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 29th April 2026 Shift 2
Subject Name :	Electrical Engineering
Creation Date :	2026-04-29 16:37:35
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Show Reports :	No
Show Progress Bar :	No

Electrical Engineering

Group Number :	1
Group Id :	75207657
Group Maximum Duration :	0
Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	120

Electrical Engineering

Section Id :	75207657
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	120
Number of Questions to be attempted :	120
Section Marks :	120
Section Negative Marks :	0
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	75207657
Question Shuffling Allowed :	Yes
Is Section Default? :	No

Question Number : 1 Question Id : 7520766721 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Minimum number of 2-input NAND gates required for implementing the logic $F = AB + A'C$ is:

Options :

1. ✖ 3

2. ✔ 4

3. ✖ 5

4. ✖ 6

Question Number : 2 Question Id : 7520766722 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Universal gate is:

Options :

1. ✖ AND

2. ✖ OR

3. ✔ NAND

4. ✖ XOR

Question Number : 3 Question Id : 7520766723 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The MSB frequency of a 4-bit ripple counter with 16 MHz clock is

Options :

1. ✔ 1 MHz

2. ✖ 2 MHz

3. ✖ 4 MHz

4. ✖ 8 MHz

Question Number : 4 Question Id : 7520766724 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A JK flip-flop with J=K=1 behaves as:

Options :

1. ✖ Reset

2. ✖ Set

3. ✔ Toggle

4. ✖ Hold

Question Number : 5 Question Id : 7520766725 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Race-around occurs when:

Options :

1. ✔ Clock width small

2. ✖ Clock width > propagation delay

3. ✖ Input zero

4. ✖ Output constant

Question Number : 6 Question Id : 7520766726 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The number of Select lines required for a 16:1 MUX is

Options :

1. ✖ 2

2. ✖ 3

3. ✖ 4

4. ✔ 5

Question Number : 7 Question Id : 7520766727 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Karnaugh map is used for:

Options :

1. ✖ Timing

2. ✔ Simplification

3. ✖ Storage

4. ✖ Speed

Question Number : 8 Question Id : 7520766728 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A full adder can be built using:

Options :

1. ✖ One Half-Adder (HA)

2. ✔ Two HAs + OR

3. ✖ XOR only

4. ✖ Three HAs

Question Number : 9 Question Id : 7520766729 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A Decoder with n inputs has the following number of outputs:

Options :

1. ✖ n

2. ✔ 2^n

3. ✖ n^2

4. ✖ $log\ n$

Question Number : 10 Question Id : 7520766730 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Setup time is the time:

Options :

1. ✖ After clock

2. ✔ Before the clock edge

3. ✖ During clock

4. ✖ Between outputs

Question Number : 11 Question Id : 7520766731 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Mealy output depends on:

Options :

1. ✖ State

2. ✔ State and Input

3. ✖ Input

4. ✖ Previous state

Question Number : 12 Question Id : 7520766732 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a moving coil instruments, the deflecting torque is proportional to:

Options :

1. ✖ I^2

2. ✔ I

3. ✖ V

4. ✖ Power

Question Number : 13 Question Id : 7520766733 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A Moving iron instrument measures:

Options :

1. ✖ DC only

2. ✖ AC only

3. ✔ AC and DC

4. ✖ Pulsating DC

Question Number : 14 Question Id : 7520766734 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In an analogue instrument, the Controlling torque is provided by:

Options :

1. ✖ Springs only

2. ✖ Damping

3. ✔ Spring or gravity

4. ✖ Gravity only

Question Number : 15 Question Id : 7520766735 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In measuring instruments, The Damping torque is used to:

Options :

1. ✖ Increase Sensitivity

2. ✔ Reduce Oscillations

3. ✖ Increase Deflection

4. ✖ Measure Current

Question Number : 16 Question Id : 7520766736 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a Voltmeter the sensitivity is given by:

Options :

1. ✔ Ω/V

2. ✖ V/Ω

3. ✖ A/V

4. ✖ W/V

Question Number : 17 Question Id : 7520766737 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

To minimize loading, the voltmeter should have:

Options :

1. ✖ Low Resistance

2. ✔ High Resistance

3. ✖ High Current

4. ✖ Low Voltage

Question Number : 18 Question Id : 7520766738 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A Permanent Magnet Moving Coil (PMMC) instrument can be used to measure:

Options :

1. ✔ DC quantities only

2. ✖ AC quantities only

3. ✖ Both AC and DC quantities

4. ✖ Only high-frequency AC

Question Number : 19 Question Id : 7520766739 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which bridge is best suited for the measurement of a high-quality factor (Q) inductor?

