National Testing Agency

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Electrical Power and Energy Engineering

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Electrical Power and Energy Engineering

Section Id :	17807026
Section Number :	1
Section type :	Online
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Number of Questions :	75
Number of Questions to be attempted :	75
Section Marks :	300
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	17807043
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 1780701892 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The valid positive, negative and zero sequence impedance (in p.u.), respectively, for a 220 kV, fully transposed three-phase transmission line, from the given choices :

1. 0.2, 0.2 and 0.2
2. 0.15, 0.15 and 0.35
3. 1.1, 0.15 and 0.08
4. 0.1, 0.3 and 0.1

Options :
1780707501. 1
1780707502. 2
1780707503. 3
1780707504. 4

Question Number : 2 Question Id : 1780701893 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Which of the following faults would not result in zero sequence current?

1. L-L-G faults
2. L-L faults
3. L-G faults
4. Any short circuit fault

Options :
1780707505. 1
1780707506. 2
1780707507. 3
1780707508. 4

Question Number : 3 Question Id : 1780701894 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A 100 MW steam station uses coal of calorific value 6400 kcal/kg. Thermal efficiency of the station is 30% and electrical efficiency is 92%. Calculate the coal consumption per hour when the station is delivering its full rated output. (1 kJ = 239 cal).

1. 48687 kg
2. 78687 kg
3. 88687 kg
4. 58687 kg

Options :
1780707509. 1
1780707510. 2
1780707511. 3
1780707512. 4

Question Number : 4 Question Id : 1780701895 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

In overhead system, the comparison of various systems is made on the basis of maximum voltage between _____

1. conductor and earth
2. insulator and neutral
3. neutral and earth
4. tower and earth

Options :
1780707513. 1
1780707514. 2
1780707515. 3
1780707516. 4

Question Number : 5 Question Id : 1780701896 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A single phase overhead transmission line delivers 1100 kW at 33 kV at 0·8 p.f. lagging. The total resistance and inductive reactance of the line are 10 Ω and 15 Ω respectively. Determine the sending end voltage.

1. 33,709 V
2. 66,709 V
3. 43,709 V
4. 53,709 V

Options :

1780707517. 1
1780707518. 2
1780707519. 3
1780707520. 4

Question Number : 6 Question Id : 1780701897 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A power MOSFET has three treminals called:

1. collector, emitter and base
2. drain, source and base
3. collector, emitter and gate
4. drain, source and gate

Options :

1780707521. 1
1780707522. 2
1780707523. 3
1780707524. 4

Question Number : 7 Question Id : 1780701898 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A single phase full controlled rectifier has a 100 V ac supply. If the firing angle is 30 degrees, for a highly inductive RL load with 10 A of average current. What should be the value of the load resistance (in Ohms)?

1. 11
2. 22
3. 7.8
4. 15.6

Options :

1780707525. 1
1780707526. 2
1780707527. 3
1780707528. 4

Question Number : 8 Question Id : 1780701899 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	**List-II**
(Power System Stability Phenomenon)	**(Dominant features)**
(A) Voltage Stability	(I) Power System Stabilizer
(B) Transient Stability	(II) Damping Power
(C) Oscillatory instability	(III) 'Angle' stability
(D) Steady State Dynamics	(IV) Reactive power

Choose the **correct** answer from the options given below:

1. (A) - (IV), (B) - (III), (C) - (II), (D) - (I)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (IV), (B) - (III), (C) - (I), (D) - (II)

Options :

1780707529. 1

1780707530. 2

1780707531. 3

1780707532. 4

Question Number : 9 Question Id : 1780701900 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Two voltage sources with emf 5 V and 10 V respectively have a series connected 10 Ohm resistance in each. These branches of resistance, connected voltage sources are connected in parallel to supply a resistive load. What should be the values of Thevenin's equivalent voltage and Thevenin's resistance across the connected load?

1. 7.5 V, 5 Ohm
2. 7.5 V, 10 Ohm
3. 10 V, 10 Ohm
4. 5 V, 10 Ohm

Options :

1780707533. 1

1780707534. 2

1780707535. 3

1780707536. 4

Question Number : 10 Question Id : 1780701901 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A parallel RLC circuit is tuned to achieve resonance with R = 1 Ω, L = 1 mH and C = 2.5 Micro Farad. What is the resonance frequency and equivalent impedance offered by the parallel combination of inductor L and capacitor C?

1. 10/π kHz, 1 Ω
2. 20 kHz, 1 Ω
3. 10/π kHz, infinite (Open circuit)
4. 20 kHz, zero (short circuit)

Options :

1780707537. 1

1780707538. 2

1780707539. 3

1780707540. 4

Question Number : 11 Question Id : 1780701902 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following is correct regarding working principle of single phase induction machines?

