

Notations :

- Options shown in **green** color and with ✓ icon are correct.
- Options shown in **red** color and with ✖ icon are incorrect.

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Actual Answer Key:	Yes
Calculator:	Scientific
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Ruler Required?:	No
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Rough Sketch/Notepad Required?:	No
Protractor Required?:	No
Show Watermark on Console?:	Yes
Highlighter:	No
Auto Save on Console?:	No

Question Shuffling Allowed : Yes

Question Number : 1 Question Id : 2310981651 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one from the following having rotational motion element?

Options :

- ✓ Inertia, Damper, Spring
- ✖ Force, Pressure, Viscosity
- ✖ Mass, Spring, Friction

Question Number : 2 Question Id : 2310981652 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The nodes in a signal flow graph are represented by small _____.

Options :

1. ✓ circles

2. ✗ arrows

3. ✗ squares

4. ✗ rectangles

Question Number : 3 Question Id : 2310981653 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which one is the correct input to a controller?

Options :

1. ✓ Error signal

2. ✗ Desired variable value

3. ✗ Sensed signal

4. ✗ Signal of fixed amplitude not dependent on desired variable value

Question Number : 4 Question Id : 2310981654 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the magnitude of the unit impulse function at $t=0$?

Options :

1. ✓ Infinite

2. ✗ Unity

3. ✗ Zero

4. ✗ One

Question Number : 5 Question Id : 2310981655 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In a signal flow graph, loop which doesn't possess any common node are known as _____ loops

Options :

1. ✓ Non-touching

2. ✗ feedback gain

3. ✗ touching

4. ✗ forward gain

Question Number : 6 Question Id : 2310981656 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

When $1/T(S+1)$ is closed loop transfer function of the system, then steady state error to the unity step input is _____

Options :

1. ✓ 0.5

2. ✗ One

3. ✗ T

Question Number : 7 Question Id : 2310981657 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which unit is accepted for measurement of magnitude in Bode plots?

Options :

1. ✓ Decibel

2. ✗ Deviation

3. ✗ Decimal

4. ✗ Degree

Question Number : 8 Question Id : 2310981658 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

When pole is situated at $s = -4$ in left-hand plane, what is its representation in the Laplace domain?

Options :

1. ✓ $1/s + 4$

2. ✗ $1/s - 4$

3. ✗ $S/s - 5$

4. ✗ $S/s + 5$

Question Number : 9 Question Id : 2310981659 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the advantage of pole zero cancellation while designing controller?

Options :

1. ✓ The system order is reduced
2. ✗ The system order is increased
3. ✗ Error reduced to optimum level
4. ✗ Controller cost become low

Question Number : 10 Question Id : 2310981660 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Due to adding a pole at $s = 0$, the angle of shifting in Nyquist plot of the system will:

Options :

1. ✓ shift 90° clockwise
2. ✗ shift 180° anticlockwise
3. ✗ shift 90° anticlockwise
4. ✗ 0° shift

Question Number : 11 Question Id : 2310981661 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The Bode plot slope is expressed as:

Options :

1. ✓ -6 db/octave
2. ✗ -7 db/octave

3. ✖ -8 db/octave

4. ✖ -6 db/decade

Question Number : 12 Question Id : 2310981662 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The Nyquist stability criterion requires the polar plot of:

Options :

1. ✔ open loop transfer function

2. ✖ closed loop transfer function

3. ✖ characteristic equation

4. ✖ gain

Question Number : 13 Question Id : 2310981663 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In order to obtain improved steady state and transient response, the following compensator may be used.

Options :

1. ✔ lead lag compensator

2. ✖ lag compensator

3. ✖ lead compensator

4. ✖ Lead lead compensator

Question Number : 14 Question Id : 2310981664 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The preplanned flow graph is appropriate for which of the following systems?

Options :

1. ✓ Linear time invariant system

2. ✗ Dynamic system

3. ✗ Invertible system

4. ✗ Casual system

Question Number : 15 Question Id : 2310981665 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In spite of the percentage of negative feedback, the control system still have a problem of instability due to:

Options :

1. ✓ components used have non-linearity

2. ✗ system has large negative phase angle at high frequencies

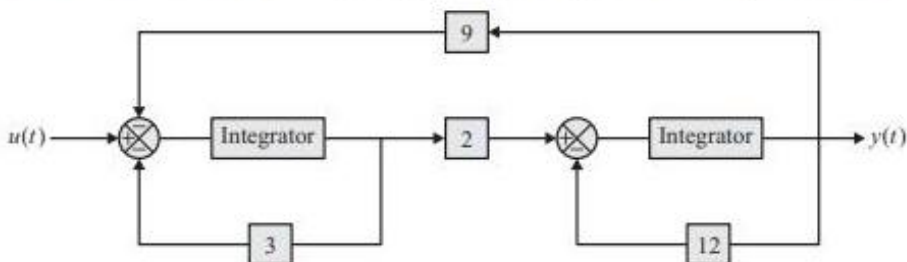
3. ✗ Approximation in mathematical analysis

4. ✗ dynamic equations not being known exactly

Question Number : 16 Question Id : 2310981666 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Find the transfer function $G(s) = Y(s)/U(s)$ of the system below.



Options :

1. ✓ $\frac{1}{27\left(1+\frac{s}{6}\right)\left(1+\frac{s}{9}\right)}$

2. ✗ $\frac{1}{18\left(1+\frac{s}{12}\right)\left(1+\frac{s}{3}\right)}$

3. ✗ $\frac{1}{27\left(1+\frac{s}{12}\right)\left(1+\frac{s}{9}\right)}$

4. ✗ $\frac{1}{27\left(1+\frac{s}{9}\right)\left(1+\frac{s}{3}\right)}$

Question Number : 17 Question Id : 2310981667 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

If poles are added at the origin, then the polar plot gets shifted by _____ at $\omega = 0$.

Options :

1. ✓ -90°

2. ✗ -180°

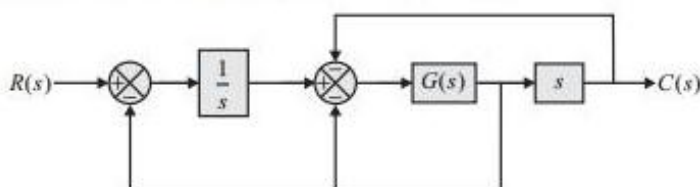
3. ✗ -60°

4. ✗ -45°

Question Number : 18 Question Id : 2310981668 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

If the transfer function is $C(s)/R(s) = S / S^2 + S + 2$, then $G(s) = ?$



Options :

1. ✓ 3

2. ✗ 1

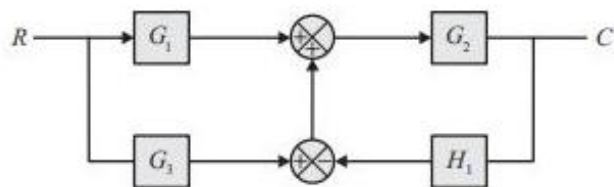
3. ✗ 1/S

4. ✗ $-S/(S^3 + S^2 - S - 2)$

Question Number : 19 Question Id : 2310981669 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the overall transfer function of the block diagram given below?