Options :

1. ✖ Maxwell's Bridge

2. ✔ Hay's Bridge

3. ✖ Anderson's Bridge

4. ✖ Schering Bridge

Question Number : 20 Question Id : 7520766740 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A 100V voltmeter has an accuracy of ±2% of full-scale deflection (FSD). If it reads 50V, what is the limiting error?

Options :

1. ✖ ±2%

2. ✖ ±1%

3. ✔ ±4%

4. ✖ ±5%

Question Number : 21 Question Id : 7520766741 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The "Creeping" phenomenon occurs in which type of instrument?

Options :

1. ✖ PMMC Ammeter

2. ✔ Induction type Energy Meter

3. ✖ Digital Multimeter

4. ✖ Dynamometer Wattmeter

Question Number : 22 Question Id : 7520766742 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A digital voltmeter (DVM) with a 3½ digit display can show a maximum count of:

Options :

1. ✖ 999

2. ✔ 1999

3. ✖ 3999

4. ✖ 9999

Question Number : 23 Question Id : 7520766743 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A Dynamometer-type instrument is primarily used as a "Transfer Instrument" because:

Options :

1. ✖ It has high sensitivity

2. ✖ It has a linear scale

3. ✔ It gives the same calibration for both AC and DC

4. ✖ It is very inexpensive

Question Number : 24 Question Id : 7520766744 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A Q-meter works on the principle of:

Options :

1. ✖ Mutual Induction

2. ✔ Series Resonance

3. ✖ Parallel Resonance

4. ✖ Piezoelectric effect

Question Number : 25 Question Id : 7520766745 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following is an "Active" transducer?

Options :

1. ✖ Strain Gauge

2. ✖ Thermistor

3. ✔ Thermocouple

4. ✖ LVDT

Question Number : 26 Question Id : 7520766746 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Lissajous patterns are used to measure:

Options :

1. ✖ Voltage and Current

2. ✖ Power and Energy

3. ✔ Frequency and Phase shift

4. ✖ Resistance and Inductance

Question Number : 27 Question Id : 7520766747 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The bridge used for the measurement of an unknown capacitance is:

Options :

1. ✖ Wheatstone Bridge

2. ✖ Wien Bridge

3. ✔ Schering Bridge

4. ✖ Kelvin Double Bridge

Question Number : 28 Question Id : 7520766748 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

For a Type-1 system, the steady-state error to a unit ramp input is:

Options :

1. ✖ Zero

2. ✔ 1/Kv

3. ✖ Infinite

4. ✖ 1/(1+Kp)

Question Number : 29 Question Id : 7520766749 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In the Routh-Hurwitz criterion, a system is stable if:

Options :

1. ✖ All elements in the first row are positive

2. ✔ All elements in the first column have the same sign

3. ✖ All roots are on the right-half plane

4. ✖ The determinant is zero

Question Number : 30 Question Id : 7520766750 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Root Locus always starts at the _____ and ends at the _____.

Options :

1. ✖ Zeros; Poles

2. ✔ Poles; Zeros

3. ✖ Origin; Infinity

4. ✖ Real axis; Imaginary axis

Question Number : 31 Question Id : 7520766751 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Boost converter output V_o is:

Options :

1. ✖ Less than V_{in}

2. ✖ Equal to V_{in}

3. ✔ Greater than V_{in}

4. ✖ Zero

Question Number : 32 Question Id : 7520766752 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A Gain Margin of 0 dB or a Phase Margin of 0 degrees indicates the system is:

Options :

1. ✖ Stable

2. ✖ Unstable

3. ✔ Marginally stable

4. ✖ Highly damped

Question Number : 33 Question Id : 7520766753 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Lead compensation is used primarily to:

Options :