1. A rotating magnetic field is produced by concentrated coils of single phase and rotor follows the field
2. A rotating magnetic field is produced by distributed coils of single phase and another distributed coil with capacitor in series is needed to give a starting torque
3. A rotating magnetic field is produced by distributed coils of single phase and usually rotor has another coil with capacitor in series to start the motor
4. A rotating magnetic field is produced by concentrated coils of single phase and usually rotor has another concentrated coil with capacitor in series to start the motor

Options :

1780707541. 1

1780707542. 2

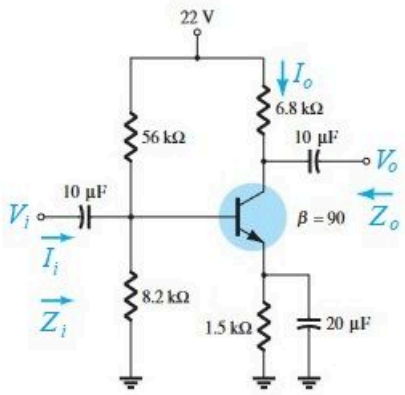
1780707543. 3

1780707544. 4

Question Number : 12 Question Id : 1780701903 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

For the network of the figure shown below, the value of I_E is ____



1. 1.41 mA
2. 1.68 mA
3. 1.87 mA
4. 1.74 mA

Options :

1780707545. 1

1780707546. 2

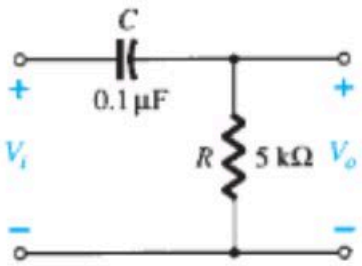
1780707547. 3

1780707548. 4

Question Number : 13 Question Id : 1780701904 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

For the network given in the figure shown below, determine the cut-off frequency.



1. 636.5 Hz
2. 318.5 Hz
3. 418.5 Hz
4. 236.5 Hz

Options :

1780707549. 1

1780707550. 2

1780707551. 3

1780707552. 4

Question Number : 14 Question Id : 1780701905 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

For an op-amp having a slew rate of 2 V/μs, what is the maximum closed-loop voltage gain that can be used when the input signal varies by 0.5 V in 10 μs?

1. 20
2. 40
3. 50
4. 30

Options :

1780707553. 1

1780707554. 2

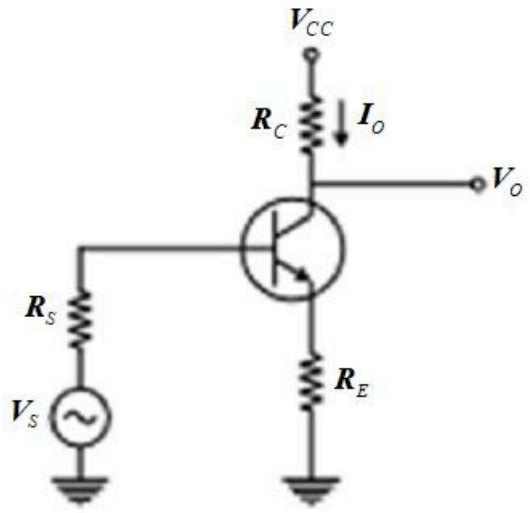
1780707555. 3

1780707556. 4

Question Number : 15 Question Id : 1780701906 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The feedback topology in the amplifier circuit (the base bias circuit is not shown for simplicity) in the figure given below is_____.



1. Voltage shunt feedback
2. Current series feedback
3. Current shunt feedback
4. Voltage series feedback

Options :

1780707557. 1

1780707558. 2

1780707559. 3

1780707560. 4

Question Number : 16 Question Id : 1780701907 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Without any additional circuitry, an 8:1 MUX can be used to obtain:

1. all functions of 3 variables and some but not all of 4 variables
2. some but not all Boolean functions of 3 variables
3. all functions of 3 variables but none of 4 variables
4. all functions of 4 variables

Options :

1780707561. 1

1780707562. 2

1780707563. 3

1780707564. 4

Question Number : 17 Question Id : 1780701908 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

J and K inputs of a negative edge-triggered Flip-Flop are tied to logic `1′ state. If the Flip-Flop were clocked by a 100 kHz waveform, the Q-output will_____.

1. always be in logic `1′ state
2. be a 50 kHz waveform
3. be a 100 kHz waveform
4. be a 200 kHz waveform

Options :

1780707565. 1

1780707566. 2

1780707567. 3

1780707568. 4

Question Number : 18 Question Id : 1780701909 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

An eight-bit D/A converter has a step size of 20 mV. The full-scale output voltage in this case would be_____.