Options :

1. ✓ $\frac{G_1 G_2 + G_2 G_3}{1 + G_2 H_1}$ 2. ✗ $\frac{G_1 G_2 + G_2 G_3}{1 + G_3 H_1}$ 3. ✗ $\frac{G_1 G_3 + G_2 G_3}{1 + G_2 G_3 H_1}$ 4. ✗ $G_1 G_2 + G_2 G_3$

Question Number : 20 Question Id : 2310981670 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The term 'burden' is referred for which type of transformer?

Options :

1. ✓ Current transformer

3. ✖ Power transformer

4. ✖ Distribution transformer

Question Number : 21 Question Id : 2310981671 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

For the measurement of three-phase reactive power, the current coil and pressure coil are connected across:

Options :

1. ✔ current coil in one phase & pressure coil across remaining two phases

2. ✖ pressure coil in one phase & current coil across remaining two phases

3. ✖ current coil in one phase & pressure coil is in another phase

4. ✖ Current coil & pressure coil across any two phase

Question Number : 22 Question Id : 2310981672 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In a wattmeter, the nature of pressure coil & of current coil, respectively, is:

Options :

1. ✔ resistive, inductive

2. ✖ inductive, resistive

3. ✖ inductive, inductive

4. ✖ inductive, capacitive

Question Number : 23 Question Id : 2310981673 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Why are laminated conductors used in the current coil of electro-dynamometer type wattmeter?

Options :

1. ✓ To reduce eddy current loss

2. ✗ To reduce hysteresis

3. ✗ To reduce friction loss

4. ✗ To reduce copper loss

Question Number : 24 Question Id : 2310981674 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Ideally, what is the phase angle between the flux of shunt magnet & the voltage applied of energy meter?

Options :

1. ✓ 90°

2. ✗ 45°

3. ✗ 30°

4. ✗ 0°

Question Number : 25 Question Id : 2310981675 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A DC supply is applied to an inductive load. What is the nature of the power factor?

Options :

1. ✓ Unity

2. ✖ Lagging

3. ✖ Leading

4. ✖ Zero lagging

Question Number : 26 Question Id : 2310981676 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The 'scale' of PMMC and Moving Iron (MI) instrument, respectively, is:

Options :

1. ✔ linear, non-linear

2. ✖ non-linear, non-linear

3. ✖ linear, linear

4. ✖ non-linear, linear

Question Number : 27 Question Id : 2310981677 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following is a 'null' type of instrument?

Options :

1. ✔ Potentiometer

2. ✖ Voltmeter

3. ✖ Ammeter

Question Number : 28 Question Id : 2310981678 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A balanced wheatstone bridge has the following values associated: $R_1=20K$, $R_2=40K$, $R_3=R_x$ and $R_4=100K$. The value of R_3 is:

Options :

1. ✓ 50 K

2. ✗ 20 K

3. ✗ 30 K

4. ✗ 40 K

Question Number : 29 Question Id : 2310981679 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The unknown low resistance of metal measured by:

Options :

1. ✓ Kelvin's double bridge

2. ✗ Maxwell bridge

3. ✗ Hay's bridge

4. ✗ Wien bridge

Question Number : 30 Question Id : 2310981680 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Two voltmeters A & B have resistance of $4000\ \Omega$ & $8000\ \Omega$ respectively. They are connected in series across 240 V supply. The voltage across these voltmeters will be:

1. ✓ $V_a = 80 \text{ V}$, $V_b = 160 \text{ V}$

2. ✗ $V_a = 33 \text{ V}$, $V_b = 207 \text{ V}$

3. ✗ $V_a = 196 \text{ V}$, $V_b = 44 \text{ V}$

4. ✗ $V_a = 120 \text{ V}$, $V_b = 120 \text{ V}$

Question Number : 31 Question Id : 2310981681 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following bridges has high 'quality factor'?

Options :

1. ✗ Owen's bridge

2. ✗ Maxwell bridge

3. ✓ Hay's bridge

4. ✗ Anderson's bridge

Question Number : 32 Question Id : 2310981682 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the internal resistance of voltmeter & ammeter respectively?

Options :

1. ✓ high, low

2. ✗ low, high

3. ✖ 10, low

4. ✖ high, high

Question Number : 33 Question Id : 2310981683 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the multiplying factor of a wattmeter of 10 A, 300 V & having full scale deflection of 750 W?

Options :

1. ✔ 4

2. ✖ 8

3. ✖ 2

4. ✖ 10

Question Number : 34 Question Id : 2310981684 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Energy can be measured by using which of the following meters?

Options :

1. ✔ Watt-hour meter

2. ✖ Wattmeter

3. ✖ Frequency meter

4. ✖ Multimeter

Question Number : 35 Question Id : 2310981685 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The sensitivity of a $40\ \mu\text{A}$ meter movement is:

Options :

1. ✓ $25\ \text{K}\Omega/\text{V}$

2. ✗ $50\ \text{K}\Omega/\text{V}$

3. ✗ $40\ \text{K}\Omega/\text{V}$

4. ✗ $20\ \text{K}\Omega/\text{V}$

Question Number : 36 Question Id : 2310981686 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A voltmeter has 50 scale divisions & it can measure up to 50 V. Each scale division reads half division. What is the resolution of voltmeter?

Options :

1. ✓ 0.5 volt

2. ✗ 1 volt

3. ✗ 0.05 volt

4. ✗ 1.5 volt

Question Number : 37 Question Id : 2310981687 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Two meters A & B require $30\ \mu\text{A}$ & $40\ \mu\text{A}$ respectively to give full-scale deflection. Then which option is true?

Options :

1. ✓ A is more sensitive

2. ✗ B is more sensitive

4. ✖ Both are equally sensitive

Question Number : 38 Question Id : 2310981688 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A 1 mA meter movement with an internal resistance of $100\ \Omega$ is to be converted into 0-100 mA ammeter. What is the value of the shunt resistance required?

Options :

1. ✔ $1.01\ \Omega$ 2. ✖ $2.01\ \Omega$ 3. ✖ $3.01\ \Omega$ 4. ✖ $4.0\ \Omega$

Question Number : 39 Question Id : 2310981689 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

An ammeter reads full scale current of 50 A with a 2% full scale error. Determine accuracy error when the ammeter reads 10 A.

Options :

1. ✔ 10%

2. ✖ 30%

3. ✖ 25%

4. ✖ 20%

Correct Marks : 2 Wrong Marks : 0.66

In the current transformer, the burden is expressed in the form of:

Options :

1. ✓ VA rating
2. ✗ Voltage, Current & power factor rating
3. ✗ primary current rating
4. ✗ secondary current rating

Question Number : 41 Question Id : 2310981691 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The basic principle of Q-meter is:

Options :

1. ✓ series resonance
2. ✗ parallel resonance
3. ✗ mutual inductance
4. ✗ mutual capacitance

Question Number : 42 Question Id : 2310981692 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the Lissajous pattern if inputs to the CRO are $5\cos(50t+\phi)$ & $5\sin(50t+\phi)$ for X & Y respectively?

