

Andhra Pradesh State Council of Higher Education

Notations :

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

Question Paper Name :	Electrical Engineering 07th June 2025 Shift 2
Subject Name :	Electrical Engineering
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Electrical Engineering

Group Number :	1
Group Id :	83189656
Group Maximum Duration :	0
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Show Attended Group? :	No
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Break time : 0
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Electrical Engineering

Section Id : 83189656
Section Number : 1
Section type : Online
Mandatory or Optional : Mandatory
Number of Questions : 120
Number of Questions to be attempted : 120
Section Marks : 120
Maximum Instruction Time : 0
Sub-Section Number : 1
Sub-Section Id : 83189656
Question Shuffling Allowed : Yes

Question Number : 1 Question Id : 8318966601 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

For a two-port network to be reciprocal, it is necessary that _____.

Options :

1. ✘ $z_{11} = z_{22}$ and $y_{21} = y_{12}$
2. ✘ $z_{11} = z_{22}$ and $AD - BC = 0$

3. ✘ $h_{11} = -h_{12}$ and $AD - BC = 0$

4. ✔ $y_{12} = y_{21}$ and $h_{21} = -h_{12}$

Question Number : 2 Question Id : 8318966602 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A DC voltage V is applied at time $t=0$ to a series circuit consisting of resistor R and capacitor C . The current in the circuit at time t is _____.

Options :

1. ✘ $\frac{V}{R} e^{-t/RC}$

2. ✘ $\frac{V}{R} e^{t/RC}$

3. ✔ $\frac{V}{R} (1 - e^{-\frac{t}{RC}})$

4. ✘ $\frac{V}{R}(1 - e^{\frac{t}{RC}})$

Question Number : 3 Question Id : 8318966603 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

What is the value of total electric flux coming out of a closed surface?

Options :

1. ✘ Zero
2. ✘ Equal to volume charge density
3. ✔ Equal to the total charge enclosed by the surface
4. ✘ Equal to the surface charge density

Question Number : 4 Question Id : 8318966604 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The impedance of a circuit is 10 ohms. If the inductive susceptance is 1 S, then inductive reactance of the circuit is _____.

Options :

1. ✘ 10 Ω
2. ✘ 1 Ω
3. ✔ 100 Ω
4. ✘ 11 Ω

Question Number : 5 Question Id : 8318966605 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The system $y(t) = tx(t) + 4$ is _____.

Options :

1. ✔ non-linear, time-varying and unstable
2. ✘ linear, time-varying and unstable

3. ✘ non-linear, time-invarying and unstable
4. ✘ non-linear, time-varying and stable

Question Number : 6 Question Id : 8318966606 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A 10 V range voltmeter is rated for 50 μA full-scale current. The total resistance of the voltmeter is _____.

Options :

1. ✘ 100 $\text{k}\Omega$
2. ✔ 200 $\text{k}\Omega$
3. ✘ 300 $\text{k}\Omega$
4. ✘ 400 $\text{k}\Omega$

Question Number : 7 Question Id : 8318966607 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The Z_{22} - Parameter of a Two -port network is known as _____.

Options :

1. ✘ open circuit input impedance
2. ✘ short circuit input impedance
3. ✔ open circuit output impedance
4. ✘ short circuit transfer impedance

Question Number : 8 Question Id : 8318966608 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The power factor at resonance in parallel R-L-C circuit is _____.

Options :

1. ✘ zero
2. ✘ 0.8 lagging

3. ✘ 0.8 leading

4. ✔ unity

Question Number : 9 Question Id : 8318966609 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In an AC circuit the voltage applied is $v=230 \sin (\omega t-30^\circ)$ volts. If the current flowing is $i=47 \sin(\omega t +10^\circ)$ amps then the current_____.

Options :

1. ✘ lags the voltage by 40°

2. ✘ lags the voltage by 20°

3. ✘ leads the voltage by 20°

4. ✔ leads the voltage by 40°

Question Number : 10 Question Id : 8318966610 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If, $x(z)$ is $\frac{1}{1-z^{-1}}$ with $|z| > 1$, then what is the corresponding $x(n)$?

Options :

1. ✘ e^{-n}

2. ✘ e^n

3. ✔ $u(n)$

4. ✘ $\delta(n)$

Question Number : 11 Question Id : 8318966611 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The input-output relationship of a linear system is given by_____.

Options :

1. ✘ $y = a_0x^2 + a_1x + a_0$

2. ✘ $y = a_1x^2 + a_0$

3. ✓ $y = a_1x_1 + a_2x_2$

4. ✗ $y = a_0$

Question Number : 12 Question Id : 8318966612 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

With a negative feedback, the system gain and stability_____ respectively.

Options :

1. ✓ decreases, increases

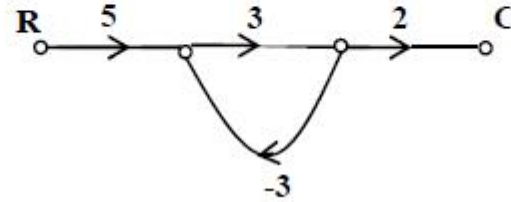
2. ✗ increases, decreases

3. ✗ increases, increases

4. ✗ decreases, decreases

Question Number : 13 Question Id : 8318966613 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In the signal flow graph shown below the transfer function is _____.



Options :

1. ✘ 3.75
2. ✘ -3
3. ✔ 3
4. ✘ -3.75

Question Number : 14 Question Id : 8318966614 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

The steady state error due to a ramp input for a type two system is equal to _____.

Options :

1. ✓ zero
2. ✘ infinite
3. ✘ non-zero number
4. ✘ constant

Question Number : 15 Question Id : 8318966615 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Frequency domain analysis is preferred when dealing with systems having input as _____.

Options :

1. ✘ ramp and parabolic

2. ✘ sinusoidal with fixed frequency
3. ✔ sinusoidal with variable frequency and amplitude
4. ✘ non-sinusoidal with lagging power factor

Question Number : 16 Question Id : 8318966616 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The number of roots of $s^3+5s^2+7s+3=0$ in the right half of the s-plane
is _____.

