ HCl and KOH
2. ✖ KOH and Cl₂
3. ✔ KOH, Cl₂ and H₂
4. ✖ K and Cl₂

Question Number : 88 Question Id : 5069615903 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

When same quantity of electricity is passed through aqueous AgNO₃ and H₂SO₄ solutions connected in series, 5.04×10^{-2} g of H₂ is liberated. What is the mass of silver (in grams) deposited?
(Eq. Wt. of hydrogen and silver is 1.008 and 108 respectively)

Options :

1. ✖ 54
2. ✖ 0.54
3. ✔ 5.4
4. ✖ 10.8

Question Number : 89 Question Id : 5069615904 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Choose the correct option that differentiates metals from non-metals

Options :

Metals form acidic oxides, whereas non-metals form basic oxides.

1. ✖

Metals have a tendency to gain electrons, whereas non-metals have a tendency to lose electrons.

2. ✖

Metals are generally good conductors of electricity, whereas non-metals are insulators.

3. ✔

All metals exist in a solid state at room temperature.

4. ✖

Question Number : 90 Question Id : 5069615905 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Nichrome is commonly used in heating elements because

Options :

It has high electrical conductivity

1. ✖

It has a high melting point and corrosion resistance

2. ✔

It is lightweight

3. ✖

It is brittle and hard

4. ✖

Question Number : 91 Question Id : 5069615906 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ combinations is used for prevention of corrosion.

Options :

1. ✓ ☒ Phosphorous or Antimony
2. ✗ ☐ Phosphorous or Chlorine
3. ✗ ☐ Antimony or Nitrogen
4. ✗ ☐ Antimony or Sodium

Question Number : 92 Question Id : 5069615907 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The process of coating zinc metal over iron to improve corrosion resistance of iron is called

Options :

1. ✗ ☐ Electroplating
2. ✗ ☐ Annealing
3. ✓ ☒ Galvanizing
4. ✗ ☐ Tinning

Question Number : 93 Question Id : 5069615908 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ is a cross linked polymer.

Options :

1. ✓ Bakelite
2. ✗ LDPE
3. ✗ Polystyrene
4. ✗ PVC

Question Number : 94 Question Id : 5069615909 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Identify the Biodegradable polymers from the following and choose the correct option.

(I) PVC (II) PHBV (III) Polypropylene (IV) Nylon-2-nylon-6

Options :

1. ✗ I and II
2. ✓ II and IV
3. ✗ I and IV
4. ✗ I, II and III

Question Number : 95 Question Id : 5069615910 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Calculate the amount of oxygen required for the complete combustion of 1 mole of Methane (CH_4).

Options :

1. ✖ 1 mole
2. ✔ 2 moles
3. ✖ 3 moles
4. ✖ 4 moles

Question Number : 96 Question Id : 5069615911 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ represents the composition of water gas

Options :

1. ✔ $\text{CO} + \text{H}_2$
2. ✖ $\text{CO}_2 + \text{H}_2$
3. ✖ $\text{CO} + \text{CH}_4$
4. ✖ $\text{CO}_2 + \text{CH}_4$

Question Number : 97 Question Id : 5069615912 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Match the following and choose the correct option.

List – I

List – II

- | | |
|--------------------------------|--|
| a) Hydrogen electrode | (i) $\text{Pt} \mid \text{Fe}^{3+}, \text{Fe}^{2+}$ |
| b) Standard hydrogen electrode | (ii) $\text{Fe} \mid \text{Fe}^{2+}$ |
| c) Metal-metal ion electrode | (iii) pH measurement |
| d) Glass electrode | (iv) $\text{Pt}, \text{H}_2 (2 \text{ bar}) \mid \text{H}^+ (0.1\text{M})$ |
| | (v) $\text{Pt}, \text{H}_2 (1 \text{ bar}) \mid \text{H}^+ (1.0\text{M})$ |
| | (vi) Oxidation electrode |

Options :

1. ✖ a – iii, b – v, c – i, d – vi

2. ✖ a – v, b – iv, c – ii, d – iii

3. ✖ a – v, b – iii, c – i, d – vi

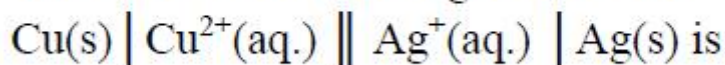
4. ✔ a – iv, b – v, c – ii, d – iii

Question Number : 98 Question Id : 5069615913 Question Type : MCQ Option Shuffling : Yes

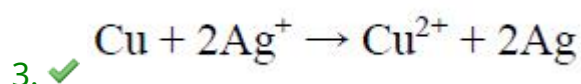
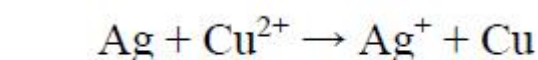
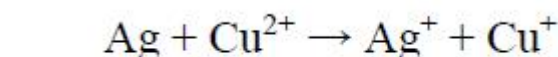
Display Question Number : Yes

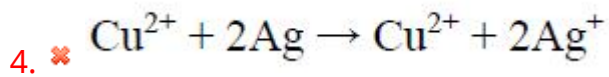
Correct Marks : 1 Wrong Marks : 0

The cell reaction of the galvanic cell



Options :





Question Number : 99 Question Id : 5069615914 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