Options :

1. ✓ A circle

2. ✖ A straight line

3. ✖ A horizontal line

4. ✖ An ellipse

Question Number : 43 Question Id : 2310981693 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The largest number that can be read by the $3\frac{1}{2}$ digital voltmeter is:

Options :

1. ✔ 1999

2. ✖ 9991

3. ✖ 1199

4. ✖ 9911

Question Number : 44 Question Id : 2310981694 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A (0-600V) voltmeter has an error of $\pm 2\%$ of full-scale deflection. When the true value is 60 V, the span of the reading would be:

Options :

1. ✔ 48 V-66 V

2. ✖ 40 V-80 V

3. ✖ 28 V-31V

Question Number : 45 Question Id : 2310981695 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the phase angle between the voltage & current if two wattmeters read identical values in the three-phase power measurement?

Options :

1. ✓ 0°

2. ✗ 45°

3. ✗ 90°

4. ✗ 180°

Question Number : 46 Question Id : 2310981696 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In the forward bias of a diode, its depletion region:

Options :

1. ✓ gets narrowed

2. ✗ gets larger

3. ✗ remains same

4. ✗ Saturated

Question Number : 47 Question Id : 2310981697 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

If both the junctions of a BJT are forward-biased, then the BJT is in the _____ region.

Options :

1. ✓ saturation
2. ✗ cutoff
3. ✗ linear
4. ✗ breakdown

Question Number : 48 Question Id : 2310981698 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The purpose of an 'enable input' on a multiplexer chip is:

Options :

1. ✓ activate the entire chip
2. ✗ activate one half of the chip
3. ✗ apply Vcc
4. ✗ To reset chip

Question Number : 49 Question Id : 2310981699 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Two input terminals of an op-amp are branded as

Options :

1. ✓ inverting and non-inverting
2. ✗ differential and non-differential

3. ✖ positive and negative

4. ✖ high and low

Question Number : 50 Question Id : 2310981700 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following converts an irregularly-shaped waveform into a regular-shaped waveform?

Options :

1. ✔ Schmitt trigger

2. ✖ Comparator

3. ✖ Voltage limiter

4. ✖ MOSFET

Question Number : 51 Question Id : 2310981701 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

If the voltage reference of +2.5 V is given, then we can get a voltage of reference +15 V by a/an:

Options :

1. ✔ non-inverting amplifier

2. ✖ inverting amplifier

3. ✖ differential amplifier

4. ✖ instrumentation amplifier

Question Number : 52 Question Id : 2310981702 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The prepp An commutation is applicable in the case of:

Options :

1. ✓ DC circuits only
2. ✗ AC circuits only
3. ✗ Both AC and DC circuits
4. ✗ Neither AC or DC circuits

Question Number : 53 Question Id : 2310981703 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

When compared, the N-channel MOSFET is better than the P-channel MOSFET because:

Options :

1. ✓ it has faster operation
2. ✗ it consumes less power
3. ✗ it is TTL-compatible
4. ✗ it has low noise levels

Question Number : 54 Question Id : 2310981704 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

To start oscillations in a circuit, the loop gain must be more than one when the phase shift around the loop is:

Options :

1. ✓ 360 degrees
2. ✗ 90 degrees

3. ✖ 45 degrees

4. ✖ 180 degrees

Question Number : 55 Question Id : 2310981705 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

For a MOSFET, $V_{gs}=4V$, $I_{dd}=6A$, and $I_d=3A$. Calculate the pinch off voltage V_p .

Options :

1. ✔ 13.65

2. ✖ 12.5

3. ✖ 6

4. ✖ 7.8

Question Number : 56 Question Id : 2310981706 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The realization of Full adder circuit is done by using_____

Options :

1. ✔ two half adder & one OR gate

2. ✖ one half adder & one OR gate

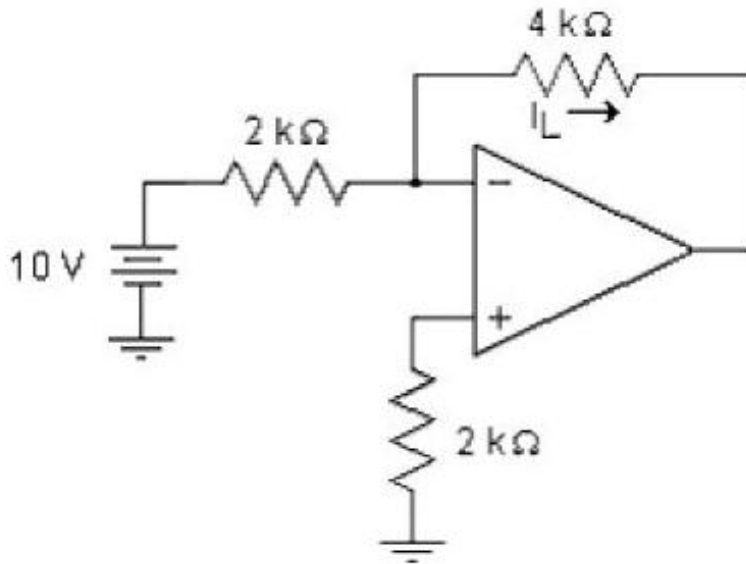
3. ✖ one half adder & two OR gate

4. ✖ two OR gate

Question Number : 57 Question Id : 2310981707 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Determine I_L for the following circuit.



Options :

1. ✓ 5 mA

2. ✗ 4 mA

3. ✗ 2 mA

4. ✗ 6 mA

Question Number : 58 Question Id : 2310981708 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The 16-bit accumulator is denoted as:

Options :

1. ✓ AX

2. ✗ DL

3. ✗ AL

4. ✗ AH

Question Number : 59 Question Id : 2310981709 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

How many PN junctions are used in a UJT?

Options :

1. ✓ One PN junction

2. ✗ Two PN junctions

3. ✗ Three PN junctions

4. ✗ Four PN junctions

Question Number : 60 Question Id : 2310981710 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

What is the time constant of (τ) of series RC circuit?

Options :

1. ✓ RC

2. ✗ R/C

3. ✗ C/R

4. ✗ 1/RC

Question Number : 61 Question Id : 2310981711 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following transistors is affected by the static electricity?

Options :

1. ✓ MOSFET

2. ✖ PFI

3. ✖ UJT

4. ✖ N-P-N transistor

Question Number : 62 Question Id : 2310981712 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The cut-in voltage & Forward voltage in silicon diode respectively are

Options :

1. ✔ 0.7 V, 1 V

2. ✖ 0.7 V, 0.6 V

3. ✖ 1 V, 0.7 V

4. ✖ 0.7 V, 0.7 V

Question Number : 63 Question Id : 2310981713 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Harmonics in three-phase inverters maybe reduced with the help of:

Options :

1. ✔ both passive and active filters

2. ✖ passive filters

3. ✖ active filters

Question Number : 64 Question Id : 2310981714 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In a three-phase bridge inverter, the gating signals for the three phases have a phase difference of:

Options :

1. ✓ 120°

2. ✗ 60°

3. ✗ 90°

4. ✗ 180°

Question Number : 65 Question Id : 2310981715 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A semiconductor device TRIAC contains:

Options :

1. ✓ two SCRs connected in reverse parallel

2. ✗ two BJTs connected in series

3. ✗ two SCRs connected in series

4. ✗ two SCRs connected in parallel

Question Number : 66 Question Id : 2310981716 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In a three-phase full-controlled converter, by using six SCRs, commutation occurs every _____.