1. 5.1 V
2. 5.8 V
3. 1.1 V
4. 3.3 V

Options :

1780707569. 1

1780707570. 2

1780707571. 3

1780707572. 4

Question Number : 19 Question Id : 1780701910 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In a critically damped system_____.

1. oscillations just disappear
2. oscillations are prominent
3. no oscillations are observed
4. oscillations are sustained

Options :

1780707573. 1

1780707574. 2

1780707575. 3

1780707576. 4

Question Number : 20 Question Id : 1780701911 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Transformer zero voltage regulation occurs at_____.

1. unity power factor
2. leading power factor
3. lagging power factor
4. zero power factor

Options :

1780707577. 1

1780707578. 2

1780707579. 3

1780707580. 4

Question Number : 21 Question Id : 1780701912 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The damping ratio of a series RLC circuit can be expressed as:

1. $R^2C/(2L)$
2. $2L/(R^2C)$
3. $\frac{R\sqrt{C/L}}{2}$
4. $2R\sqrt{C/L}$

Options :

1780707581. 1

1780707582. 2

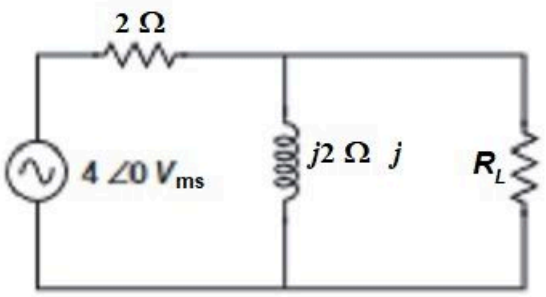
1780707583. 3

1780707584. 4

Question Number : 22 Question Id : 1780701913 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In the given circuit, the maximum power (in Watts) that can be transferred to the load R_L is _____.



1. 1.655 Watt
2. 2.655 Watt
3. 0.655 Watt
4. 3.655 Watt

Options :

1780707585. 1

1780707586. 2

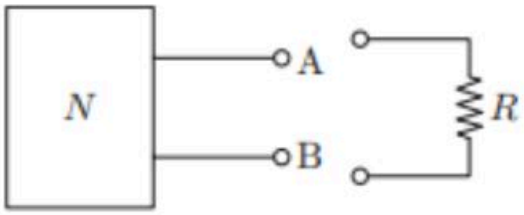
1780707587. 3

1780707588. 4

Question Number : 23 Question Id : 1780701914 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Norton equivalence of the network `N' to the left of AB is a Norton current source (I_N) = 5A from B to A, Norton equivalence resistance (R_N) = 3 Ω and current through 'R' when it is connected across AB = 2A. What is the value of resistance 'R' in ohms?



1. 3
2. 9
3. 6
4. 4.5

Options :

1780707589. 1

1780707590. 2

1780707591. 3

1780707592. 4

Question Number : 24 Question Id : 1780701915 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In a thyristor, the magnitude of anode current will _____.

1. increase if the gate current is increased
2. decrease if the gate current decreased
3. increase if the gate current is decreased
4. not change with variation in gate current

Options :

1780707593. 1

1780707594. 2

1780707595. 3

1780707596. 4

Question Number : 25 Question Id : 1780701916 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The difference between the half-power frequencies is called the:

1. quality factor
2. resonant frequency
3. bandwidth
4. cutoff frequency

Options :

1780707597. 1

1780707598. 2

1780707599. 3

1780707600. 4

Question Number : 26 Question Id : 1780701917 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

What is the value of directivity of an isotropic antenna?

1. 1 dB
2. 0 dB
3. infinity
4. π dB

Options :

1780707601. 1

1780707602. 2

1780707603. 3

1780707604. 4

Question Number : 27 Question Id : 1780701918 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A transformer on no load is switched on to a source of voltage. It will draw a current, which is_____.

1. Same as steady state magnetising current
2. Several times as steady state magnetising current depending on the initial state of residual flux in the transformer core
3. Several times as steady state magnetising current independent on the initial state of residual flux in the transformer core
4. Twice the steady state magnetising current provided the core has no residual flux

Options :

1780707605. 1

1780707606. 2

1780707607. 3

1780707608. 4

Question Number : 28 Question Id : 1780701919 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The inrush current of transformer at no load is maximum if supply is switched on_____.