_____ is used to reduce water pollution.

Options :

- 1. ✖ Neem
- 2. ✖ Watermelon
- 3. ✔ Water hyacinth
- 4. ✖ People

Question Number : 100 Question Id : 5069615915 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following can cause soil pollution

Options :

- 1. ✔ DDT
- 2. ✖ CO_2
- 3. ✖ NO_2
- 4. ✖ Nitrogen

ELECTRICAL AND ELECTRONICS ENGINEERING

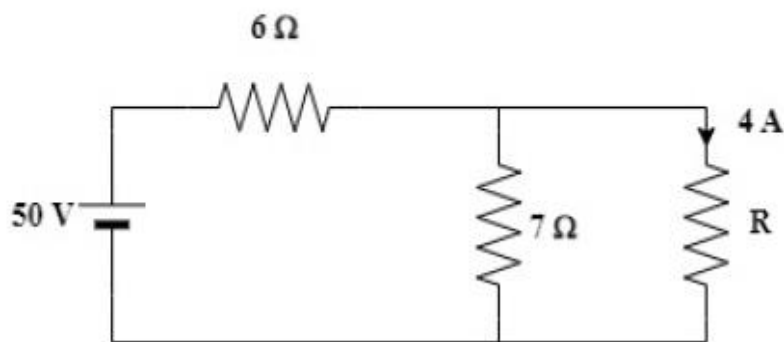
Section Id :	506961117
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	100
Number of Questions to be attempted :	100
Section Marks :	100
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	506961138
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 5069615916 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The value of resistance 'R' shown in figure is



Options :

1. ✗ $1\ \Omega$
2. ✗ $2.5\ \Omega$
3. ✓ $3.5\ \Omega$
4. ✗ $4.5\ \Omega$

Question Number : 102 Question Id : 5069615917 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Most commonly used battery in mobile phones is

Options :

1. ✓ Lithium – Ion Battery
2. ✗ Lead acid Battery
3. ✗ Nickel- Cadmium Battery
4. ✗ Alkaline Battery

Question Number : 103 Question Id : 5069615918 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The Superposition theorem is not applicable for

Options :

1. ✗ Linear circuits only
2. ✗ Non-linear circuits only
3. ✓ Non-linear circuits and power calculations
4. ✗ Linear circuits and power calculations

Question Number : 104 Question Id : 5069615919 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Pick up the magnetic material whose susceptibility is negative.

Options :

1. ✗ Paramagnetic

- 2. ✓ Diamagnetic
- 3. ✗ Ferromagnetic
- 4. ✗ Anti-ferromagnetic

Question Number : 105 Question Id : 5069615920 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The material that exhibits the piezoelectric effect is

Options :

- 1. ✗ Copper
- 2. ✓ Quartz
- 3. ✗ Silicon
- 4. ✗ Aluminium

Question Number : 106 Question Id : 5069615921 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The unit of reluctance is

Options :

- 1. ✗ Ampere turns
- 2. ✗ Weber
- 3. ✓

Ampere turns per Weber

4. ✖ Ampere turns per metre

Question Number : 107 Question Id : 5069615922 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A multiple plate capacitor has 10 plates, each area of 10 square cm, and the separation between the two plates is 1 mm with air as dielectric. The capacitance is ($\epsilon_0 = 8.854 \times 10^{-12} \text{ F/m}$)

Options :

1. ✖ $10\epsilon_0$

2. ✖ $8\epsilon_0$

3. ✖ $5\epsilon_0$

4. ✔ $9\epsilon_0$

Question Number : 108 Question Id : 5069615923 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The factor that improves the commutation in a dc generator is

Options :

1. ✖ The low contact resistance of brushes

2. ✔ Shifting of brushes in the direction of rotation of the generator

3. ✖ High inductance of the coil undergoing commutation

4. ✖

Shifting of brushes in the opposite direction of rotation of the generator

Question Number : 109 Question Id : 5069615924 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The front pitch of progressive lap winding of a 4 pole dc machine having 756 conductors and three turns per coil is

Options :

1. ✓ 63

2. ✗ 65

3. ✗ 61

4. ✗ 67

Question Number : 110 Question Id : 5069615925 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The space distribution of air gap flux density wave at no load in the dc machine is

Options :

1. ✗ Rectangular

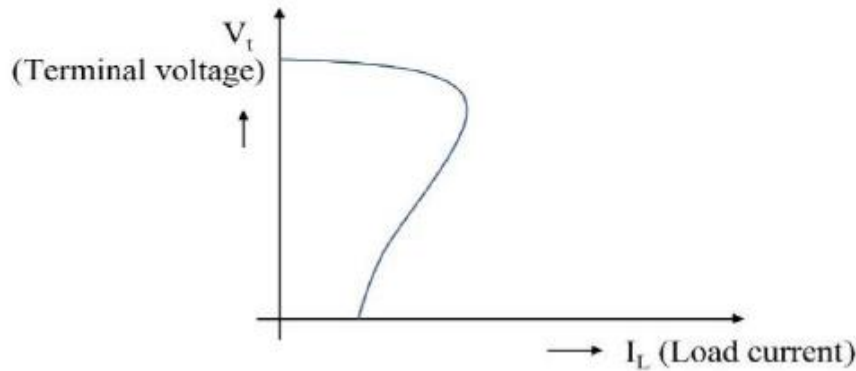
2. ✗ Sinusoidal

3. ✗ Saw tooth

4. ✓ Flat-topped

Question Number : 111 Question Id : 5069615926 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

For a self-excited dc generator, the following figure represents _____ at constant field current and speed.