Options :

1. ✓ 60°

2. ✗ 90°

3. ✗ 45°

4. ✗ 180°

Question Number : 67 Question Id : 2310981717 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A circuit consumes average power of 4 kW. If the reactive power associated with the circuit is 3 kVAR lagging, then the power factor of the circuit is:

Options :

1. ✓ 0.8 lagging

2. ✗ 0.75 lagging

3. ✗ 0.6 lagging

4. ✗ 0.7 lagging

Question Number : 68 Question Id : 2310981718 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A capacitor C connected to a single phase, 50 Hz, 240 V AC supply draws a current of 24 A. What would be the current if the voltage applied is changed to 200 V at 60 Hz?

Options :

1. ✗ 6A

2. ✗ 12A

3. ✓ 24A

4. ✗ 10A

Question Number : 69 Question Id : 2310981719 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

MMF required to produce flux of 1 mWb in a magnetic circuit having 100 turns is 50. If the number of turns is doubled and the current is reduced by 50%, without altering the other dimensions of the circuit, then the flux produced will be:

Options :

1. ✗ 2 mwb

2. ✓ 1 mwb

3. ✗ 0.5 mwb

4. ✗ 2.5 mwb

Question Number : 70 Question Id : 2310981720 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Reluctance of magnetic flux path is 2000 AT/Wb. If the length of flux path is reduced by 50% and its area of cross section is increased by 50%, then its reluctance becomes _____ the original reluctance.

Options :

1. ✗ three times

2. ✓ one third of

3. ✗ twice

4. ✗ half

Correct Marks : 2 Wrong Marks : 0.66

Current through and voltage across an element in an AC circuit is given by:

$$i = 10 \sin(\omega t - 30^\circ)$$

$$v = 100 \sin(\omega t + 30^\circ)$$

The real power consumed by the circuit is:

Options :

1. ✖ 500 W

2. ✔ 250 W

3. ✖ 1000 W

4. ✖ 750 W

Question Number : 72 Question Id : 2310981722 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

An RL circuit when connected to an AC source of 200 V, 50 Hz draws a current of 20 A; it takes a current of 25 A when applied with a DC voltage of 200 V. What would be the current if the frequency of the ac supply is decreased to 40 Hz?

Options :

1. ✖ 27.5 A

2. ✔ 21.5 A

3. ✖ 10.5 A

4. ✖ 18.5 A

Question Number : 73 Question Id : 2310981723 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

An AC voltage is given by $v = 100 \sin \left(314t + \frac{\pi}{2} \right)$. With $\omega t = 0$ as reference, time taken by the voltage to reach 100 V for the first time is:

1. ✖ 5 ms

2. ✔ 10 ms

3. ✖ 20 ms

4. ✖ 15 ms

Question Number : 74 Question Id : 2310981724 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

An alternating current varying sinusoidally having an average value of 20 A flowing for one second through a resistance produces a heat of 400 joules. What would be the heat produced if a DC current of 20 A flows through the same resistance for the same time?

Options :

1. ✖ $\frac{3200}{\pi}$

2. ✔ $\frac{3200}{\pi^2}$

3. ✖ $\frac{6400}{\pi^2}$

4. ✖ $\frac{6400}{\pi}$

Question Number : 75 Question Id : 2310981725 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

An AC current flowing through a capacitor of 10 μF is given by $i = 10\sin 100 t$. Then, the rms value of voltage across the capacitor in volts is:

Options :

1. ✔ $\frac{1000}{\sqrt{2}}$

2. ✖ 1000

3. ✖ 500

4. ✖ $1000\sqrt{2}$

Question Number : 76 Question Id : 2310981726 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Two voltage sources, $v_1 = 90 \sin(\omega t + 45^\circ)$ and $v_2 = 90 \sin(\omega t + 225^\circ)$ are connected in series. What is the rms value of the resultant voltage?

Options :

1. ✔ Zero

2. ✖ 90 V

3. ✖ 180 V

4. ✖ 45 V

Question Number : 77 Question Id : 2310981727 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

An ac voltage is applied to an RL series circuit with resistance 50Ω and reactance 50Ω . When applied with a sinusoidal varying voltage, the current flowing will lag behind the voltage by angle of:

Options :

1. ✖ 30 degree

2. ✖ 60 degree

3. ✔ 45 degree

Question Number : 78 Question Id : 2310981728 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A 200 V, 50 Hz inductive circuit takes a current of 20 A at a lagging power factor of 0.8. Inductive reactance of the circuit is:

Options :

1. ✓ 6Ω

2. ✗ 10Ω

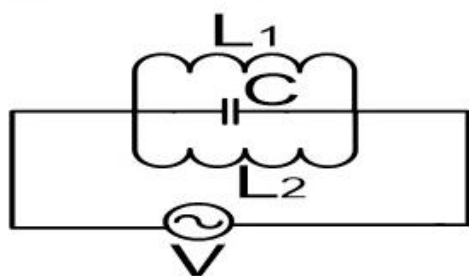
3. ✗ 8Ω

4. ✗ 18Ω

Question Number : 79 Question Id : 2310981729 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

RMS value of current flowing through L_1 , L_2 and C in the circuit below are 0.5 A, 0.3 A and 0.2 A, respectively. Total current drawn from the source is:



Options :

1. ✗ 1 A

2. ✓ 0.6 A

3. ✗ 0.4 A

Question Number : 80 Question Id : 2310981730 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

An RLC series circuit with a resistance of $50\ \Omega$, inductance of 0.01 H and capacitance of 100 pF is applied with an ac voltage of 200 V . Quality factor of the circuit at resonance is:

Options :

1. ✖ 400

2. ✔ 200

3. ✖ 800

4. ✖ 100

Question Number : 81 Question Id : 2310981731 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A circuit draws an active power of 1000 W and reactive power of 1000 VAR from a 200 V , 50 Hz ac source. RMS value of current drawn from the source is:

Options :

1. ✖ $\frac{5}{\sqrt{2}}\text{ A}$

2. ✔ $5\sqrt{2}\text{ A}$

3. ✖ 10 A

4. ✖ 5 A

Question Number : 82 Question Id : 2310981732 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A series LCR circuit is resonant at 100 kHz and has a quality factor of 50 . The lower half power frequency is:

1. ✖ 98 kHz

2. ✔ 99 kHz

3. ✖ 49 kHz

4. ✖ 49.5 kHz

Question Number : 83 Question Id : 2310981733 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

RLC series circuit consists of $R = 5 \Omega$, $C = 50 \mu\text{F}$ and a variable L . An ac voltage of 100 V at 1000 rad/s is applied and L is varied till the voltage across R is maximum. Value of L required is:

Options :

1. ✔ 0.02 H

2. ✖ 0.2 H

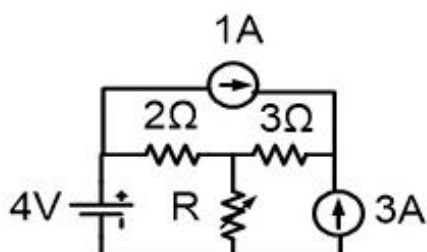
3. ✖ 2 H

4. ✖ 20 H

Question Number : 84 Question Id : 2310981734 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In the circuit shown, what is the maximum power transferred to R ?