Options :

1. ✔ zero
2. ✘ one
3. ✘ two

4. ✘ three

Question Number : 17 Question Id : 8318966617 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The transfer function of a phase-lead compensator is given by

$(s) = \frac{1+3Ts}{1+Ts}$, $T>0$. The maximum phase shift provided by such a compensator is _____.

Options :

1. ✘ 90^0

2. ✘ 60^0

3. ✘ 45^0

4. ✔ 30^0

Question Number : 18 Question Id : 8318966618 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The presence of transportation lag in the forward path of a closed loop control system_____.

Options :

1. ✓ decreases margin of stability
2. ✘ increases margin of stability
3. ✘ is zero
4. ✘ maintains margin of stability

Question Number : 19 Question Id : 8318966619 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The phase cross-over frequency of the transfer function $G(s) = \frac{100}{(s+1)^2}$

in rad/s is_____.

Options :

1. ✓ $\sqrt{3}$

2. ✘ $\frac{1}{\sqrt{3}}$

3. ✘ 3

4. ✘ $3\sqrt{3}$

Question Number : 20 Question Id : 8318966620 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The gain at the breakaway point of the root locus of a unity feedback

system with open loop transfer function $G(s) = \frac{Ks}{(s-1)(s-4)}$

is _____.

Options :

1. ✔ 1

2. ✘ 2

3. ✖ 5

4. ✖ 9

Question Number : 21 Question Id : 8318966621 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The voltage regulation of alternator at lagging power factor will be _____.

Options :

1. ✔ positive and more than regulation at unity power factor

2. ✖ less than at unity power factor

3. ✖ remain un changed

4. ✖ negative and less than regulation at unity power factor

Question Number : 22 Question Id : 8318966622 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The only disadvantages of field control method for controlling the speed of a DC shunt motor is that it_____.

Options :

1. ✘ Gives speeds lower than the normal speed
2. ✘ Is wasteful
3. ✘ Needs a large rheostat
4. ✔ Adversely affects commutation

Question Number : 23 Question Id : 8318966623 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The purpose of connecting resistance in the rotor circuit of slip rings induction motor is_____.

Options :

1. ✘ to increase running torque

2. ✓ to increase starting torque
3. ✘ to achieve maximum running torque
4. ✘ to increase motor efficiency

Question Number : 24 Question Id : 8318966624 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

When pull-out torque occurs in a synchronous motor, the poles of the rotor are _____.

Options :

1. ✓ mid-way between N and S poles of stator
2. ✘ coincident with stator pole
3. ✘ 45° (electrical) behind stator poles

45° (electrical) ahead stator poles

4. ✘

Question Number : 25 Question Id : 8318966625 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A transformer has a core loss of 64 W and copper loss of 144 W. When it is carrying 20% over load current, the load at which this transformer will operate at the maximum efficiency is _____.

Options :

1. ✔ 80 %

2. ✘ 66 %

3. ✘ 120 %

4. ✘ 44 %

Question Number : 26 Question Id : 8318966626 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Crawling of a motor results from_____.

Options :

1. ✘ High load at the time of starting
2. ✘ Low supply voltage
3. ✔ Harmonics developed in the motor currents
4. ✘ Short circuit condition in induction motor

Question Number : 27 Question Id : 8318966627 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

An induction motor will develop maximum torque when the phase difference between the stator flux and the rotor current is_____.

Options :

1. ✓ 90° Electrical

2. ✘ 45° Electrical

3. ✘ 30° Electrical

4. ✘ 0° Electrical

Question Number : 28 Question Id : 8318966628 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A transformer operates most efficiently at $3/4^{\text{th}}$ full-load. Its iron loss (P_i) and full-load copper loss (P_c) are related as _____.

Options :

1. ✘ $P_i/P_c = 4/3$

2. ✘ $P_i/P_c = 16/9$

3. ✘ $P_i/P_c = 3/4$

4. ✔ $P_i/P_c = 9/16$

Question Number : 29 Question Id : 8318966629 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Two transformers of identical voltages but of different capacities are operating in parallel. For satisfactory load sharing_____.

Options :

1. ✘ impedances must be equal

2. ✘ per-unit impedances must be equal

3. ✔ per-unit impedances and X/R ratios must be equal

4. ✘ impedances and X/R ratios must be equal.

Question Number : 30 Question Id : 8318966630 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Dummy coils may be needed in a DC wave winding_____.

Options :

1. ✓ to achieve mechanical balance of armature
2. ✘ to achieve electrical balance of parallel paths
3. ✘ to avoid use of equalizer rings
4. ✘ to achieve good commutation

Question Number : 31 Question Id : 8318966631 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The 'Equal Area Criterion' for the determination of transient stability of the synchronous machine connected to an infinite bus_____.

Options :

1. ✓ ignores line as well as synchronous machine resistances and shunt capacitances
2. ✘ assume accelerating power acting on the rotor as constant
3. ✘ ignores the effect of voltage regulator and governor but considers the inherent damping present in the machine
4. ✘ takes into consideration the possibility of machine losing synchronism after it has survived during the first swing.

Question Number : 32 Question Id : 8318966632 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The positive, negative, and zero sequence impedance of a solidly grounded system under steady state condition always follow the relation_____.

Options :

$$Z_1 > Z_2 > Z_0$$

1. ✓

2. ✘ $Z_1 < Z_2 < Z_0$

3. ✘ $Z_0 < Z_1 > Z_2$

4. ✘ $Z_0 = Z_1 Z_2$

Question Number : 33 Question Id : 8318966633 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A relay used on long transmission lines is _____.