Options :

1. ✖ No-load magnetization characteristic
2. ✖ Load characteristic
3. ✔ External characteristic
4. ✖ Regulation characteristic

Question Number : 112 Question Id : 5069615927 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

For which dc motor, the speed rises to dangerously high values when load torque on it increases?

Options :

1. ✖ Shunt motor
2. ✖ Series motor

Cumulatively compound motor

3. ✖

Differentially compound motor

4. ✔

Question Number : 113 Question Id : 5069615928 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Match the following:

Type of test	Nature of test
A) Swinburne's test	L) Direct test
B) Hopkinson's test	M) No-load test
C) Brake test	N) Regenerative test
	O) Separation of stray losses

Options :

A-M; B-L; C-N

1. ✖

A-M; B-N; C-L

2. ✔

A-N; B-O; C-L

3. ✖

A-N; B-L; C-O

4. ✖

Question Number : 114 Question Id : 5069615929 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In normal dc machines operating at full-load conditions, the most powerful electromagnet is

Options :

1. ✓ Field winding
2. ✗ Interpole winding
3. ✗ Interpole and compensating winding together
4. ✗ Armature winding

Question Number : 115 Question Id : 5069615930 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A dc series motor drives a fan at 800 rpm and takes 20 A of current when fed at a rated voltage of 230 V. The motor speed is to be raised to 1000 rpm by varying the voltage, while the magnetic circuit is unsaturated, the motor current at this speed is

Options :

1. ✓ 25 A
2. ✗ 31 A
3. ✗ 50 A
4. ✗ 62 A

Question Number : 116 Question Id : 5069615931 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

At constant load, the power factor at which transformer efficiency is maximum

Options :

- 1. ✖ 0.8 leading
- 2. ✖ 0.8 lagging
- 3. ✔ unity
- 4. ✖ 0.9 leading

Question Number : 117 Question Id : 5069615932 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A 10 kVA, single-phase transformer has iron loss = 300 W and full-load copper loss = 400 W. The efficiency at full load with 0.8 power factor is

Options :

- 1. ✖ 96.20%
- 2. ✖ 97.80%
- 3. ✖ 98.35%
- 4. ✔ 91.95%

Question Number : 118 Question Id : 5069615933 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If primary leakage impedance is neglected in a transformer, then

Options :

1. ✖ Core loss current lags the applied voltage V_1 by 90°
2. ✖ Exciting current lags the applied voltage V_1 by 90°
3. ✔ Magnetising current lags the applied voltage V_1 by 90°
4. ✖ Core loss current leads the applied voltage V_1 by 90°

Question Number : 119 Question Id : 5069615934 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two transformers of identical voltages but of different ratings are operating in parallel. To share the load satisfactorily,

Options :

1. ✖ Only per unit impedances must be equal
2. ✖ Only impedances must be equal
3. ✖ Impedances and X/R ratios must be equal
4. ✔ Per unit impedances and X/R ratios must be equal

Question Number : 120 Question Id : 5069615935 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Select the correct option with respect to statements related to Y/Y, three-phase connection in transformers.

- A) It is used for small H.V transformers
- B) The winding insulation is stressed to 57.7 % of line voltage
- C) This connection has oscillatory neutral problem

Options :

- 1. ✖ A and B only
- 2. ✖ B and C only
- 3. ✖ C and A only
- 4. ✔ A, B and C

Question Number : 121 Question Id : 5069615936 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A single-phase transformer is designed to operate at 240/120 V, 50 Hz. If the high voltage side of the transformer is connected to 240 V, 40 Hz, the secondary no-load voltage will be

Options :

- 1. ✔ 120 V
- 2. ✖ 150 V
- 3. ✖ 96 V
- 4. ✖ 90 V

Question Number : 122 Question Id : 5069615937 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

To eliminate 5th harmonic voltage from the phase voltage of an alternator, the coils should be short-pitched by an electrical angle of

Options :

1. ✓ 36°
2. ✗ 30°
3. ✗ 72°
4. ✗ 18°

Question Number : 123 Question Id : 5069615938 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A three-phase synchronous generator is operating at constant load, while the excitation is adjusted to give unity power factor current. If the excitation is now increased, the power factor will become

Options :

1. ✓ Lagging
2. ✗ Leading
3. ✗ Zero
4. ✗ Unity

Question Number : 124 Question Id : 5069615939 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Pick up the correct statement concerned to steam turbines used in thermal power plants.