Options :

1. ✖ 36 W

2. ✔ 18 W

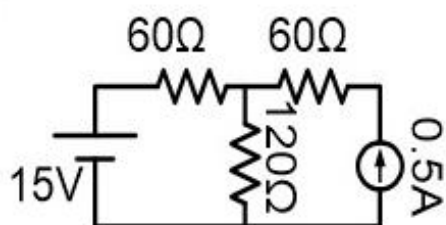
3. ✖ 9 W

4. ✖ 12 W

Question Number : 85 Question Id : 2310981735 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In the circuit shown below, power supplied by voltage source is:



Options :

1. ✖ 3.75 W

2. ✔ -3.75 W

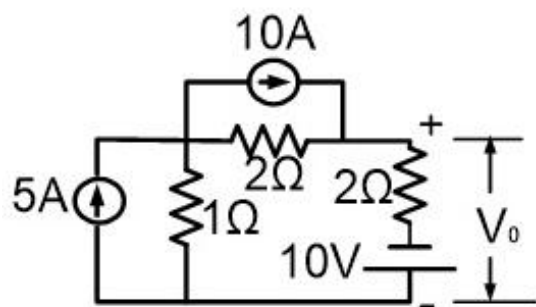
3. ✖ -7.5 W

4. ✖ 7.5 W

Question Number : 86 Question Id : 2310981736 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The value of the output voltage V_0 in the circuit is:



Options :

1. ✗ 8 V

2. ✗ 6 V

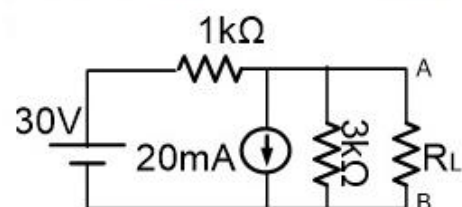
3. ✓ 4 V

4. ✗ 2 V

Question Number : 87 Question Id : 2310981737 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

For the circuit shown below, nortons (short circuit) current that will flow between the load terminals A and B is:



Options :

1. ✗ 12 mA

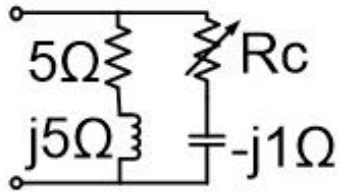
2. ✗ 5 mA

3. ✗ 1 mA

4. ✓ 10 mA

Correct Marks : 2 Wrong Marks : 0.66

What is the value of R_c in the circuit to yield resonance?



Options :

1. ✖ 1 Ω

2. ✔ 3 Ω

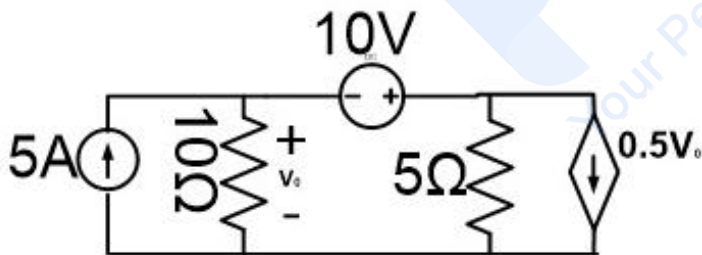
3. ✖ 6 Ω

4. ✖ 5 Ω

Question Number : 89 Question Id : 2310981739 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Power of the dependent source in the circuit below is:



Options :

1. ✖ 18.75 W

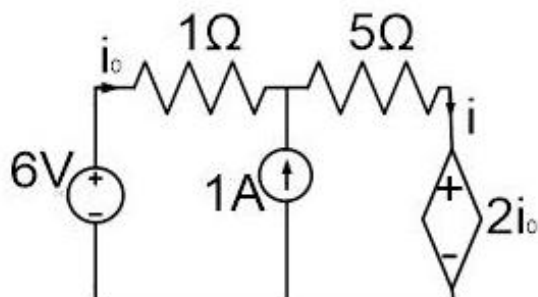
2. ✔ -25.78 W

3. ✖ 46.25 W

Question Number : 90 Question Id : 2310981740 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The value of i_0 and i in the circuit are:



Options :

1. ✗ $\frac{1}{8} A$ and $-\frac{9}{8} A$

2. ✓ $\frac{1}{8} A$ and $\frac{9}{8} A$

3. ✗ $-\frac{1}{4} A$ and $\frac{5}{4} A$

4. ✗ $\frac{1}{4} A$ and $-\frac{5}{4} A$

Question Number : 91 Question Id : 2310981741 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The force of interaction between 2 charges spaced 10 cm apart in a vacuum is 3 N. If the same charges are separated by the same distance in a kerosene of relative permittivity 3, what is the corresponding force of interaction?

Options :

1. ✗ 3 N

2. ✓ 1 N

3. ✗ 9 N

Question Number : 92 Question Id : 2310981742 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

2 infinite plane sheets (conductors) are separated by a distance d . The first charge is $+\sigma$ C per unit area, 2nd is $-\sigma$ C per unit area. Then the electric field intensity at any point between them is given by:

Options :

1. ✓ σ/ϵ_0

2. ✗ $\sigma\epsilon_0$

3. ✗ $2\sigma/\epsilon_0$

4. ✗ $\sigma/2\epsilon_0$

Question Number : 93 Question Id : 2310981743 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Two point charges Q_1 and Q_2 having charges $5\mu\text{C}$ and $-5\mu\text{C}$ respectively, are placed along a straight line 10 m apart. Where should the 3rd charge of $4\mu\text{C}$ be placed such that it is subjected to no force?

Options :

1. ✓ 5 m from Q_2 to the right

2. ✗ 5 m from Q_1 to the right

3. ✗ 15 m from Q_1 to the right

4. ✗ 15 m from Q_2 to the right

Question Number : 94 Question Id : 2310981744 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

www.prepp.in An uniform electric field is directed along the positive x axis and its magnitude is 60 N/C. What is the potential difference between 2 points at distance $x_1 = 5$ cm and $x_2 = 15$ cm from the origin?

Options :

1. ✖ 9 V

2. ✔ 6 V

3. ✖ 4.5 V

4. ✖ 12 V

Question Number : 95 Question Id : 2310981745 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A positive charge of 10×10^{-10} C is placed at the origin. What is the pd between two points a and b (V_{ba}) which are at distance of 0.2 m and 0.4 m, respectively.