1. ✖ Increase the steady-state accuracy

2. ✖ Reduce the bandwidth

3. ✔ Improve the transient response and increase speed

4. ✖ Eliminate noise

Question Number : 34 Question Id : 7520766754 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In State-Space representation, the "State Vector" consists of:

Options :

1. ✖ Only the input variables

2. ✔ The minimum set of variables that describe the system's future behavior

3. ✖ The output variables only

4. ✖ The coefficients of the transfer function

Question Number : 35 Question Id : 7520766755 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A system is "Controllable" if:

Options :

1. ✔ All states can be reached from an arbitrary initial state using an input

2. ✖ The output can be determined by observing the input

3. ✖ The eigenvalues are all negative

4. ✖ The transfer function has no zeros

Question Number : 36 Question Id : 7520766756 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The State Transition Matrix $\phi(t)$ is given by:

Options :

1. ✖ $\mathcal{L}^{-1}[sI - A]$

2. ✔ $\mathcal{L}^{-1}[(sI - A)^{-1}]$

3. ✖ $[sI - A]^{-1}$

4. ✖ e^{-At}

Question Number : 37 Question Id : 7520766757 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the eigenvalues of the system matrix A are -2 and -5, the system is:

Options :

1. ✔ Stable

2. ✖ Unstable

3. ✖ Oscillatory

4. ✖ Critically stable

Question Number : 38 Question Id : 7520766758 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which plot is used to determine stability by looking at the encirclements of the point (-1, j0)?

Options :

1. ✖ Bode Plot

2. ✖ Root Locus

3. ✔ Nyquist Plot

4. ✖ Nichols Chart

Question Number : 39 Question Id : 7520766759 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Adding a Zero to the transfer function generally:

Options :

1. ✔ Increases the overshoot and improves the speed of response

2. ✖ Decreases the overshoot

3. ✖ Makes the system unstable

4. ✖ Has no effect on the transient response

Question Number : 40 Question Id : 7520766760 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A diode current increases from 1 mA to 10 mA. Dynamic resistance changes by:

Options :

1. ✖ 10× increase

2. ✔ 10× decrease

3. ✖ Same

4. ✖ 100× decrease

Question Number : 41 Question Id : 7520766761 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A DC generator has flux doubled and speed halved. New EMF is

Options :

1. ✖ Doubled

2. ✖ Halved

3. ✔ Same

4. ✖ Zero

Question Number : 42 Question Id : 7520766762 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

An autotransformer converts 200V to 100V supplying same load. Copper saving is

Options :

1. ✖ 25%

2. ✔ 50%

3. ✖ 75%

4. ✖ 100%

Question Number : 43 Question Id : 7520766763 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A synchronous generator is over-excited and running in parallel with an identical generator at the same terminal voltage. The over-excited generator will:

Options :

1. ✖ Supply real power only

2. ✔ Supply reactive power only

3. ✖ Supply both real and reactive power

4. ✖ Absorb reactive power

Question Number : 44 Question Id : 7520766764 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A 6-pulse HVDC rectifier produces which harmonics in AC line current?

Options :

1. ✔ 5th, 7th, 11th, 13th …

2. ✖ 6th, 12th, 18th …

3. ✖ 3rd, 9th, 15th …

4. ✖ Only 1st

Question Number : 45 Question Id : 7520766765 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A 12-pulse HVDC link: line voltage = 220 kV (LL), $\alpha = 30°$. Approximate DC voltage:

Options :

1. ✖ 220 kV

2. ✖ 238 kV

3. ✔ 325 kV

4. ✖ 200 kV

Question Number : 46 Question Id : 7520766766 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

An overcurrent relay operates at 1.2pu for 2 s. Fault current = 3pu. What is the expected operation time if relay is inverse-time type?

Options :

1. ✔ <2s

2. ✖ 2s

3. ✖ >2s

4. ✖ Depends on system voltage

Question Number : 47 Question Id : 7520766767 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $A^2 = 0$, then:

Options :

1. ✖ $e^{At} = I$

2. ✔ $e^{At} = I + At$

3. ✖ $e^{At} = At$

4. ✖ Infinite series required

Question Number : 48 Question Id : 7520766768 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

An AC voltage controller reduces the RMS voltage across a resistive load to 0.5 of its original value. What is the reduction in power?