Options :

1. ✓ In an impulse turbine only, the steam expands completely in the stationary nozzles
2. ✗ In a reaction turbine only, the steam is partially expanded in the stationary nozzles
3. ✗ In an impulse and reaction turbines, the steam completely expanded in the stationary nozzles
4. ✗ In an impulse and reaction turbines, the steam is partially expanded in the stationary nozzles

Question Number : 125 Question Id : 5069615940 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In hydroelectric power stations, the turbine used for low heads and large quantities of water is

Options :

1. ✗ Pelton wheel
2. ✓ Kaplan turbine
3. ✗ Francis turbine
4. ✗ Impeller turbine

Question Number : 126 Question Id : 5069615941 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In Pressurised Water Reactor (PWR)

Options :

1. ✖ Light water (H_2O) is used as a coolant only
2. ✖ Light water (H_2O) is used as a moderator only
3. ✖ No moderator is used
4. ✔ Light water (H_2O) is used as a coolant and a moderator

Question Number : 127 Question Id : 5069615942 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a medium or high – head hydroelectric power station, a surge tank is provided to

Options :

1. ✖ Reduce the length of penstock pipes
2. ✖ Augment water at the fore-bay
3. ✔ Control the pressure variations in the penstock pipes due to sudden load changes
4. ✖ Control the water flow through the turbine

Question Number : 128 Question Id : 5069615943 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a nominal T-network of medium transmission line, I_c (charging current) is given with usual notation by

Options :

1. ✖ $(V_r + ZI_r) \frac{Y}{2}$

2. ✖ $\left(V_r + I_r \frac{Z}{2}\right) Y$

3. ✔ $I_r \left(\frac{Z}{2}\right) Y$

4. ✖ $\left(V_s + I_r \frac{Z}{2}\right) Y$

Question Number : 129 Question Id : 5069615944 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The ratio of capacitance to neutral of each conductor in a two- conductor line to three phase line with symmetrical spacing is

Options :

1. ✖ 1:2

2. ✖ 2:1

3. ✔ 1:1

4. ✖ 1:3

Question Number : 130 Question Id : 5069615945 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In HVDC monopolar link usually the pole is

Options :

1. ✖ positive only
2. ✖ positive and negative
3. ✔ negative only
4. ✖ alternately positive and negative

Question Number : 131 Question Id : 5069615946 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The corona loss will be more for the following conditions, except

Options :

1. ✔ For larger size of the conductor
2. ✖ For low values of air density correction factor (δ)
3. ✖ For higher values of supply frequency
4. ✖ For smaller height of the conductors from the ground

Question Number : 132 Question Id : 5069615947 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The receiving end voltage for a long line under capacitive load condition is

Options :

1. ✖ less than the sending end voltage
2. ✖ equal to the sending end voltage
3. ✖ zero
4. ✔ more than the sending end voltage

Question Number : 133 Question Id : 5069615948 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Identify the wrong statement from the following

Options :

1. ✖ A metallic sheath is provided over the insulation to protect the cable from moisture
2. ✖ The most commonly used insulation in high voltage cables is impregnated paper
3. ✔ In single core cables, armouring is done in order to avoid excessive sheath losses
4. ✖ If the length of the cable increases, the insulation resistance decreases

Question Number : 134 Question Id : 5069615949 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Suspension type insulator is used for voltages beyond

Options :

1. ✔ 33 KV

- 2. ✖ 400 V
- 3. ✖ 11 KV
- 4. ✖ 6.6 KV

Question Number : 135 Question Id : 5069615950 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

For which of the following loads, the voltage drop is minimum

Options :

- 1. ✖ Load at the end of the feeder
- 2. ✔ Uniformly decreasing load
- 3. ✖ Uniformly increasing load
- 4. ✖ Uniformly distributed load

Question Number : 136 Question Id : 5069615951 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The voltage rating of transformer of pole mounted substation is normally

Options :

- 1. ✖ 132 KV/ 11 KV
- 2. ✖ 33 KV /400 KV

3. ✖ 66 KV/ 11 KV

4. ✔ 11 KV/ 400 V

Question Number : 137 Question Id : 5069615952 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For a transmission line of 200 m span between level supports, has weight of conductor 1000 kg/km with a working tension of 1500 kg the sag is

Options :

1. ✔ 3.33 m

2. ✖ 13.33 m

3. ✖ 6.66 m

4. ✖ 10 m

Question Number : 138 Question Id : 5069615953 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The size of the earth wire made to run along all low or medium voltage distribution lines using steel poles is

Options :

1. ✔ NO.8 SWG, G.I wire

2. ✖ NO.6 SWG, G.I wire

3. ✖ NO.12 SWG, G.I wire

4. ✖ NO.10 SWG, G.I wire

Question Number : 139 Question Id : 5069615954 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The current rating of MCB (Miniature circuit breaker) used in 1.5-ton 2.5 KW load air conditioner is

Options :

1. ✖ 10 amps

2. ✔ 16 amps

3. ✖ 20 amps

4. ✖ 25 amps

Question Number : 140 Question Id : 5069615955 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The current collector that can be used with different speeds under all the wind conditions and stiffness of overhead equipment (OHE) is

Options :

1. ✖ Trolley collector

2. ✔ Pantograph collector

3. ✖ Bow collector

4. ✖ Messenger collector

Question Number : 141 Question Id : 5069615956 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Identify the wrong statement from the following for electric traction

Options :

1. ✖ The greater the distance between stops, the more specific energy consumption
2. ✔ For a given schedule speed, specific energy consumption will be less for small values of acceleration and retardation
3. ✖ A steep gradient will involve more specific energy consumption
4. ✖ More the train resistance, the greater will be the specific energy consumption

Question Number : 142 Question Id : 5069615957 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Stroboscopic effect occurs in

Options :

1. ✖ Filament lamp
2. ✖ Sodium vapour lamp
3. ✔ Fluorescent lamp
4. ✖ Mercury vapour lamp

Question Number : 143 Question Id : 5069615958 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Identify the correct option from the following

- A) High frequency Induction heating is used for melting of ferrous and non-ferrous metals.
- B) In case of core less type furnace, the charge need not be in molten-state at the starting.
- C) The core type furnace is usually operated at 10 Hz.