Options :

1. ✔ 22.5 V

2. ✖ 2.25 V

3. ✖ 9 V

4. ✖ 18 V

Question Number : 96 Question Id : 2310981746 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Three point charges are located in free space. $Q_1 = 5 \times 10^{-8}$ C at (0,0), $Q_2 = 4 \times 10^{-8}$ C at (3,0), $Q_3 = -6 \times 10^{-8}$ C at (0,4).

What is the total electric flux over a sphere of 5 m radius with centre as (0,0)?

Options :

1. ✖ 15×10^{-8} C

2. ✖ $9 \times 10^{-8} \text{ C}$ 3. ✖ $5 \times 10^{-8} \text{ C}$ 4. ✔ $3 \times 10^{-8} \text{ C}$

Question Number : 97 Question Id : 2310981747 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Two capacitors C1 and C2 are in parallel. C1 = 100 μF , C2 = 50 μF . What is the total stored energy with a steady applied voltage of 1000 V?

Options :

1. ✖ 150 J

2. ✔ 75 J

3. ✖ 25 J

4. ✖ 50 J

Question Number : 98 Question Id : 2310981748 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Three point charges are located in free space. $Q_1 = 5 \times 10^{-8} \text{ C}$ at (0,0), $Q_2 = 4 \times 10^{-8} \text{ C}$ at (3,0), $Q_3 = -6 \times 10^{-8} \text{ C}$ at (0,4). Then, the potential at A(3,4)m is:

Options :

1. ✔ zero

2. ✖ 4 V

3. ✖ 5 V

Question Number : 99 Question Id : 2310981749 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A dielectric slab of flat surface of relative permittivity 2 is disposed with its surface normal to a uniform field with flux density 2 C/m^2 . The slab occupies a volume of 0.1 m^3 and is uniformly polarised. Total dipole moment of slab is:

Options :

1. ✖ 0.2C m

2. ✔ 0.1C m

3. ✖ 0.15C m

4. ✖ 0.3C m

Question Number : 100 Question Id : 2310981750 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Two parallel conducting plates 5 cm apart and situated in air are connected to a source of constant pd of 100 kV. Electric field intensity between the plates in the air gap is:

Options :

1. ✖ 10 kV/cm

2. ✔ 20 kV/cm

3. ✖ 50 kV/cm

4. ✖ 30 kV/cm

Question Number : 101 Question Id : 2310981751 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

An electric field in free space is $E = (5z^3/\epsilon_0)\bar{a}_z$ V/m. Then, total charge contained within a sphere of 3 m radius, centred at the origin is:

Options :

1. ✓ 972π

2. ✗ 672π

3. ✗ 375π

4. ✗ 1250π

Question Number : 102 Question Id : 2310981752 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A uniform volume charge density of $80 \mu\text{C}/\text{m}^3$ is present throughout the region $8\text{mm} < r < 10\text{mm}$. If the volume charge density is 0 for $0 < r < 8\text{mm}$, then the total charge inside the spherical surface $r = 10 \text{ mm}$ is:

Options :

1. ✗ 328 pC

2. ✓ 164 pC

3. ✗ 656 pC

4. ✗ 82 pC

Question Number : 103 Question Id : 2310981753 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Two parallel conducting plates 3 cm apart and situated in air are connected to a source of constant voltage of 72 kV. A mica sheet of relative permittivity 4, and thickness 1 cm is introduced between the plates. What is the field intensity in air gap?

Options :

1. ✗ 8 kV/cm

2. ✖ 16 kV/cm

3. ✔ 32 kV/cm

4. ✖ 16 kV/cm

Question Number : 104 Question Id : 2310981754 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

An electric field in free space is given as $E = x\bar{a}_x + 4z\bar{a}_y + 4y\bar{a}_z$. If potential at (1, 1, 1) is 10 V, then the potential at (3,3,3) is:

Options :

1. ✖ 26V

2. ✔ -26V

3. ✖ 32V

4. ✖ -32V

Question Number : 105 Question Id : 2310981755 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A core having relative permeability μ_r and length l meters is wound with N number of turns and a current of I amperes flows through it. Then, the flux density produced in the core in wb/m^2 can be expressed as

Options :

1. ✖ $\frac{\mu_0 \mu_r l}{NI}$

2. ✖ $\frac{\mu_0 NI l}{\mu_r}$

3. ✖ $\mu_0 \mu_r l$

4. ✔ $\frac{\mu_0 \mu_r NI}{l}$

Question Number : 106 Question Id : 2310981756 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The magnetic flux linked with a single turn coil is given by the equation $\varphi = 6t^2 + 4t + 6$. The emf induced in the coil in the fourth second will be:

Options :

1. ✔ 12 V

2. ✖ 52 V

3. ✖ 24 V

4. ✖ 6 V

Question Number : 107 Question Id : 2310981757 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Inductance of a solenoid of 2500 turns wound uniformly over a length of 0.5 m cylindrical paper tube of 4 cm diameter in air medium is around:

Options :

1. ✔ 18 mH

2. ✖ 180 mH

3. ✖ 1.8 H

Question Number : 108 Question Id : 2310981758 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The value of electric field E at $P(\rho = 2, \varphi = 40^\circ, Z = 3)$ is given as $E = 100a_\rho - 200a_\varphi + 300a_z$ V/m. What is the incremental work required to move a $20 \mu\text{C}$ charge a distance of $6 \mu\text{m}$ in the direction of a_φ ?

Options :

1. ✗ -36 nJ

2. ✗ 24 nJ

3. ✓ -12 nJ

4. ✗ 12 nJ

Question Number : 109 Question Id : 2310981759 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Determine the constant c such that the vector $F = (2x + 3ay)i + (2y + 3bx)j + (2x + cz)k$ will be solenoidal.

Options :

1. ✗ -2

2. ✓ -4

3. ✗ -6

4. ✗ -8

Question Number : 110 Question Id : 2310981760 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Curl of vector field $H = 3y\bar{u}_x + (z - x)\bar{u}_y + 3y\bar{u}_z$ at the origin is:

Options :

1. ✓ $\sqrt{20}$

2. ✗ $\sqrt{10}$

3. ✗ $\sqrt{40}$

4. ✗ $\sqrt{50}$

Question Number : 111 Question Id : 2310981761 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A vector is represented in a cylindrical coordinate system as $r = r^2 \bar{u}_r$. Its divergence at the origin is:

Options :

1. ✓ 0

2. ✗ 6

3. ✗ 4

4. ✗ 2

Question Number : 112 Question Id : 2310981762 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A toroidal coil of 1000 turns has a mean radius of 20 cm and a radius for the winding of 2 cm. The average self-inductance with air core and with an inner core of relative permeability of 800, respectively are:

Options :

1. ✗ 1.26 H and 1 mH

2. ✓ 1.26 mH and 1 H

3. ✖ 1 H and 1.26 mH

4. ✖ 1 mH and 1.26 H

Question Number : 113 Question Id : 2310981763 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Two coils with negligible resistance and of self-inductance of 0.2 H & 0.1 H, respectively are connected in parallel. If their mutual inductance is 0.1 H, then the possible effective inductance are:

Options :

1. ✔ 0.02 H and 0.1 H

2. ✖ 0.5 H and 0.1 H

3. ✖ 0.02 H and 0.5 H

4. ✖ 0.1 H and 0.5 H

Question Number : 114 Question Id : 2310981764 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A vector is given by $5x^3 \left(\sin \frac{\pi x}{2} \right) a_x$. Its divergence at $x=1$ is:

Options :

1. ✖ 10

2. ✔ 15

3. ✖ 5

4. ✖ 20

Correct Marks : 2 Wrong Marks : 0.66

If a function $f(t)$ is shifted by a in time, then it is correctly represented as:

Options :

1. ✓ $f(t-a)u(t-a)$

2. ✗ $f(t-a)u(t)$

3. ✗ $f(t)u(t-a)$

4. ✗ $f(t)u(t)$

Question Number : 116 Question Id : 2310981766 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Value of ramp function $r(t-3)$ at $t=3$ is:

Options :

1. ✗ 3

2. ✓ zero

3. ✗ unity

4. ✗ 6

Question Number : 117 Question Id : 2310981767 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Scaling by a factor a in the time domain corresponds to scaling s by a factor of _____ in the Laplace domain.

Options :

1. ✗ a

2. ✓ $1/a$

3. ✗ a^2

4. ✗ $1/a^2$

Question Number : 118 Question Id : 2310981768 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The value of unit impulse function $\delta(t)$ for $t > 0$ is:

Options :

1. ✓ zero

2. ✗ unity

3. ✗ infinite

4. ✗ constant

Question Number : 119 Question Id : 2310981769 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following system is linear?

Options :

1. ✗ $y(t)=2x(t)+3$

2. ✗ $y(t)=5x^2(t)$

3. ✓ $y(t)=tx(t)$

Question Number : 120 Question Id : 2310981770 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

If $u(t) = 1$, for $t > 0$
 $= 0$, for $t < 0$

The value of the function $5u(t) - 4u(-t) + 0.8u(1-t)$ at $t=0.8$ is:

Options :

1. ✖ 3.8

2. ✖ 7.8

3. ✔ 5.8

4. ✖ 9.8

Question Number : 121 Question Id : 2310981771 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Z transform of unit step function is:

Options :

1. ✖ $\frac{Z}{Z+1}$

2. ✔ $\frac{Z}{Z-1}$

3. ✖ $\frac{Z-1}{Z+1}$

4. ✖ $\frac{1}{Z-1}$

Question Number : 122 Question Id : 2310981772 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Find the $g(t)$ given by $g(t) = \int_{-\infty}^t f(t)dt$, when $f(t) = Ae^{-at}u_{-1}(t)$.

Options :

1. ✔ $\frac{A}{a}(1 - e^{-at})u_{-1}(t)$ for all t

2. ✖ $\frac{a}{A}(1 - e^{-at})u_{-1}(t)$ for all t

3. ✖ $\frac{A}{a}(1 - e^{-At})u_{-1}(t)$ for all t

4. ✖ $\frac{a}{A}(1 - e^{-At})u_{-1}(t)$ for all t

Question Number : 123 Question Id : 2310981773 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Derivative of the function $f(t) = Ae^{-at}u_{-1}(t)$ is:

Options :

1. ✖ $A[u_0(t) - ae^{at}u_{-1}(t)]$

2. ✖ $A[u_0(t) - e^{-at}u_{-1}(t)]$

3. ✔ $A[u_0(t) - ae^{-at}u_{-1}(t)]$

4. ✖ $A[u_0(t) - e^{at}u_{-1}(t)]$

Question Number : 124 Question Id : 2310981774 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

If $f(t)$ and its first derivative are Laplace transformable, then initial value of $f(t)$ is given by

Options :

1. ✗ $\lim_{t \rightarrow 0} f(t) = \lim_{s \rightarrow 0} sF(s)$

2. ✓ $\lim_{t \rightarrow 0} f(t) = \lim_{s \rightarrow \infty} sF(s)$

3. ✗ $\lim_{s \rightarrow 0} f(t) = \lim_{s \rightarrow 0} sF(s)$

4. ✗ $\lim_{s \rightarrow 0} f(t) = \lim_{s \rightarrow \infty} sF(s)$

Question Number : 125 Question Id : 2310981775 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A function is shifted in time domain by t_0 , then its Fourier transform $F(j\omega)$ is multiplied by a factor:

Options :

1. ✓ $e^{-j\omega t_0}$

2. ✗ $e^{j\omega t_0}$

3. ✗ $e^{-j\omega/t_0}$

4. ✗ $e^{j\omega/t_0}$

Question Number : 126 Question Id : 2310981776 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A periodic function $f(t)$ having a time period of T repeats itself after half time period $T/2$. Fourier series of $f(t)$ would contain:

Options :

1. ✗ cosine terms only

2. ✖ odd terms only

4. ✔ even harmonic terms only

Question Number : 127 Question Id : 2310981777 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The impulse response of a LTI systems is given by $h(n) = (1/2)^n u(n + 3)$. System is:

Options :

1. ✖ unstable and causal

2. ✔ stable and non-causal

3. ✖ unstable and non-causal

4. ✖ stable and causal

Question Number : 128 Question Id : 2310981778 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following property holds good for the system $y(t) = \sin(4t) x(t)$?

Options :

1. ✖ Time invariant

2. ✔ Causal

3. ✖ Unstable

Question Number : 129 Question Id : 2310981779 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A voltage of $e^{-\alpha t} u_{-1}(t)$ is applied to a 1Ω resistor. The total energy absorbed by the resistor is:

Options :

1. ✔ $\frac{1}{2\alpha} \text{ J}$

2. ✖ $\frac{1}{\alpha} \text{ J}$

3. ✖ $\frac{2}{\alpha} \text{ J}$

4. ✖ $\frac{3}{2\alpha} \text{ J}$

Question Number : 130 Question Id : 2310981780 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Convolution of a function $f(t)$ with unit impulse function $\delta(t)$ is:

Options :

1. ✔ $f(t)$

2. ✖ $f(t) \delta(t)$

3. ✖ $\delta(t)$

4. ✖ $f(0) \delta(t)$

Question Number : 131 Question Id : 2310981781 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A sinusoidal current with a period of 2 s and an amplitude of 100 mA begins at $t = 4$ s. The equation for the current is:

1. ✓ $i(t) = [100 \sin \pi(t - 4)]u_{-1}(t - 4)$

2. ✗ $i(t) = [100 \sin \pi(t - 4)]u_{-1}(t + 4)$

3. ✗ $i(t) = [100 \sin \pi(t - 4)]u_{-1}(t)$

4. ✗ $i(t) = [100 \sin(t - 4)]u_{-1}(t - 4)$

Question Number : 132 Question Id : 2310981782 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

$x(t) = e^{at}u(t)$ and $h(t) = u(t)$. The convolution integral $g(t) = x(t) * h(t)$ is:

Options :

1. ✗ $\frac{1}{a}(e^{at} + 1)$

2. ✓ $\frac{1}{a}(e^{at} - 1)$

3. ✗ $\frac{1}{a}(e^{-at} - 1)$

4. ✗ $\frac{1}{a}(e^{-at} + 1)$

Question Number : 133 Question Id : 2310981783 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of the following represents convolution of functions $f_1(t)$ and $f_2(t)$?