Options :

1. ✖ 50%

2. ✔ 75%

3. ✖ 25%

4. ✖ No change

Question Number : 49 Question Id : 7520766769 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The property of state transition matrix , $\emptyset(t_1 + t_2) =$

Options :

1. ✖ $\emptyset(t_1) + \emptyset(t_2)$

2. ✔ $\emptyset(t_1) * \emptyset(t_2)$

3. ✖ $\emptyset(t_1) - \emptyset(t_2)$

4. ✖ $\emptyset(t_1)/\emptyset(t_2)$

Question Number : 50 Question Id : 7520766770 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In a connected electrical network graph, which statement about Kirchhoff's Current Law (KCL) is most accurate?

Options :

1. ✖ KCL is derived from Faraday's law of electromagnetic induction and applies only to mesh analysis.

2. ✖ KCL is applicable only to resistive networks under steady state DC conditions and is not valid for AC circuits.

3. ✔ KCL is valid only for networks consisting of linear and time-invariant elements.

4. ✖ KCL is based on the principle of conservation of charge and states that the algebraic sum of currents at a node is zero

Question Number : 51 Question Id : 7520766771 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A series RL circuit consists of a resistor R=10 Ω and an inductor L=1H, connected to a DC voltage source of V=20 V. The switch is closed at t=0, and the initial current is zero. Determine the expression for the current *i(t)*through the inductor for t>0, assuming ideal components.

Options :

1. ✖ $i(t)=2e^{-10t}\,A$

2. ✖ $i(t)=2(1-e^{-0.1t})\,A$

3. ✔ $i(t)=2(1-e^{-10t})\,A$

4. ✖ $i(t)=2e^{-0.1t}\,A$

Question Number : 52 Question Id : 7520766772 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A series RLC circuit has R = 10 Ω, L = 1 H, C = 100 μF. At resonance, the impedance is:

Options :

1. ✖ 0 Ω

2. ✔ 10 Ω

3. ✖ 100 Ω

4. ✖ Depends on frequency

Question Number : 53 Question Id : 7520766773 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In an induction motor, maximum torque occurs when:

Options :

1. ✖ $R_2 = X_2$

2. ✖ $R_2 = sX_2$

3. ✖ $\frac{R_2}{s} = X_2$

4. ✔ $\frac{R_2}{X_2} = s_m$

Question Number : 54 Question Id : 7520766774 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A balanced three-phase, star-connected source with a line-to-line RMS voltage of 400V supplies a balanced star-connected load. Each phase of the load has a resistance of 20 Ω. Neglect the line impedance. Calculate the total active power consumed by the load.

Options :

1. ✖ *6 kW*

2. ✔ *4 kW*

3. ✖ *12 kW*

4. ✖ *8 kW*

Question Number : 55 Question Id : 7520766775 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In a Capacitor-start motor, main winding current is 2.0 pu, auxiliary winding current is 2.0 pu and the phase difference is 90°. Then the starting torque is,

Options :

1. ✖ 2.0 pu

2. ✔ 4.0 pu

3. ✖ 6.0 pu

4. ✖ 8.0 pu

Question Number : 56 Question Id : 7520766776 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A stepper motor with a step angle 1.8^{o} requires _____ steps per one revolution.

Options :

1. ✖ 180

2. ✔ 200

3. ✖ 360

4. ✖ 100

Question Number : 57 Question Id : 7520766777 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following is true about hunting in synchronous machines?

Options :

1. ✖ Occurs at low speed only

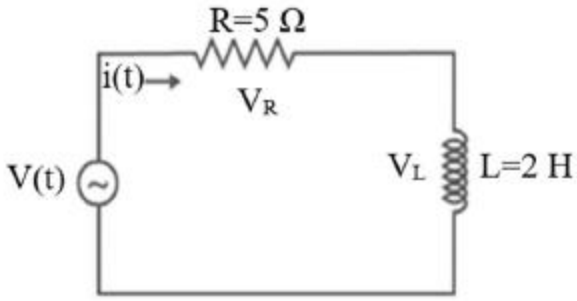
2. ✔ Occurs when mechanical load fluctuates

3. ✖ Is due to sudden change in field current

4. ✖ Is due to interaction between rotor inertia and synchronizing torque

Question Number : 58 Question Id : 7520766778 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A series RL circuit has $V = 10\ V$, $R = 5\ \Omega$, $L = 2\ H$. With $i(t) = (V/R)\left(1 - e^{(-t/\tau)}\right)$, $\tau = L/R$. Find i at $t = 0.5$ s.