Options :

- 1. ✖ A and B
- 2. ✖ B and C
- 3. ✖ A and C
- 4. ✔ A, B and C

Question Number : 144 Question Id : 5069615959 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Carbon arc welding is suitable particularly for

Options :

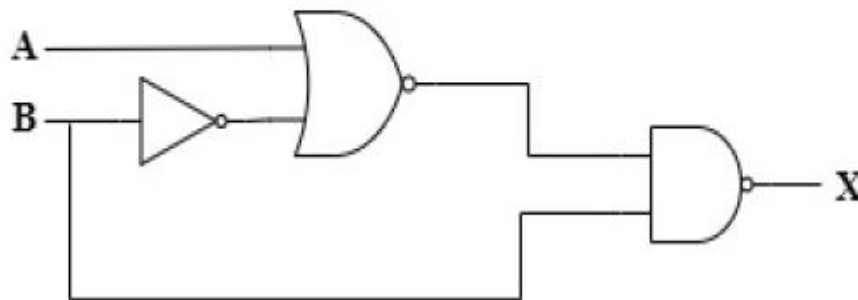
- 1. ✔ Non-Ferrous metals only
- 2. ✖ Ferrous metals only
- 3. ✖ Both Ferrous and Non-Ferrous metals
- 4. ✖ Alloys only

Question Number : 145 Question Id : 5069615960 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Boolean expression for the output 'X' of the following logic circuit is



Options :

1. ✖ $\bar{A} + B$
2. ✔ $A + \bar{B}$
3. ✖ $\bar{A} + \bar{B}$
4. ✖ $A + B$

Question Number : 146 Question Id : 5069615961 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Convert the hexadecimal number (1CD.2A) to decimal number

Options :

1. ✖ 261.162
2. ✔ 461.164
3. ✖ 643.164
4. ✖ 561.165

Question Number : 147 Question Id : 5069615962 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A shift register consists of

Options :

1. ✘ A latch
2. ✘ A byte of storage
3. ✔ A flip flop
4. ✘ Four bits of storage

Question Number : 148 Question Id : 5069615963 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is an example of non-volatile memory?

Options :

1. ✘ Cache memory
2. ✘ Static RAM
3. ✘ Dynamic RAM
4. ✔ ROM

Question Number : 149 Question Id : 5069615964 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The number of flip- flops required to build a binary counter that counts from 0 to 1023 is

Options :

- 1. ✓ 10
- 2. ✗ 9
- 3. ✗ 8
- 4. ✗ 11

Question Number : 150 Question Id : 5069615965 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A J-K flip-flop is not in the toggle condition, except

Options :

- 1. ✗ $J = 1, K = 0$
- 2. ✗ $J = 0, K = 0$
- 3. ✓ $J = 1, K = 1$
- 4. ✗ $J = 0, K = 1$

Question Number : 151 Question Id : 5069615966 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

How many AND gates and OR gates are required to realize the following logical expression?

$$Y = CD + EF + G$$

Options :

1. ✖ 1, 2

2. ✖ 2, 3

3. ✖ 3, 2

4. ✔ 2, 1

Question Number : 152 Question Id : 5069615967 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

To increase the range of voltmeter a

Options :

1. ✖ low resistance in series is connected

2. ✔ high resistance in series is connected

3. ✖ low resistance in parallel is connected

4. ✖ high resistance in parallel is connected

Question Number : 153 Question Id : 5069615968 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In measurement of 3- ϕ power by Two-wattmeter method, the difference of readings is equal to (in terms of rms values of phase voltage and current)

Options :

1. ✖ $V_r I_r \cos \phi$

2. ✖ $\sqrt{3} V_r I_r \cos \phi$

3. ✖ $V_r I_r \sin \phi$

4. ✔ $\sqrt{3} V_r I_r \sin \phi$

Question Number : 154 Question Id : 5069615969 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Dynamometer type wattmeter has

Options :

1. ✖ Cramped scale

2. ✔ Linear scale

3. ✖ Square law scale

4. ✖ Logarithmic scale

Question Number : 155 Question Id : 5069615970 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A digital voltmeter of $4\frac{1}{2}$ digit display has a 1 V range. If 1.56 V is to be measured, then it reads

Options :

1. ✖ 0.56 V

2. ✖ 1.560 V

3. ✔ 1.5600 V

4. ✖

0.5600 V

Question Number : 156 Question Id : 5069615971 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In Ramp type DVM, the pulses are counted during

Options :

1. ✖ Negative slope above zero level
2. ✔ Positive slope above zero level
3. ✖ Positive slope below zero level
4. ✖ Negative slope below zero level

Question Number : 157 Question Id : 5069615972 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Lissajous pattern on screen of CRO is an ellipse. Then

Options :