Options :

1. ✔ Mho's relay

2. ✘ Reactance relay

3. ✘ Impedance relay

4. ✘ No relay is used

Question Number : 34 Question Id : 8318966634 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If the reference bus is changed in two load flow runs with same system data and power obtained for reference bus taken as specified P and Q in the later run:

Options :

1. ✓ The system losses will be unchanged but complex bus voltages will change
2. ✗ The system losses will change but complex bus voltages remain unchanged
3. ✗ The system losses as well as complex bus voltage will change
4. ✗ The system losses as well as complex bus voltage will be unchanged.

Question Number : 35 Question Id : 8318966635 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

One of the main causes of deterioration of cable dielectric is _____.

Options :

1. ✓ formation of voids
2. ✗ cable capacitance
3. ✗ formation of voids and cable capacitance
4. ✗ cable power factor

Question Number : 36 Question Id : 8318966636 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Suspension type insulators are used for voltages beyond _____.

Options :

1. ✗ 132 kV
2. ✓ 33 kV

3. ✘ 400 kV

4. ✘ 11 kV

Question Number : 37 Question Id : 8318966637 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following is commercially used in gas blast Circuit breakers?

Options :

1. ✘ Hydrogen

2. ✘ Nitrogen

3. ✔ SF₆

4. ✘ Both hydrogen and SF₆

Question Number : 38 Question Id : 8318966638 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

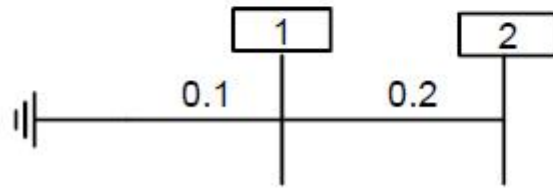
The steady state stability limit of a synchronous generator can be increased by_____.

Options :

1. ✘ an increase in its reactance
2. ✘ an increase in the excitation of the machine
3. ✔ a decrease in the moment of inertia of the machine
4. ✘ an increase in the moment of inertia of the machine

Question Number : 39 Question Id : 8318966639 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The bus admittance matrix of the network shown in the given figure, for which the marked parameters are per unit impedance, is _____.



Options :

$$\begin{bmatrix} 0.3 & -0.2 \\ -0.2 & 0.2 \end{bmatrix}^{-1}$$

1. ✘

$$\begin{bmatrix} 0.3 & 0.2 \\ 0.2 & 0.2 \end{bmatrix}$$

2. ✘

$$\begin{bmatrix} 0.3 & -0.2 \\ -0.2 & 0.2 \end{bmatrix}$$

3. ✘

$$\begin{bmatrix} 15 & -5 \\ -5 & 5 \end{bmatrix}$$

4. ✓

Question Number : 40 Question Id : 8318966640 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

When bundle conductors are used in place of single conductors, the effective inductance and capacitance will respectively_____.

Options :

1. ✘ increase and decrease
2. ✓ decrease and increase
3. ✘ decrease and remain unaffected
4. ✘ remain unaffected and increase

Question Number : 41 Question Id : 8318966641 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A Wheatstone bridge requires a change of 6 ohms in the unknown arm of the bridge to produce a change in deflection of 3 mm of the galvanometer. The sensitivity of the instruments is _____.

Options :

1. ✘ 0.1 ohm/mm
2. ✘ 1 ohm/mm
3. ✔ 0.5 ohm/mm
4. ✘ 2.0 ohm/mm

Question Number : 42 Question Id : 8318966642 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Phantom loading for testing of energy meter is used _____.

Options :

1. ✘ to isolate the current and potential circuit

2. ✘
to reduce power loss during testing
3. ✘
for meter power loss during testing
4. ✔
to test meter having a large current rating for which loads may not be available

Question Number : 43 Question Id : 8318966643 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which one of the following is the main cause of creeping in the induction type energy meters?

Options :

1. ✔
Friction compensation
2. ✘
Lag/lead compensation

3. ✘ Overload compensation

4. ✘ Braking torque producing system

Question Number : 44 Question Id : 8318966644 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Induction type single phase energy meter is _____.

Options :

1. ✘ a VA meter

2. ✔ true watt-hour meter

3. ✘ an ampere-hour meter

4. ✘ wattmeter

Question Number : 45 Question Id : 8318966645 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

An ammeter has a current range of 0-5 A, and its internal resistance is 0.2Ω . In order to change the range to 0-25 A, we need to add a resistance of _____.

Options :

1. ✘ 0.8Ω in series with the meter
2. ✔ 0.05Ω in parallel with the meter.
3. ✘ 1.0Ω in series with the meter
4. ✘ 0.04Ω in parallel with the meter

Question Number : 46 Question Id : 8318966646 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The material most preferred for control spring is _____.

Options :

1. ✘ german silver

2. ✘ platinum silver

3. ✘ silicon bronze

4. ✔ phosphor bronze

Question Number : 47 Question Id : 8318966647 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The ratio error of a CT is due to _____.

Options :

1. ✘ power factor

2. ✘ supply voltage fluctuations

3. ✔ exciting current

4. ✘ negative component of current in the secondary

Question Number : 48 Question Id : 8318966648 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the fault current is 2000 A, the relay setting 50% and the CT ratio is 400/5, then the plug setting multiplier will be _____.

Options :

1. ✘ 25 A
2. ✘ 15 A
3. ✔ 10 A
4. ✘ 50 A

Question Number : 49 Question Id : 8318966649 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

NAND and NOR gates are called _____.

Options :

1. ✘ Bidirectional gates
2. ✘ Unilateral gates

3. ✓ Universal gates

4. ✘ High level logic gates

Question Number : 50 Question Id : 8318966650 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Ohm's law relates the current density J with field intensity E as _____.

Options :

1. ✓ $J = \sigma E$

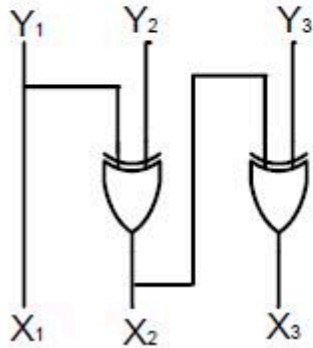
2. ✘ $J = \frac{E}{\sigma}$

3. ✘ $J = \frac{E^2}{\sigma}$

4. ✘ $J = \sigma^2 E$

Question Number : 51 Question Id : 8318966651 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The logic circuit given below converts a binary code $Y_1 Y_2 Y_3$ into _____.