1. at zero voltage
2. at maximum voltage value
3. at 0.66 times voltage value
4. at half voltage value

Options :

1780707609. 1

1780707610. 2

1780707611. 3

1780707612. 4

Question Number : 29 Question Id : 1780701920 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If two induction motors A and B are identical except that the air-gap of motor A is 50% greater than that of motor B then:

1. the no load power factor of A will be better than that of B
2. the no load power factor of A will be poorer than that of B
3. the core losses of A will be more than those of B
4. the operating flux of A will be smaller than that of B

Options :

1780707613. 1

1780707614. 2

1780707615. 3

1780707616. 4

Question Number : 30 Question Id : 1780701921 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The main cause of crawling in the three phase induction motor is:

1. Improper design of stator lamination
2. Low voltage supply
3. High Loads
4. Harmonics developed in motor

Options :

1780707617. 1

1780707618. 2

1780707619. 3

1780707620. 4

Question Number : 31 Question Id : 1780701922 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The rotor power output of a three phase induction motor is 15kW and the corresponding slip is 4%. The rotor ohmic loss is_____.

1. 600 W
2. 625 W
3. 650 W
4. 700 W

Options :

1780707621. 1

1780707622. 2

1780707623. 3

1780707624. 4

Question Number : 32 Question Id : 1780701923 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A megger is used for the measurement of_____.

1. Low value resistance
2. Medium value resistance
3. High value resistance particularly insulation resistance
4. High value capacitance

Options :

1780707625. 1

1780707626. 2

1780707627. 3

1780707628. 4

Question Number : 33 Question Id : 1780701924 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The maximum possible speeds in rpm at which an alternator can be driven to generate voltages at 60 Hz and 50 Hz are respectively:

1. 2000, 2400
2. 3000, 3600
3. 3600, 3000
4. 2400, 2000

Options :

1780707629. 1

1780707630. 2

1780707631. 3

1780707632. 4

Question Number : 34 Question Id : 1780701925 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The power generated by two plants are P1 = 50 MW and P2 = 40 MW. If the loss coefficients are;

B11 = 0.001, B22 = 0.0025 and B12 = −0.0005, then the calculated power loss will be_____.

1. 5.5 MW
2. 6.5 MW
3. 4.5 MW
4. 7.5 MW

Options :

1780707633. 1

1780707634. 2

1780707635. 3

1780707636. 4

Question Number : 35 Question Id : 1780701926 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let r be the root of the equation $x^2 + 2x + 6 = 0$.

Then the value of the expression $(r+2)(r+3)(r+4)(r+5)$ is_____.

1. 51
2. -51
3. 126
4. -126

Options :

1780707637. 1

1780707638. 2

1780707639. 3

1780707640. 4

Question Number : 36 Question Id : 1780701927 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The partial derivative of the function

$f(x,y,z) = e^{1-x\cos y} + xze^{-1(1+y^2)}$

with respect to *x* at the point (1, 0, e) is_____.

1. −1
2. 1
3. 0
4. $\frac{1}{e}$

Options :

1780707641. 1

1780707642. 2

1780707643. 3

1780707644. 4

Question Number : 37 Question Id : 1780701928 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

For a vector field $\vec{A}$, which one of the following is False?

1. $\nabla \times \vec{A}$ is another vector field
2. $\vec{A}$ is solenoidal if $\nabla \times \vec{A} = 0$
3. $\vec{A}$ is irrotational if $\nabla^2 \vec{A} = 0$
4. $\nabla \times (\nabla \times \vec{A}) = \nabla(\nabla . \vec{A}) - \nabla^2 \vec{A}$

Options :

1780707645. 1

1780707646. 2

1780707647. 3

1780707648. 4

Question Number : 38 Question Id : 1780701929 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If *E* denotes expectation, the variance of a random variable *X* is given by_____.

1. $E[X^2] - E^2[X]$
2. $E[X^2] + E^2[X]$
3. $E[X^2]$
4. $E^2[X]$

Options :

1780707649. 1

1780707650. 2

1780707651. 3

1780707652. 4

Question Number : 39 Question Id : 1780701930 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A quadratic function of two variables is given as $f(x_1,x_2) = {x_1}^2 + 2{x_2}^2 + 3x_1 + 3x_2 + x_1x_2 + 1$. The magnitude of maximum rate of change of the function at the point (1,1) is_____.

(Rounded off to the nearest integer)

1. 6
2. 8
3. 10
4. 14

Options :
1780707653. 1
1780707654. 2
1780707655. 3
1780707656. 4

Question Number : 40 Question Id : 1780701931 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

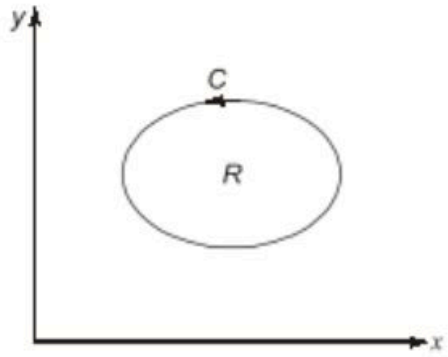
Three points in the x-y planes are (-1, 0.8), (0, 2.2) and (1, 2.8). The value of the slope of the best fit straight line in the least square sense is_____.