1. ✔ $f_1 = f_2$ and $0 < \phi < 90^\circ$
2. ✖ $f_1 \neq f_2$ and $0 < \phi < 90^\circ$
3. ✖ $f_1 = f_2$ and $\phi = 0$
4. ✖ $f_1 \neq f_2$ and $\phi = 90^\circ$

Question Number : 158 Question Id : 5069615973 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The complex power of a 1- ϕ ac system is $P + iQ$. Then the kVAR of the system is

Options :

1. ✖ $\sqrt{P^2 + Q^2}$

2. ✔ Q

3. ✖ P

4. ✖ $P + Q$

Question Number : 159 Question Id : 5069615974 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A resistance of $1\ \Omega$ is connected in parallel to an inductance of $1\ \text{H}$ from a source of $1\ \text{V}$, $(1/2\pi)\ \text{Hz}$. The power drawn by the circuit is

Options :

1. ✔ $1\ \text{W}$

2. ✖ $\sqrt{2}\ \text{W}$

3. ✖ $1/\sqrt{2}\ \text{W}$

4. ✖ $1/2\ \text{W}$

Question Number : 160 Question Id : 5069615975 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Find the ratio of wattmeter readings (W_1/W_2) of a 3- ϕ ac system, if the circuit power factor is $\sqrt{3}/2$.

Options :

1. ✓ 2:1
2. ✗ 1:2
3. ✗ $\sqrt{3}:2$
4. ✗ $2:\sqrt{3}$

Question Number : 161 Question Id : 5069615976 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Thevinin/Norton equivalent of a network cannot be found if

Options :

1. ✗ It contains voltage sources
2. ✗ Any of its currents/voltages depend upon the current/voltage of same network
3. ✓ Any of its currents/voltages depend upon the current/voltage of another network
4. ✗ It contains current sources

Question Number : 162 Question Id : 5069615977 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An RC parallel circuit is excited from a current impulse source of 1 mA.
What is the value of voltage across C at $t = 5 \text{ ms}$, when $R = 1 \text{ k}\Omega$ and $C = 5 \mu\text{F}$?

Options :

1. ✗ $200/e^2$
2. ✓ $200/e$
3. ✗ $200e$
4. ✗ $200e^2$

Question Number : 163 Question Id : 5069615978 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Consider two voltage forms:

$$v_1 = 100\sin(\omega t + \pi/6), v_2 = 200\cos(\omega t - \pi/3).$$

The phase angle between two voltages is

Options :

1. ✗ 90°
2. ✓ zero
3. ✗ 45°
4. ✗ 30°

Question Number : 164 Question Id : 5069615979 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The slope of 3- ϕ induction motor at maximum torque of Torque-slip characteristic is

Options :

1. ✖ negative
2. ✖ maximum
3. ✔ zero
4. ✖ positive

Question Number : 165 Question Id : 5069615980 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A 3- ϕ induction motor has a full load torque of 250 Nm at a slip of 4%. If the rotor resistance remains constant, determine the Starting torque.

Options :

1. ✖ 6550 Nm
2. ✔ 6250 Nm
3. ✖ 6850 Nm
4. ✖ 6050 Nm

Question Number : 166 Question Id : 5069615981 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A 3- ϕ , slip-ring induction motor is started with a higher external rotor resistance. Then,

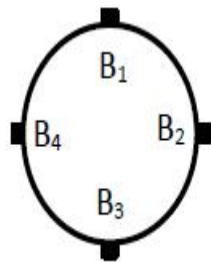
Options :

1. ✖ Starting torque decreases
2. ✔ Maximum torque remains same
3. ✖ Maximum torque increases
4. ✖ Starting torque remains same

Question Number : 167 Question Id : 5069615982 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In the figure shown below B_1 to B_4 are the brushes of compensated repulsion motor. Indicate valid connections of brushes.



Options :

1. ✖ Brushes B_4 & B_1 are short circuited and brushes B_2 & B_3 are connected to compensating winding
2. ✔ Brushes B_1 & B_3 are short circuited and brushes B_2 & B_4 are connected to compensating winding
3. ✖ Brushes B_2 & B_3 are short circuited and brushes B_4 & B_1 are connected to compensating winding
4. ✖ Brushes B_3 & B_4 are short circuited and brushes B_1 & B_2 are connected to compensating winding

Question Number : 168 Question Id : 5069615983 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If two armature coils of ac winding are short pitched by an α and coil side emfs have a phase difference of β , then pitch factor is

Options :

1. ✖ $\sin(\alpha/2)$
2. ✖ $\sin(\beta/2)$
3. ✔ $\cos(\alpha/2)$
4. ✖ $\cos(\beta/2)$

Question Number : 169 Question Id : 5069615984 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A 3- ϕ induction motor acts like a transformer with

Options :

1. ✖ Variable frequency only
2. ✖ Variable flux only
3. ✔ Variable frequency and variable voltage
4. ✖ Variable voltage only

Question Number : 170 Question Id : 5069615985 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If s is slip and R'_2 is equivalent rotor resistance, then the electrical equivalent of mechanical load on a 3- ϕ induction motor is

Options :

1. ✓ $R'_2 \left(\frac{1-s}{s} \right)$

2. ✗ $R'_2 \left(\frac{s-1}{s} \right)$

3. ✗ $R'_2 \left(\frac{s}{1-s} \right)$

4. ✗ $R'_2 \left(\frac{1}{s} \right)$

Question Number : 171 Question Id : 5069615986 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

At constant supply voltage, if frequency of a 3- ϕ synchronous motor is increased beyond rated frequency, then

Options :

1. ✗ Speed decreases

2. ✓ Flux decreases

3. ✗ Speed become zero

4. ✗ Flux increases

Question Number : 172 Question Id : 5069615987 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which type of 1- ϕ induction motor has the highest starting torque?