Options :

1. ✘ Excess-3 code
2. ✔ Gray code
3. ✘ BCD code
4. ✘ Hamming code

Question Number : 52 Question Id : 8318966652 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

If the accumulator of an Intel 8085A microprocessor contains 37 H and the previous operation has set the carry flag, the instruction ACI 56 H will result in_____.

Options :

1. ✓ 8E H
2. ✗ 94 H
3. ✗ 7E H
4. ✗ 84 H

Question Number : 53 Question Id : 8318966653 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Two binary signals 'a' and 'b' are to be compared. When two signals are equal, then output expression is_____.

Options :

1. ✗ $a\bar{b} + a\bar{b}$

2. ✓ $ab + \bar{a}\bar{b}$

3. ✗ $\bar{a}\bar{b}$

4. ✗ ab

Question Number : 54 Question Id : 8318966654 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Turn-on time of an SCR can be reduced by using a _____.

Options :

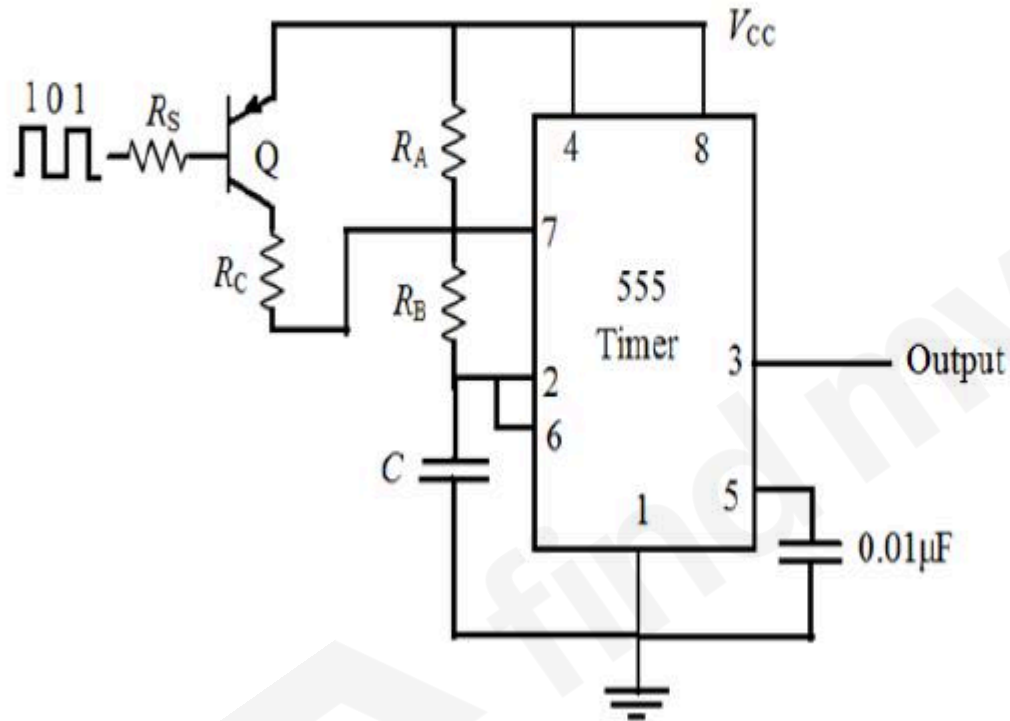
1. ✓ rectangular pulse of high amplitude and narrow width

2. ✗ rectangular pulse of low amplitude and wide width

3. ✗ triangular pulse

4. ✗ trapezoidal pulse

When the input to Q is a 1 level, the frequency of oscillations of the timer circuit is _____.



Options :

$$f = \frac{1.44}{(R_A + 2R_B)C}$$

1. ✘

$$f = \frac{1.44}{(R+2R_B)C}$$

2. ✘

$$f = \frac{1.44}{(2R+2R_B)C}$$

3. ✘

$$f = \frac{1.44}{(R+2R_B)C}$$

4. ✔

Question Number : 56 Question Id : 8318966656 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A discrete-time signal $x[n] = \sin(\pi^2 n)$, n being an integer,
is _____.

Options :

1. ✘ periodic with period π

2. ✘ periodic with period π^2

3. ✘ periodic with period $\pi/2$
4. ✔ not periodic

Question Number : 57 Question Id : 8318966657 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If R_1 is the region of convergence of $x(n)$ and R_2 is the region of convergence of $y(n)$, then the region of convergence of $x(n)$ convoluted $y(n)$ is _____.

Options :

1. ✘ $R_1 + R_2$
2. ✘ $R_1 - R_2$
3. ✘ $R_1 \cup R_2$
4. ✔ $R_1 \cap R_2$

Question Number : 58 Question Id : 8318966658 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The discrete system $y[n] = x[n - 3] - 4x[n - 7]$ is a _____.

Options :

1. ✓ Dynamic system
2. ✗ Time varying system
3. ✗ Memory less system
4. ✗ Non-linear system

Question Number : 59 Question Id : 8318966659 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Determine the fundamental period of the signal $\cos \frac{\pi}{4} t + \sin \frac{\pi}{3} t$.

Options :

1. ✗ 12

2. ✘ 13
3. ✔ 24, periodic
4. ✘ 24π , non-periodic

Question Number : 60 Question Id : 8318966660 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A 100 km long, three phase, 110V, 50 Hz overhead transmission line has three conductors each diameter 1.5 cm. The conductors are spaced 2 m at the corners of equilateral triangle. The capacitance of the line is _____.