Options :

1. ✗ $\int_0^\pi f_1(t)f_2(\tau - t)d\tau$

2. ✓ $\int_0^t f_1(t - \tau) f_2(\tau) d\tau$

3. ✗ $\int_0^t f_1(t - \tau) f_2(t) d\tau$

4. ✗ $\int_0^t f_1(t + \tau) f_2(\tau) d\tau$

Question Number : 134 Question Id : 2310981784 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Which of these functions does NOT have FT?

Options :

1. ✓ $1/t$

2. ✗ $e^{-t} u(-t)$

3. ✗ $|t|u(t)$

4. ✗ $te^{-3t}u(t)$

Question Number : 135 Question Id : 2310981785 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Fourier transform of a function $f(t)$ is $F(j\omega)$. The value for $f(t)$ at $t=0$ is equal to _____ times the area under its Fourier transform $F(j\omega)$.

Options :

1. ✗ $1/\pi$

2. ✓ $1/2\pi$

3. ✖ $\pi/2$

4. ✖ π

Question Number : 136 Question Id : 2310981786 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Inverse LT of $F(s) = \frac{2s+1}{(s+1)^2(s+2)}$ is:

Options :

$$f(t) = 3e^{-t} - te^{-t} - 3e^{-2t} \text{ for } t \geq 0,$$

1. ✔ $=0 \text{ for } t < 0$

$$(t) = 3e^{-t} - 3te^{-t} - 3e^{-2t} \text{ for } t \geq 0,$$

2. ✖ $=0 \text{ for } t < 0$

$$(t) = 3e^{-3t} - te^{-t} - 3e^{-2t} \text{ for } t \geq 0,$$

3. ✖ $=0 \text{ for } t < 0$

$$(t) = 3e^{-3t} - 3te^{-t} - 3e^{-2t} \text{ for } t \geq 0,$$

4. ✖ $=0 \text{ for } t < 0$

Question Number : 137 Question Id : 2310981787 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Z transform of $\frac{1}{s(s+1)}$ is:

Options :

1. ✖ $\frac{Z(1 - e^{-T})}{(Z - 1)(Z - e^{-2T})}$

2. ✖ $\frac{Z(1 - e^{-2T})}{(Z - 1)(Z - e^{-T})}$

3. ✖ $\frac{Z(1 - e^{-2T})}{(Z - 1)(Z - e^{-2T})}$

4. ✔ $\frac{Z(1 - e^{-T})}{(Z - 1)(Z - e^{-T})}$

Question Number : 138 Question Id : 2310981788 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

If the number of poles in a lap wound generator is doubled, then the generated emf:

Options :

1. ✔ remains constant

2. ✖ increases four times

3. ✖ becomes twice

4. ✖ reduces by 50%

Question Number : 139 Question Id : 2310981789 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The maximum torque that a three phase cage type induction motor can develop during running condition is

Options :

1. ✖ equal to starting torque

2. ✔ much higher than full load torque.

3. ✖ less than starting torque

4. ✖ equal to full load torque

Question Number : 140 Question Id : 2310981790 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In a synchronous motor, the excitation is adjusted to get induced voltage equal to the applied voltage. Such an excitation is called:

Options :

1. ✖ under excitation

2. ✔ normal excitation

3. ✖ over excitation

4. ✖ abnormal excitation

Question Number : 141 Question Id : 2310981791 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In shunt generator, inter-pole winding carries the:

Options :

1. ✖ short circuit current

2. ✔ armature current

3. ✖ shunt field current

4. ✖ rated current

Question Number : 142 Question Id : 2310981792 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

An over compounded DC generator is supplying a load at 220 V. If the machine terminal voltage is 220.5 V when the load current is 10 A, what will be the machine terminal voltage when the load is 600 A?

Options :

1. ✓ 232 V

2. ✗ 208 V

3. ✗ 222 V

4. ✗ 220 V

Question Number : 143 Question Id : 2310981793 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

If the supply voltage is changed by 5% for 3 Φ induction motor, it's torque will have a change of:

Options :

1. ✗ 5%

2. ✓ 10%

3. ✗ 20%

4. ✗ 25%

Question Number : 144 Question Id : 2310981794 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The air gap flux of an alternator has a 3rd harmonic component along with fundamental component. If the coils are short pitched by an angle α for fundamental wave, then the pitch factor corresponding to the 3rd harmonic wave is:

Options :

1. ✗ $\cos\left(\frac{3\alpha}{4}\right)$

2. ✓ $\cos\left(\frac{2\alpha}{3}\right)$

3. ✗ $\cos\left(\frac{4\alpha}{3}\right)$

Question Number : 145 Question Id : 2310981795 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

A single phase 5 MVA, 11/220 kV transformer gives a full load efficiency of 90% when supplying a unity power factor load. Full load copper loss and iron loss are equal at 80% of load when supplying a lagging load of power factor 0.8. Its iron losses and full load copper losses, respectively, are:

Options :

1. ✗ 244 kW and 156 kW

2. ✓ 156 kW and 244 kW

3. ✗ 456 kW and 244 kW

4. ✗ 156 kW and 844 kW

Question Number : 146 Question Id : 2310981796 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3 Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In a DC two wire feeder, the voltage drop per wire is 4%. The transmission efficiency of the feeder is:

Options :

1. ✓ 92%

2. ✗ 96%

3. ✖ 98%

4. ✖ 88%

Question Number : 147 Question Id : 2310981797 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

The open circuit and short circuit impedance of a line are 100Ω each. The characteristic impedance of the line is:

Options :

1. ✖ $100/\sqrt{2} \Omega$ 2. ✔ 100Ω 3. ✖ $100\sqrt{2} \Omega$ 4. ✖ 50Ω

Question Number : 148 Question Id : 2310981798 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

Surge impedance of a 400 kV, 100 km transmission line is 400Ω . For a length of 300 km, surge impedance of the line will be:

Options :

1. ✔ 400Ω 2. ✖ 800Ω 3. ✖ 200Ω 4. ✖ 1200Ω

Correct Marks : 2 Wrong Marks : 0.66

The cost of a transmission line conductor at 400 kV is ₹200/metre. At 800 kV, cost per metre will be:

Options :

1. ✖ ₹100

2. ✖ ₹200

3. ✔ ₹50

4. ✖ ₹400

Question Number : 150 Question Id : 2310981800 Question Type : MCQ Option Shuffling : Yes Negative Marks Display Text : 2/3
Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.66

In a 66 kV overhead line there are 3 units in the string of insulator. The voltage across the string is:

Options :

1. ✖ $66\sqrt{3}$ kV

2. ✔ $66/\sqrt{3}$ kV

3. ✖ 66 kV

4. ✖ 132 kV