Options :

1. ✓ Capacitor start motor
2. ✗ Shaded pole motor
3. ✗ Split phase motor
4. ✗ Universal motor

Question Number : 173 Question Id : 5069615988 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Consider the following statements with reference to protective relays and select the correct option.

- A. The minimum relay coil current at which the relay operates is called pick-up value.
- B. If pick-up value of a relay is 7.5 A and fault current is 30 A, then its plug setting multiplier is 5.
- C. An earth fault current is generally lesser than the short circuit current.
- D. Induction relays are used with both ac and dc quantities.

Options :

1. ✗ A and B are correct
2. ✗ B and C are correct
3. ✓ A and C are correct

4. ✖ A, B and D are correct

Question Number : 174 Question Id : 5069615989 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In sub-stations, the most commonly used type of arrester is

Options :

1. ✔ Thyrite

2. ✖ Horn gap

3. ✖ Rod gap

4. ✖ Both Horn gap and Rod gap

Question Number : 175 Question Id : 5069615990 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In Resonant grounding system, the neutral is grounded through

Options :

1. ✖ Resistance

2. ✖ Solid wire

3. ✔ Arc-suppression coil

4. ✖ Reactance

Question Number : 176 Question Id : 5069615991 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

How the operating coil of the overcurrent relay is connected in a Differential relay?

- (a) In a Current differential relay, it is connected across the CT secondary circuit.
- (b) In a Current differential relay, it is connected in series with CT secondary circuit.
- (c) In a Voltage differential relay, it is connected across the CT secondary circuit.
- (d) In a Voltage differential relay, it is connected in series with CT secondary circuit.

Options :

- 1. ✖ (a) and (c) are true
- 2. ✖ (b) and (d) are true
- 3. ✖ (b) and (c) are true
- 4. ✔ (d) and (a) are true

Question Number : 177 Question Id : 5069615992 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For a given metal of round wire of diameter d , the fusing constant k depends on fusing current I as

Options :

- 1. ✖ $k = (I / d)^{2/3}$
- 2. ✖ $k = (I / d)^{3/2}$

3. ✖ $k = I/d^{2/3}$

4. ✔ $k = I/d^{3/2}$

Question Number : 178 Question Id : 5069615993 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A 3- ϕ circuit breaker is rated at 2000 MVA, 33 kV. Its making current will be about

Options :

1. ✖ 35 kA

2. ✖ 49 kA

3. ✖ 70 kA

4. ✔ 89 kA

Question Number : 179 Question Id : 5069615994 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If V_{BD} is the Breakdown voltage, then the *Impulse ratio* of a lightning arrester is defined as

Options :

1. ✖ V_{BD} under high frequency condition / V_{BD} under surge condition

2. ✖ V_{BD} under surge condition / V_{BD} under high frequency condition

3. ✔ V_{BD} under surge condition / V_{BD} under low frequency condition

4. ✖ V_{BD} under low frequency condition / V_{BD} under surge condition

Question Number : 180 Question Id : 5069615995 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The dc power output of a centre tapped full-wave rectifier is equal to _____, if I_m is the peak current and R_L is the load resistance.

Options :

1. ✖ $(2I_m^2/\pi^2)R_L$

2. ✖ $(I_m^2/2\pi^2)R_L$

3. ✖ $(I_m^2/\pi^2)R_L$

4. ✔ $(4I_m^2/\pi^2)R_L$

Question Number : 181 Question Id : 5069615996 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a positive diode Clipper circuit, assuming a sinusoidal input

Options :

1. ✖ Peak-to-peak voltage remain same

2. ✔ Negative waveform is not distorted

3. ✖ Positive waveform is not distorted

4. ✖ Average output voltage is zero

Question Number : 182 Question Id : 5069615997 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In Common base configuration of transistor amplifier

Options :

1. ✓ Current gain is nearly equal to unity
2. ✗ Voltage gain is nearly equal to unity
3. ✗ Power gain is nearly equal to unity
4. ✗ Power gain is more than unity

Question Number : 183 Question Id : 5069615998 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the feedback factor of an amplifier is 0.1 and gain without feedback is 40, then its gain with negative feedback is

Options :

1. ✗ 400
2. ✓ 8
3. ✗ 4
4. ✗ 40

Question Number : 184 Question Id : 5069615999 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Crystal oscillators are often used for providing a

Options :

1. ✓ Stable sine-wave audio generator
2. ✗ Square wave output
3. ✗ Triangular wave output
4. ✗ Frequency multiplication

Question Number : 185 Question Id : 5069616000 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The characteristics of OPAMP is

Options :

1. ✗ Low gain & high band-width
2. ✗ High gain & low band-width
3. ✗ Low input impedance & High output impedance
4. ✓ High input impedance & Low output impedance

Question Number : 186 Question Id : 5069616001 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following type of transistors is most preferred in digital and analog electronic circuits?