1. 0.5
2. 1
3. 1.5
4. 2

Options :
1780707657. 1
1780707658. 2
1780707659. 3
1780707660. 4

Question Number : 41 Question Id : 1780701932 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Let R be a region in the first quadrant of the xy plane enclosed by a closed curve C considered in counter-clockwise direction. Which of the following expressions does not represent the area of the region R?



1. $\oint_C xdx$
2. $\frac{1}{2}\oint_C (xdy - ydx)$
3. $\iint_R dxdy$
4. $\oint_C ydx$

Options :

1780707661. 1

1780707662. 2

1780707663. 3

1780707664. 4

Question Number : 42 Question Id : 1780701933 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

For air pollution and acid rain, which energy sources are responsible?

1. Wind Energy
2. Solar Energy
3. Tidal Energy
4. Fossil fuels

Options :

1780707665. 1

1780707666. 2

1780707667. 3

1780707668. 4

Question Number : 43 Question Id : 1780701934 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

With respect to the Indian energy scenario, which statement is correct?

1. Coal dominates the energy mix in India, contributing to almost 55% of the total primary energy production.
2. Oil dominates the energy mix in India, contributing to almost 55% of the total primary energy production.
3. Gas dominates the energy mix in India, contributing to almost 55% of the total primary energy production.
4. Uranium dominates the energy mix in India, contributing to almost 55% of the total primary energy production.

Options :

1780707669. 1

1780707670. 2

1780707671. 3

1780707672. 4

Question Number : 44 Question Id : 1780701935 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Carbon mono-oxide (CO) due to burning of fuels is causing_____.

1. air pollution
2. water pollution
3. noise pollution
4. soil pollution

Options :

1780707673. 1

1780707674. 2

1780707675. 3

1780707676. 4

Question Number : 45 Question Id : 1780701936 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The cost of electrical energy generated is broadly classified as fixed cost and running cost. An example of running costs is_____.

1. capital cost of power plant
2. cost of Land
3. Interest on capital, taxes and insurance
4. cost of fuel

Options :

1780707677. 1

1780707678. 2

1780707679. 3

1780707680. 4

Question Number : 46 Question Id : 1780701937 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Hydro-electric power plant upto 100kW capacity is termed as_____.

1. Micro hydro-electric plant
2. Mini hydro-electric plant
3. Medium hydro-electric plant
4. Small hydro-electric plant

Options :

1780707681. 1

1780707682. 2

1780707683. 3

1780707684. 4

Question Number : 47 Question Id : 1780701938 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The process of densifying loose agro-waste into a solidified biomass of high density, which can be conveniently used as a fuel, is called :

1. Biomass Briquetting (Bio-coal)
2. Bio-gas plant
3. Gasifier
4. Agricultural residues

Options :

1780707685. 1

1780707686. 2

1780707687. 3

1780707688. 4

Question Number : 48 Question Id : 1780701939 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The Solar-Thermal devices graded as high grade heating devices are for_____.

1. temperature above 200°C
2. temperature above 300°C
3. temperature above 50°C
4. temperature above 150°C

Options :

1780707689. 1

1780707690. 2

1780707691. 3

1780707692. 4

Question Number : 49 Question Id : 1780701940 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A 100 kW wind turbine producing 20 kW at an average wind speed of 25 km/h. What will be the annual energy output?

1. 175,200 kWh
2. 75,200 kWh
3. 175,20 kWh
4. 1750,200 kWh

Options :

1780707693. 1

1780707694. 2

1780707695. 3

1780707696. 4

Question Number : 50 Question Id : 1780701941 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In ultrasonic imaging in medical diagnosis, ultrasonic elements are the best suitable in the frequency range of_____.

1. 1 MHz to 15 MHz
2. 15 MHz to 25 MHz
3. 35 MHz to 45 MHz
4. 25 MHz to 35 MHz

Options :

1780707697. 1

1780707698. 2

1780707699. 3

1780707700. 4

Question Number : 51 Question Id : 1780701942 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A set of readings has a wide range and, therefore, it has_____.

1. Low precision
2. High precision
3. Low accuracy
4. High accuracy

Options :

1780707701. 1

1780707702. 2

1780707703. 3

1780707704. 4

Question Number : 52 Question Id : 1780701943 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The linear variable differential transformer (LVDT) is used for the measurement of_____.

1. Displacement
2. Velocity
3. Acceleration
4. Pressure

Options :

1780707705. 1

1780707706. 2

1780707707. 3

1780707708. 4

Question Number : 53 Question Id : 1780701944 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Thermistors are_____.