Options :

1. ✔ $1 \times 10^{-3} \mu\text{F}$
2. ✘ 2.29 F
3. ✘ 1.5 F

4. ✘ 1.5 μ F

Question Number : 61 Question Id : 8318966661 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A transformer has no-load voltage of 220 V and full-load voltage of 210 V. Find voltage regulation.

Options :

1. ✔ 4.76 %

2. ✘ 2.04 %

3. ✘ 3.15 %

4. ✘ 1.06%

Question Number : 62 Question Id : 8318966662 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

When the firing angle α of a single phase, fully controlled rectifier feeding a constant DC current into a load is 30° , the displacement power factor of the rectifier is _____.

Options :

1. ✘ 1
2. ✘ 0.5
3. ✘ $\frac{1}{\sqrt{3}}$
4. ✔ $\frac{2}{\sqrt{3}}$

Question Number : 63 Question Id : 8318966663 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A DC chopper operates on 230 V DC and frequency of 400 Hz, feeds an R-L load. If the output voltage of chopper is 150 V, the ON time of the chopper is _____.

Options :

1. ✘ 3.84 msec
2. ✘ 2.5 msec
3. ✔ 1.63 msec
4. ✘ 0.65 msec

Question Number : 64 Question Id : 8318966664 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following signals are periodic?

$$x(t) = \sin\pi t + \cos 2\pi t$$

$$y(t) = \sin 2t + \sin 5t$$

$$z(t) = \sin t + \cos \pi t$$

Options :

1. ✘ x(t) and z(t)
2. ✔ x(t) and y(t)
3. ✘ y(t) and z(t)
4. ✘ only y(t)

Question Number : 65 Question Id : 8318966665 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The initial value of $x[n]$ is _____, if $X(z) = \frac{3z^3}{(z+3)(z-3)}$

Options :

1. ✓ 3

2. ✘ 6

3. ✘ ∞

4. ✘ 0

Question Number : 66 Question Id : 8318966666 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In a three-phase full wave AC to DC converter, the ratio of output ripple frequency to the supply voltage frequency is _____.

Options :

1. ✘ 2

2. ✘ 3

3. ✓ 6

12

4. ✘

Question Number : 67 Question Id : 8318966667 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The main advantage of IGBT over MOSFET is _____.

Options :

1. ✘ Higher input impedance
2. ✘ Faster switching
3. ✔ Higher voltage handling capability
4. ✘ Lower cost

Question Number : 68 Question Id : 8318966668 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A single phase full bridge inverter is connected to a load of 24Ω . The DC input voltage is 48V. What is the rms output voltage at fundamental frequency?

Options :

$$\frac{4 \times 48}{\sqrt{2}\pi} \text{ V}$$

1. ✓

$$\frac{2 \times 48}{\sqrt{2}\pi} \text{ V}$$

2. ✗

$$\frac{4 \times 48}{2\pi} \text{ V}$$

3. ✗

$$\frac{2 \times 48}{2\pi} \text{ V}$$

4. ✗

Question Number : 69 Question Id : 8318966669 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Variable frequency drives (VFDs) are used in _____.

Options :

1. ✘ DC motor control
2. ✔ Induction motor control
3. ✘ Stepper motor control
4. ✘ Universal motor control

Question Number : 70 Question Id : 8318966670 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following is NOT a part of the typical speed-time curve for train movement?

Options :

1. ✘ Acceleration
2. ✘ Coasting
3. ✘ Constant braking

4. ✓ Free fall

Question Number : 71 Question Id : 8318966671 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The maximum reverse bias voltage that can be applied to a reverse biased PN junction diode without damaging the junction is called _____.

Options :

1. ✗ Breakdown Voltage

2. ✓ Peak Inverse Voltage

3. ✗ Reverse saturation voltage

4. ✗ Bias voltage

Question Number : 72 Question Id : 8318966672 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A transistor has $I_E = 10$ mA and $h_{FB} = 0.98$. The base and collector currents respectively are _____.

Options :

1. ✘ 9.8 mA and 0.2 mA
2. ✔ 0.2 mA and 9.8 mA
3. ✘ 10 mA and 0.2 mA
4. ✘ 10 mA and 2 mA

Question Number : 73 Question Id : 8318966673 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Fourier transform of $[a_1f_1(t) + a_2f_2(t)]$ is _____.

Options :

1. ✔ $a_1f_1(\omega) + a_2f_2(\omega)$

2. ✘ $a_1 f_1(\omega) - a_2 f_2(\omega)$

3. ✘ $a_1 f_1^2(\omega) + a_2 f_2^2(\omega)$

4. ✘ $a_1 f_1(\omega) * a_2 f_2(\omega)$

Question Number : 74 Question Id : 8318966674 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Fourier transform of $f_1(t) = 1$ is _____.

Options :

1. ✔ $2\pi\delta(\omega)$

2. ✘ $\pi\delta(\omega)$

3. ✘ $3\pi\delta(\omega)$

4. ✘ $n\pi\delta(\omega)$

Question Number : 75 Question Id : 8318966675 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A Long two –Wire Line Composed of Solid Ground Conductors is 0.5 cm and the distance between their centres is 2 m. If this distance is double, then the inductance per unit length_____.

Options :

1. ✘ Halves
2. ✔ Increases but does not double
3. ✘ Doubles
4. ✘ Decreases but does not halve

Question Number : 76 Question Id : 8318966676 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Loading effect in primarily caused by instruments having_____.

Options :

1. ✘ High resistance
2. ✘ High sensitivity
3. ✔ Low sensitivity
4. ✘ High range

Question Number : 77 Question Id : 8318966677 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following systems is time invariant?