Options :

1. ✖ 1.26 A

2. ✔ 1.428A

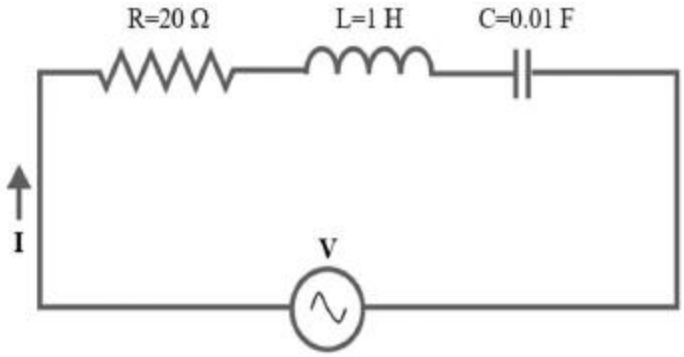
3. ✖ 2.00 A

4. ✖ 0.95 A

Question Number : 59 Question Id : 7520766779 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A series RLC circuit has R=20 Ω, L=1 H, C=0.01 F.

Using $\zeta = R/\left(2\sqrt{L/C}\right)$, the response is:



Options :

1. ✖ Underdamped

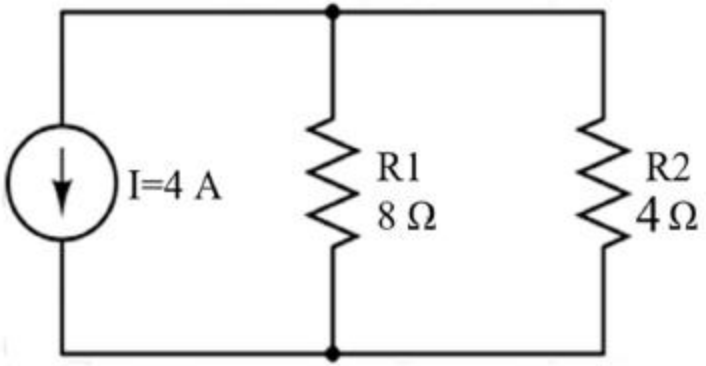
2. ✔ Critically damped

3. ✖ Overdamped

4. ✖ Sustained oscillations

Question Number : 60 Question Id : 7520766780 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A 4 A current source feeds 8 Ω and 4 Ω in parallel. Power in 8 Ω is:



Options :

1. ✖ 32 W

2. ✖ 16 W

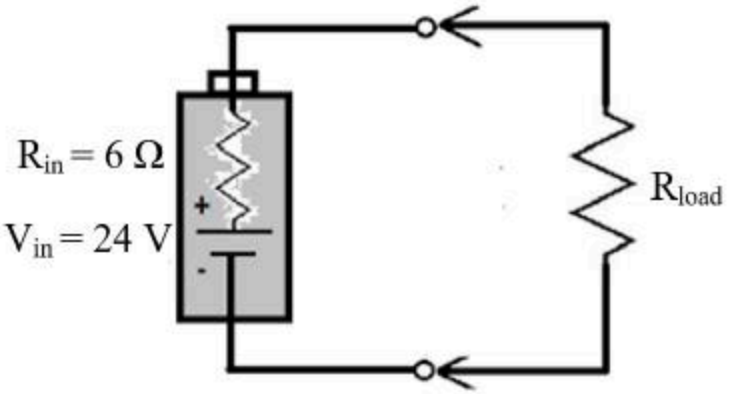
3. ✔ 14.22 W

4. ✖ 10.67 W

Question Number : 61 Question Id : 7520766781 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A 24 V source with internal resistance 6 Ω feeds a load. Maximum power to load is:



Options :