1. used for the measurement of temperature
2. used for the measurement of resistance
3. used for the measurement of force
4. used for the measurement of vibration

Options :

1780707709. 1

1780707710. 2

1780707711. 3

1780707712. 4

Question Number : 54 Question Id : 1780701945 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Hall-effect transducer is used to measure:

1. flux
2. pressure
3. power
4. voltage

Options :

1780707713. 1

1780707714. 2

1780707715. 3

1780707716. 4

Question Number : 55 Question Id : 1780701946 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Piezoelectric transducers are used for the measurement of:

1. Inductance and capacitance
2. Capacitance and resistance
3. Resistance and inductance
4. Force and pressure

Options :

1780707717. 1

1780707718. 2

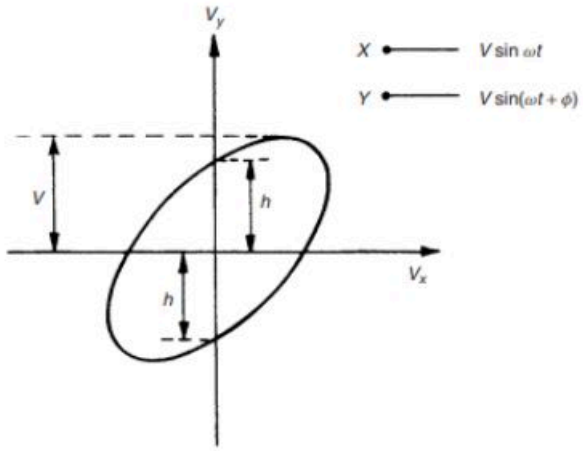
1780707719. 3

1780707720. 4

Question Number : 56 Question Id : 1780701947 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If two input signals of equal magnitude are applied to the X and Y inputs of a X-Y plotter, the plot obtained is an ellipse, as shown in figure, if ϕ is the phase, then



1. sinϕ=h/V
2. sinϕ=V/h
3. cosϕ=h/V
4. ϕ=0

Options :

1780707721. 1

1780707722. 2

1780707723. 3

1780707724. 4

Question Number : 57 Question Id : 1780701948 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The Wien bridge is used for the measurement of_____.

1. Inductance
2. Capacitance
3. Resistance
4. Frequency

Options :

1780707725. 1

1780707726. 2

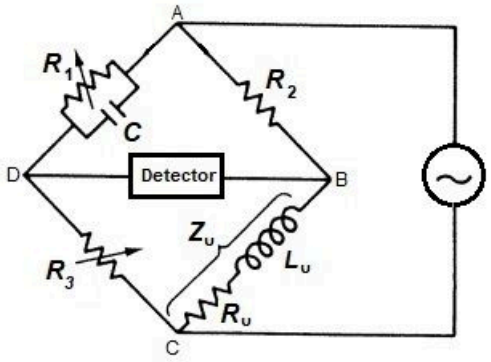
1780707727. 3

1780707728. 4

Question Number : 58 Question Id : 1780701949 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The bridge used for measurement of inductance L_u as shown in the figure represents:



1. Maxwell bridge
2. Anderson bridge
3. Kelvin bridge
4. Wheatstone bridge

Options :

1780707729. 1

1780707730. 2

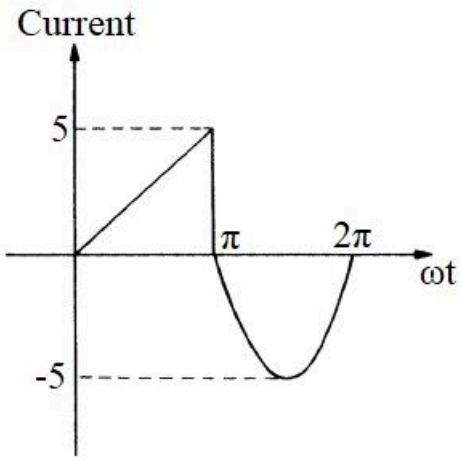
1780707731. 3

1780707732. 4

Question Number : 59 Question Id : 1780701950 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Calculate the reading that would be observed on a moving-coil ammeter when it is measuring the current in the circuit shown in the figure.



1. -0.342
2. -3.42
3. -34.2
4. -342

Options :

1780707733. 1

1780707734. 2

1780707735. 3

1780707736. 4

Question Number : 60 Question Id : 1780701951 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

What is the correct sequence of ascending size of air pollutant?

(A). CO

(B). NOx

(C). Hydrocarbon Benzene

(D). Airborne particulate matter

Choose the **correct** answer from the options given below:

1. (A), (B), (C), (D)
2. (A), (C), (B), (D)
3. (B), (A), (D), (C)
4. (C), (B), (D), (A)

Options :

1780707737. 1

1780707738. 2

1780707739. 3

1780707740. 4

Question Number : 61 Question Id : 1780701952 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A DC to DC converter (Chopper) is fed from constant voltage mains. The duty ratio α of the chopper is progressively increased while the chopper feeds RL load. The per unit current ripple would_____.