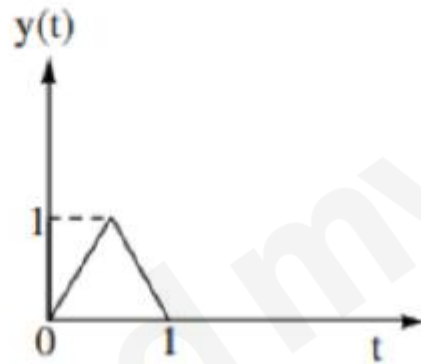
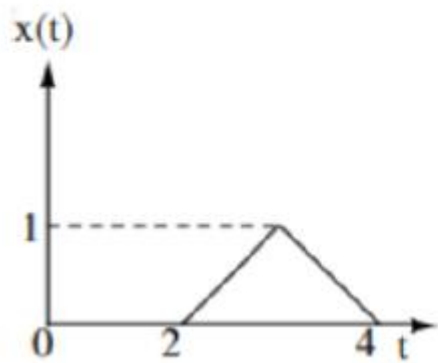
Options :

1. ✘ $y(t) = x(2t) + x(-t)$
2. ✘ $y(t) = x(t) + x(1-t)$
3. ✘ $y(t) = -x(t) + x(1-t)$

4. ✓ $y(t) = x(t) + x(t-1)$

Question Number : 78 Question Id : 8318966678 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

For the figure below, $x(t)$ and $y(t)$ are related as _____.



Options :

1. ✗ $y(t) = x(4(t-1))$

2. ✗ $y(t) = x(3(t-1))$

3. ✗ $y(t) = 2x(t-1)$

4. ✓ $y(t) = x(2(t+1))$

Question Number : 79 Question Id : 8318966679 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The period of the discrete-time signal, $\sin \frac{6\pi n}{14}$ is _____.

Options :

- 1. ✘ 7
- 2. ✓ 14
- 3. ✘ 28
- 4. ✘ 42

Question Number : 80 Question Id : 8318966680 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In an Anderson bridge, the unknown inductance is measured in terms of_____.

Options :

1. ✘ known inductance and resistance
2. ✔ known capacitance and resistance
3. ✘ known resistance
4. ✘ known inductance

Question Number : 81 Question Id : 8318966681 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In an inverting RC integrator using an Op-amp, , $RC = 1\text{S}$, $V_i = 5\text{V}$,
then $V_o =$ _____

Options :

1. ✘ $10t$

2. ✓ $-5t$

3. ✗ $5t$

4. ✗ $15t$

Question Number : 82 Question Id : 8318966682 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The DC and rms components of currents in a half-wave rectifier are given by the relations?

Options :

1. ✗ $\frac{I_m}{2}$ and $\frac{I_m}{\pi}$

2. ✓ $\frac{I_m}{\pi}$ and $\frac{I_m}{2}$

3. ✗ $\frac{2I_m}{\pi}$ and $\frac{2I_m}{2}$

4. ✘ $\frac{I_m}{2\pi}$ and $\frac{2I_m}{2}$

Question Number : 83 Question Id : 8318966683 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which method is preferred for solving the power flow problem in small to medium-sized power systems?

Options :

1. ✘ Newton-Raphson method
2. ✔ Gauss-Seidel method
3. ✘ Decoupled power flow method
4. ✘ Backward/Forward Sweep method

Question Number : 84 Question Id : 8318966684 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Penalty factors in economic dispatch with losses are used to:

Options :

1. ✘ Penalize generators for exceeding reactive power limits
2. ✔ Account for the economic impact of power losses
3. ✘ Ensure fair distribution of generation among units
4. ✘ Minimize the total number of generators in operation

Question Number : 85 Question Id : 8318966685 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The advantage of hydro-electric power station over thermal power station is:

Options :

1. ✘ The initial cost of hydro-electric power station is low

2. ✓ The operation cost of hydro-electric power station is low

3. ✘ Hydro-electric power station can supply the power throughout the year

4. ✘ Hydro-electric station can be constructed at the place where the energy is required.

Question Number : 86 Question Id : 8318966686 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

For economic dispatch that neglects both line losses and generation limits_____.

Options :

1. ✓ total generation is equal to the total demand.

2. ✘ it is the most complicated economic dispatch problem.

3. ✘ all the generators will share the load equally.

4. ✘ all plants must operate at equal incremental fuel cost.

Question Number : 87 Question Id : 8318966687 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A 50 Hz alternator is rated 500 MVA, 20 kV with $X_d = 1.0$ per unit and $X''_d = 0.2$ per unit. It supplies a purely resistive load of 400 MW at 20 kV. The load is connected directly across the generator terminals when a symmetrical fault occurs at the load terminals. The initial rms current in the generator is per unit is _____.

Options :

1. ✘ 7.22

2. ✘ 6.4

3. ✘ 3.22

4. ✓ 5.1

Question Number : 88 Question Id : 8318966688 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A balanced delta connected load of $(8 + j6) \Omega$ per phase is connected to a 400 V, 50 Hz, three-phase supply lines. If the input power factor is to be improved to 0.9 by connecting a bank of star connected capacitors, the required kVAR of the bank is_____.

Options :

1. ✗ 42.7
2. ✓ 10.2
3. ✗ 28.8
4. ✗ 38.4

Question Number : 89 Question Id : 8318966689 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The bus impedance matrix of a 4-bus power system is given by

$$Z_{\text{bus}} = \begin{bmatrix} j0.3435 & j0.2860 & j0.2723 & j0.2277 \\ j0.2860 & j0.3408 & j0.2586 & j0.2414 \\ j0.2723 & j0.2586 & j0.2791 & j0.2209 \\ j0.2277 & j0.2414 & j0.2209 & j0.2791 \end{bmatrix}$$

A branch having an impedance of $j 0.2\Omega$ is connected between bus 2 and the reference. Then the values of $Z_{22,\text{new}}$ and $Z_{23,\text{new}}$ of the bus impedance matrix of the modified network are respectively_____.