Options :

1. ✖ BJT
2. ✖ JFET
3. ✔ MOSFET
4. ✖ UJT

Question Number : 187 Question Id : 5069616002 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A multiplexer of 2^n inputs has

Options :

1. ✔ n select lines
2. ✖ (n-1) select lines
3. ✖ 2^{n-1} select lines
4. ✖ (n+1) select lines

Question Number : 188 Question Id : 5069616003 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In Analog to Digital Converter using binary counter

Options :

1. ✖ Input of DAC is fed to OpAmp
2. ✖

Clear signal is fed to AND gate

3. ✖ Clock signal is fed to counter

4. ✔ Analog input is fed to OpAmp

Question Number : 189 Question Id : 5069616004 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If peak voltage on a half wave rectifier circuit is 5 V and diode cut-in voltage is 0.7 V, then peak inverse voltage on diode will be

Options :

1. ✖ 3.6 V

2. ✖ 4.3 V

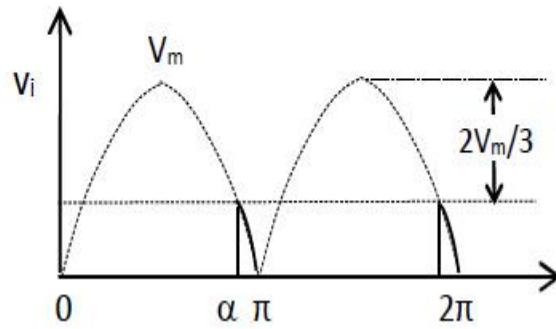
3. ✔ 5 V

4. ✖ 5.7 V

Question Number : 190 Question Id : 5069616005 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The output of a 1- ϕ full-wave converter is fed to a resistive circuit is shown in the following figure. The firing angle ' α ' is



Options :

1. ✗ $\alpha = \sin^{-1}(1/3)$
2. ✗ $\alpha = \pi - \cos^{-1}(1/3)$
3. ✓ $\alpha = \pi - \sin^{-1}(1/3)$
4. ✗ $\alpha = \cos^{-1}(1/3)$

Question Number : 191 Question Id : 5069616006 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If width of pulse is decreased in SPWM control, then

Options :

1. ✓ RMS output voltage decreases
2. ✗ RMS output voltage increases
3. ✗ Frequency of output voltage decreases
4. ✗ Frequency of output voltage increases

Question Number : 192 Question Id : 5069616007 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The firing angle of a 1- ϕ full converter is 30° . Then the input Total Harmonic Distortion (THD) is

Options :

1. ✖ 0.5
2. ✖ 1.0
3. ✔ 0.866
4. ✖ 0.707

Question Number : 193 Question Id : 5069616008 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the expressions for output voltage of step-up chopper is correct, assuming a linear variation of load current, α as duty cycle and V_S as input voltage?

Options :

1. ✖ $V_S \sqrt{\alpha}$
2. ✖ V_S / α
3. ✔ $V_S / (1 - \alpha)$
4. ✖ $V_S / \sqrt{\alpha}$

Question Number : 194 Question Id : 5069616009 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a 3- ϕ Voltage source inverter, if D_1, D_3, D_5 are top feed-back diodes and D_2, D_4, D_6 are bottom feed-back diodes, then

Options :

All diodes are anti-parallel to adjacent thyristors

1. ✓

All diodes are parallel to adjacent thyristors

2. ✗

D_1, D_3, D_5 are anti-parallel and D_2, D_4, D_6 are parallel to adjacent thyristors

3. ✗

D_1, D_3, D_5 are parallel and D_2, D_4, D_6 are anti-parallel to adjacent thyristors

4. ✗

Question Number : 195 Question Id : 5069616010 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In 180° conduction mode of 3- ϕ voltage source inverter, at any given time only

Options :

One switch conduct

1. ✗

Two switches conducts

2. ✗

Three switches conducts

3. ✓

Four switches conducts

4. ✗

Question Number : 196 Question Id : 5069616011 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following C++ data types is not derived type?

Options :

- 1. ✖ Array
- 2. ✖ Function
- 3. ✔ Float
- 4. ✖ Pointer

Question Number : 197 Question Id : 5069616012 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Register inputs of PLC are designed for

Options :

- 1. ✖ Push-button switches
- 2. ✔ Parallel communication of bytes of data
- 3. ✖ Sensors
- 4. ✖ Limit switches

Question Number : 198 Question Id : 5069616013 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The range of signed char C++ basic data type is

Options :

1. ✖ -127 to 127

2. ✖ -127 to 128

3. ✖ -128 to 128

4. ✔ -128 to 127

Question Number : 199 Question Id : 5069616014 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Calculate approximate value of hybridness of alight delivery van with the propulsion of the following ratings

Diesel engine: 110 kW; Electric motor: 23 kW

Options :

1. ✖ 82%

2. ✔ 17%

3. ✖ 21%

4. ✖ 47%

Question Number : 200 Question Id : 5069616015 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Normally, internal combustion engine is not used in

Options :

1. ✔ Electric vehicle

2. ✖ Hybrid electric vehicle

3. ✖ Plug-in hybrid electric vehicle
4. ✖ Complex hybrid electric vehicle