1. increase progressively
2. decrease progressively
3. decrease to a maximum value at α=0.5 and then increase
4. increase to a maximum value at α=0.5 and then decrease

Options :
1780707741. 1
1780707742. 2
1780707743. 3
1780707744. 4

Question Number : 62 Question Id : 1780701953 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A single-phase full bridge inverter can operate in load- commutation mode in case load consists of_____.

1. RL
2. RLC underdamped
3. RLC overdamped
4. RLC critically damped

Options :
1780707745. 1
1780707746. 2
1780707747. 3
1780707748. 4

Question Number : 63 Question Id : 1780701954 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A semiconductor switch is used to connect a load of 5Ω, 0.05H to a 240V, 50Hz supply. What will be the triggering angle of the device to ensure no current transients?

1. 72.34°
2. 62.35°
3. 0°
4. 90°

Options :
1780707749. 1
1780707750. 2
1780707751. 3
1780707752. 4

Question Number : 64 Question Id : 1780701955 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

In a commutation circuit employed to turn-off an SCR (Thyristor), satisfactory turn-off is obtained when:

1. circuit turn-off time < device turn-off time
2. circuit turn-off time > device turn-off time
3. circuit time constant > device turn-off time
4. circuit time constant < device turn-off time

Options :
1780707753. 1
1780707754. 2
1780707755. 3
1780707756. 4

Question Number : 65 Question Id : 1780701956 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

In a Thyristor:

1. latching current I_L is associated with turn-off process and holding current I_H with turn-on process
2. both I_L and I_H are associated with turn-off process
3. I_H is associated with turn-off process and I_L with turn-on process
4. both I_L and I_H are associated with turn-on process

Options :
1780707757. 1
1780707758. 2
1780707759. 3
1780707760. 4

Question Number : 66 Question Id : 1780701957 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

If I_s is the RMS value of supply phase current including fundamental and harmonics and I_{s1} is the RMS value of the fundamental component of supply current, then total harmonic distortion (THD) is defined as:

1. $[(I_{s1} / I_s) - 1]^{1/2}$
2. $[(I_s / I_{s1})^2 - 1]^{1/2}$
3. $[(I_{or} / I_s)^2 - 1]^{1/2}$
4. I_s / I_{s1}

Options :
1780707761. 1
1780707762. 2
1780707763. 3
1780707764. 4

Question Number : 67 Question Id : 1780701958 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A single-phase full-bridge diode rectifier delivers a constant load current of 10A. Average and RMS values of source current are respectively:

1. 5A, 10A
2. 10A, 5A
3. 15A, 5A
4. 0A, 10A

Options :

1780707765. 1

1780707766. 2

1780707767. 3

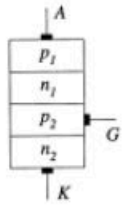
1780707768. 4

Question Number : 68 Question Id : 1780701959 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

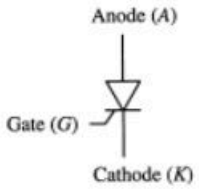
Correct Marks : 4 Wrong Marks : 1

With respect to thyristor, which of the following are true:

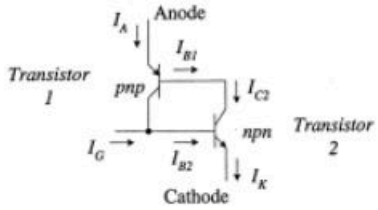
A. It's a four-layered device



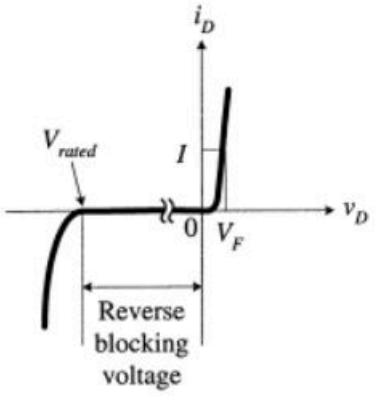
B. It's symbol is given by



C. Its transistor model is given as



D. Its V-I characteristics is given as



Choose the **correct** answer from the options given below:

1. (A), (B) and (D) only
2. (A), (B) and (C) only
3. (A), (B), (C) and (D)
4. (B), (C) and (D) only

Options :