Options :

1. ✘ $j 0.5408 \Omega$ and $j 0.4586 \Omega$
2. ✔ $j 0.1260 \Omega$ and $j 0.0956 \Omega$
3. ✘ $j 0.5408 \Omega$ and $j 0.0956 \Omega$
4. ✘ $j 0.1260 \Omega$ and $j 0.1630 \Omega$

Question Number : 90 Question Id : 8318966690 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✘ rms phase voltage
2. ✘ peak phase voltage
3. ✔ rms line to line voltage
4. ✘ peak line to line voltage

Question Number : 91 Question Id : 8318966691 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The angle δ in the swing equation of a synchronous generator is the:

Options :

1. ✘
angle between stator voltage and current
2. ✘
angular displacement of the rotor with respect to the stator
3. ✘
angular displacement of the stator MMF with respect to a synchronously rotating axis
4. ✔
angular displacement of an axis fixed to the rotor with respect to a synchronously rotating axis

Question Number : 92 Question Id : 8318966692 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The time duration of coasting in a speed-time curve refers to the period when _____.

Options :

1. ✘
Train is accelerating

2. ✘ Train is running at constant speed
3. ✔ No power is supplied, and speed reduces gradually
4. ✘ Brakes are applied

Question Number : 93 Question Id : 8318966693 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Specific energy consumption is defined as energy consumed per unit_____.

Options :

1. ✘ Distance
2. ✘ Power
3. ✔ Tonne-km

4. ✖ Speed

Question Number : 94 Question Id : 8318966694 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Tractive effort is defined as _____.

Options :

1. ✖ Force applied by brakes
2. ✖ Resistance offered by wind
3. ✔ Pull developed by locomotive at the wheel rim
4. ✖ Power developed in traction moto

Question Number : 95 Question Id : 8318966695 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The function of a gradient in train movement is to _____.

Options :

1. ✘ Increase braking force
2. ✘ Increase rolling resistance
3. ✘ Reduce tractive effort requirement
4. ✔ Add or subtract from train resistance

Question Number : 96 Question Id : 8318966696 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which semiconductor power device out of the following is not a current triggered device?

Options :

1. ✘ Thyristor
2. ✘ GTO
3. ✘ TRAIC

4. ✓ MOSFET

Question Number : 97 Question Id : 8318966697 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In controlled rectifiers, the nature of load current, i.e. whether load current is continuous or discontinuous:

Options :

1. ✘ does not depend on type of load and firing angle delay
2. ✓ depends both on the type of load and firing angle delay
3. ✘ depends only on the type of load
4. ✘ depends only on the firing angle delay

Question Number : 98 Question Id : 8318966698 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In a JK flip-flop the J input is connected to 0 and its K input is connected to output Q. a clock pulse is fed to the clock input. The flip-flop will now:

Options :

1. ✘ Change its state for each clock input
2. ✘ Goes to state 1 and remains at 1
3. ✘ Goes to state 0 and remains at 0
4. ✔ Retains the previous state

Question Number : 99 Question Id : 8318966699 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Calculate the conversion time of a 12-bit counter type ADC with 1MHz clock frequent to convert a full scale input?

Options :

1. ✘ 4.095 μ s
2. ✔ 4.095ms
3. ✘ 4.095s
4. ✘ 4.095ns

Question Number : 100 Question Id : 8318966700 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which one of the following is not a vectored interrupt?

Options :

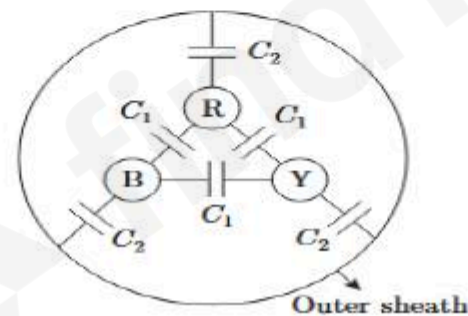
1. ✘ TRAP
2. ✘ INTR
3. ✘ RST 7.5

RST 3

4. ✓

Question Number : 101 Question Id : 8318966701 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

Consider a three-core, three-phase, 50 Hz, 11 kV cable whose conductors are denoted as R, Y and B in the given figure. The inter-phase capacitance (C_1) between each pair of conductors is $0.2 \mu\text{F}$ and the capacitance (C_2) between each line conductor and the sheath is $0.4 \mu\text{F}$.



Options :

1. ✓ 2.0A

2. ✘ 2.4A

3. ✘ 2.7A

4. ✘ 3.5A

Question Number : 102 Question Id : 8318966702 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The line impedance of a three-phase transmission line is given by

$Z = (10 + j5)\Omega$. For 100 MVA power delivered at 132 kV, the transmission loss is _____.

Options :

1. ✘ 10 MW

2. ✔ 5.74 MW

3. ✘ 11.5 MW

1 MW

4. ✘

Question Number : 103 Question Id : 8318966703 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The interrupting time of a circuit breaker is the period between the instant of_____.

Options :

initiation of short circuit and the arc extinction on an opening operation.

1. ✘

energising of the trip circuit and the arc extinction on an opening operation.

2. ✔

initiation of short circuit and the parting of primary arc contacts.

3. ✘

energising of the trip circuit and the parting of primary arc contacts

4. ✘

Question Number : 104 Question Id : 8318966704 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Bundled conductors are mainly used in high voltage overhead transmission lines to_____.

Options :

1. ✘ reduce transmission line losses.
2. ✘ increase mechanical strength of the line.
3. ✔ reduce corona.
4. ✘ reduce sag

Question Number : 105 Question Id : 8318966705 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The ratio of maximum displacement deviation to full scale deviation of the instrument is called_____.

Options :

1. ✘ static sensitivity
2. ✘ dynamic deviation
3. ✔ linearity
4. ✘ precision or accuracy

Question Number : 106 Question Id : 8318966706 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Standard resistor is made from

Options :

1. ✘ platinum
2. ✔ maganin
3. ✘ Silver

nichrome

4. ✘

Question Number : 107 Question Id : 8318966707 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If a system transfer function has some poles lying on the imaginary axis , it is _____.

Options :

1. ✘ Unconditionally stable

2. ✘ Conditionally stable

3. ✘ Unstable

4. ✔ Marginally Stable

Question Number : 108 Question Id : 8318966708 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A slide potentiometer has 5 wires 2m each. With the help of a standard voltage source of 1.234 V, it is standardized by keeping the jockey at 123.4 cm. If resistance of potentiometer wire is 1000ohm, then the value of working current will be _____.

Options :

1. ✘ 1mA

2. ✘ 0.5 mA

3. ✘ 0.1mA

4. ✔ 10mA

Question Number : 109 Question Id : 8318966709 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

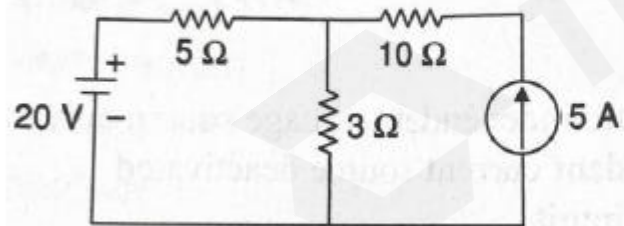
In a Δ -Y transformer, the phase shift between primary and secondary is _____.

Options :

1. ✘ 90°
2. ✘ 60°
3. ✘ 0°
4. ✔ 30°

Question Number : 110 Question Id : 8318966710 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
 Correct Marks : 1 Wrong Marks : 0

Find the current through 3 ohm resistor using superposition theorem



Options :

1. ✓ 5.625 A

2. ✘ 5.725A

3. ✘ 5.825 A

4. ✘ 6.625 A

Question Number : 111 Question Id : 8318966711 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Determine the value of λ and μ for which the that the system of equations $x + 2y + z = 6$, $x + 4y + 3z = 10$, and

$2x + 4y + \lambda z = \mu$ has a unique solution.

Options :

1. ✘ $\lambda = 2, \mu \neq 12$

2. ✘ $\lambda = 2, \mu = 12$

3. ✓ $\lambda \neq 2, \mu \neq 12$

4. ✗ for any λ and any μ

Question Number : 112 Question Id : 8318966712 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If $A = \begin{pmatrix} 1 & -1 \\ 2 & 3 \end{pmatrix}$ is a 2×2 matrix, then the eigenvalues of the matrix $2A^2 - 4A + 5I$ are _____, where I is the 2×2 unit matrix.

Options :

1. ✗ $2 \pm i$

2. ✓ $3 \pm 4i$

3. ✗ $3 \pm 2i$

4. ✗ $-3 \pm i$

Question Number : 113 Question Id : 8318966713 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The value of $\int_0^{\infty} e^{-x^3} dx$ is

Options :

1. ✓ $\frac{1}{3} \Gamma\left[\frac{1}{3}\right]$

2. ✗ $\frac{1}{2} \Gamma\left[\frac{1}{3}\right]$

3. ✗ $\frac{1}{2} \Gamma\left[\frac{1}{2}\right]$

4. ✗ $\Gamma\left[\frac{1}{3}\right]$

Question Number : 114 Question Id : 8318966714 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In what direction from the point $(2, 1, -1)$ is the directional derivative of $\varphi = xy^2z$ a maximum?

Options :

1. ✘ $\hat{i} + 4\hat{j} + \hat{k}$
2. ✔ $-\hat{i} - 4\hat{j} + 2\hat{k}$
3. ✘ $\hat{i} + 4\hat{j} - 2\hat{k}$
4. ✘ $\hat{i} + 4\hat{j} - \hat{k}$

Question Number : 115 Question Id : 8318966715 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Let X be an exponential random variable with mean parameter one.
Then the conditional probability $P(X > 10 | X > 5)$ is equal to

Options :

1. ✘ $1 - e^{-\frac{5}{2}}$
2. ✘ $e^{-\frac{5}{2}}$

3. ✓ $1 - e^{-5}$

4. ✗ e^{-5}

Question Number : 116 Question Id : 8318966716 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The given differential equation

$$(xy^2 + nx^2y)dx + (x^3 + x^2y)dy = 0 \text{ is exact when } n =$$

Options :

1. ✗ 0

2. ✗ 1

3. ✗ 2

4. ✓ 3

Question Number : 117 Question Id : 8318966717 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $I = \frac{1}{2\pi i} \oint z e^{1/z} dz$ in the unite circle $|z| = 1$, then:

Options :

1. ✘ $I = 2$

2. ✔ $I = 1/2$

3. ✘ $I = 1$

4. ✘ $I = 1/3$

Question Number : 118 Question Id : 8318966718 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The solution of the differential equation

$$(D^3 - 5D^2 + 7D - 3)y = e^{-2x} \text{ is}$$

Options :

$$y = (c_1 + c_2x)e^{-x} + c_3e^{3x} - \frac{1}{45}e^{-2x}$$

1. ✘

$$y = (c_1 + c_2x)e^x + c_3e^{-3x} + \frac{1}{45}e^{-2x}$$

2. ✘

$$y = (c_1 + c_2x)e^{-x} + c_3e^{-3x} - \frac{1}{45}e^{-2x}$$

3. ✘

$$y = (c_1 + c_2x)e^x + c_3e^{3x} - \frac{1}{45}e^{-2x}$$

4. ✔

Question Number : 119 Question Id : 8318966719 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The number of accidents occurring in AU region in a month follows Poisson distribution with mean as 5. The probability of occurrence of less than two accidents in the AU region during a randomly selected month is _____

Options :

1. ✘ $\frac{5}{e^5}$

2. ✔ $\frac{6}{e^5}$

3. ✘ $\frac{35}{2e^5}$

4. ✘ $\frac{37}{2e^5}$

Question Number : 120 Question Id : 8318966720 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The Newton-Raphson method is used to find the root of the equation $f(x) = e^{-x} - x$. If the initial guess for the root is 0, then the estimate of the root after first iteration is _____

Options :

1. ✘ 0.56

2. ✖ -0.50

3. ✔ 0.50

4. ✖ -0.56