1780707769. 1

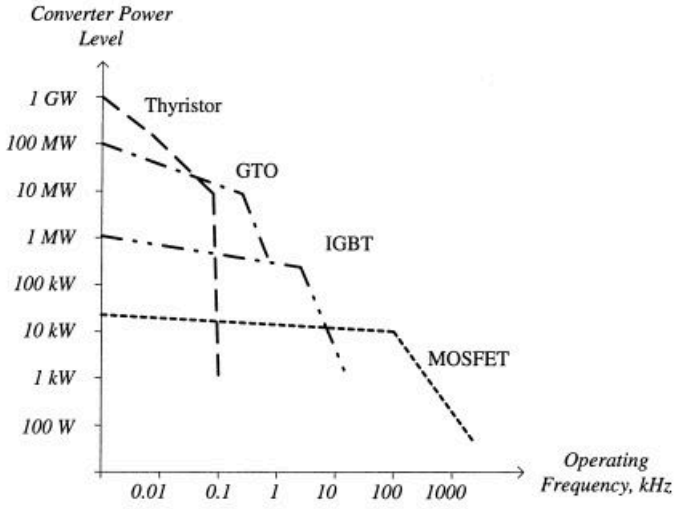
1780707770. 2

1780707771. 3

1780707772. 4

Question Number : 69 Question Id : 1780701960 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The power level vs operating frequency graph is given for different power electronics devices.



(A). For high power application, thyristor is a better choice than the GTO

(B). For high frequency applications, MOSFET is the best choice.

(C). IGBT is a better choice than MOSFET if the power level is in MW.

(D). For operating frequencies less than 1kHz, both GTO and IGBT are suitable.

Choose the **correct** answer from the options given below:

1. (A), (B) and (D) only
2. (A), (B) and (C) only
3. (A), (B), (C) and (D)
4. (B), (C) and (D) only

Options :

1780707773. 1

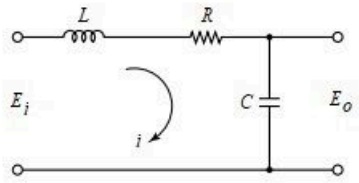
1780707774. 2

1780707775. 3

1780707776. 4

Question Number : 70 Question Id : 1780701961 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

After the mathematical modeling of the circuit shown in the figure, its transfer function is_____.



1. $E_o(s)/E_i(s)=1/(LCs^2+RCs+1)$
2. $E_o(s)/E_i(s)=1/(s^2+RCs+1)$
3. $E_o(s)/E_i(s)=1/(LCs^2+s+1)$
4. $E_o(s)/E_i(s)=1/(LCs^2+RCs)$

Options :

1780707777. 1

1780707778. 2

1780707779. 3

1780707780. 4

Question Number : 71 Question Id : 1780701962 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The state transition matrix Φ(t) is

(A). Solution of homogeneous state equation

(B). Φ(0)=I (unit matrix)

(C). Φ(0)=null matrix

(D). $\Phi(-t)=\Phi^{-1}(t)$

Choose the **correct** answer from the options given below:

1. (C) and (D) only
2. (A), (B) and (D) only
3. (A), (B), (C) and (D)
4. (B), (C) and (D) only

Options :

1780707781. 1

1780707782. 2

1780707783. 3

1780707784. 4

Question Number : 72 Question Id : 1780701963 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The PI controller cascaded with a system_____.

1. reduces the steady state error
2. increases the steady state error
3. reduces the peak overshoot
4. improves the transient behavior of a system

Options :

1780707785. 1

1780707786. 2

1780707787. 3

1780707788. 4

Question Number : 73 Question Id : 1780701964 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The steady-state error of a type-2 system with open-loop transfer function G(S) = K/ S(S+1) with unit-ramp input is given by:

1. 0
2. infinite
3. K, where K is the velocity error constant
4. 1/K, where K is the velocity error constant

Options :

1780707789. 1

1780707790. 2

1780707791. 3

1780707792. 4

Question Number : 74 Question Id : 1780701965 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The transfer function of a system is given by, G(s) = (s + 3)/ [(s + 1)(s + 2)]; as per the Routh Hurwitz criterion commenting about the stability of the system:

1. The system is stable because all the poles are in the left half of the s-plane.
2. The system is unstable because all the poles are in the left half of the s-plane.
3. The system is marginally stable because all the poles are on the jw-axis of the s-plane.
4. The system is unstable because all the poles are in the right half of the s-plane.

Options :

1780707793. 1

1780707794. 2

1780707795. 3

1780707796. 4

Question Number : 75 Question Id : 1780701966 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following is/are the correct statement?

(A). The lead compensator increases the bandwidth.

(B). The lead compensator decreases the bandwidth.

(C). The lead compensator increases the peak overshoot.

(D). The lead compensator reduces the peak overshoot.

Choose the **correct** answer from the options given below:

1. (A), (B) and (D) only
2. (A), (B) and (C) only
3. (A), (B), (C) and (D)
4. (A) and (D) only

Options :

1780707797. 1
1780707798. 2
1780707799. 3
1780707800. 4