1. ✔ 24 W

2. ✖ 48 W

3. ✖ 36 W

4. ✖ 12 W

Question Number : 62 Question Id : 7520766782 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$v(t) = 50\sqrt{2}\ sin(\omega t)$ is applied to $Z = 3 + j4\ \Omega$. Average power is:

Options :

1. ✖ 200 W

2. ✖ 250 W

3. ✔ 300 W

4. ✖ 400 W

Question Number : 63 Question Id : 7520766783 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

With dependent sources, Thevenin's resistance is found by:

Options :

1. ✖ Open-circuit method

2. ✖ Short-circuit method

3. ✔ Applying a test source (V/I)

4. ✖ Ignoring sources

Question Number : 64 Question Id : 7520766784 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Maximum power transfer in an AC network occurs when:

Options :

1. ✖ RL = RS

2. ✔ ZL = ZS*

3. ✖ ZL = ZS

4. ✖ RL = 0

Question Number : 65 Question Id : 7520766785 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Newton–Raphson method is preferred because it,

Options :

1. ✖ is simplest

2. ✔ has Quadratic Convergence

3. ✖ uses fewer equations

4. ✖ avoids iteration

Question Number : 66 Question Id : 7520766786 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a per-unit system, the base impedance (Z_{base}) is defined as:

Options :

1. ✖ $V_{base} \times I_{base}$

2. ✔ V_{base}/I_{base}

3. ✖ I_{base}/V_{base}

4. ✖ $V_{base}^2 \times P_{base}$

Question Number : 67 Question Id : 7520766787 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Swing Equation describes the relationship between:

Options :

1. ✖ Voltage and Current

2. ✔ Power Angle and Rotor Dynamics

3. ✖ Fault Current and Time

4. ✖ Real Power and Reactive Power

Question Number : 68 Question Id : 7520766788 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a Load Flow study, which parameters are known at a PQ (Load) bus?

Options :

1. ✖ P and V

2. ✖ V and δ

3. ✔ P and Q

4. ✖ Q and δ

Question Number : 69 Question Id : 7520766789 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The "Equal Area Criterion" is used to determine:

Options :

1. ✖ Economic Dispatch

2. ✖ Fault Current Magnitude

3. ✔ Transient Stability Limits

4. ✖ Transmission Line Losses

Question Number : 70 Question Id : 7520766790 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the supply frequency increases, the Skin Effect in a conductor:

Options :

1. ✔ Increases

2. ✖ Decreases

3. ✖ Remains the same

4. ✖ Becomes zero

Question Number : 71 Question Id : 7520766791 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A 100 MVA, 11 kV generator has a reactance of 0.2 pu. What is the reactance in ohms?

Options :

1. ✔ 0.242 Ω

2. ✖ 2.42 Ω

3. ✖ 24.2 Ω

4. ✖ 1.21 Ω

Question Number : 72 Question Id : 7520766792 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Differential protection is primarily used for:

Options :

1. ✖ Long Transmission Lines

2. ✔ Transformers and Generators

3. ✖ Distribution Feeders

4. ✖ Lightning Protection

Question Number : 73 Question Id : 7520766793 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In Economic Load Dispatch, the most efficient operation occurs when:

Options :

1. ✖ All units operate at max capacity.

2. ✔ Incremental fuel costs of all units are equal.

3. ✖ Total fuel consumption is maximized.

4. ✖ All units carry equal loads.

Question Number : 74 Question Id : 7520766794 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

What is the primary purpose of a FACTS device like a STATCOM?

Options :

1. ✖ To break circuit arcs.

2. ✔ To provide fast-acting reactive power compensation.

3. ✖ To measure harmonic distortion.

4. ✖ To convert AC to DC

Question Number : 75 Question Id : 7520766795 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

HVDC transmission is preferred over HVAC for very long distances because:

Options :

1. ✖ DC equipment is cheaper.

2. ✔ There are no charging current losses or skin effect.

3. ✖ It doesn't require transformers.

4. ✖ It is easier to tap off power.

Question Number : 76 Question Id : 7520766796 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which relay is most affected by power swings?

Options :

1. ✔ Mho Relay

2. ✖ Differential Relay

3. ✖ Over-current Relay

4. ✖ Buchholz Relay

Question Number : 77 Question Id : 7520766797 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The "Corona Effect" in a transmission line is most likely to occur during

Options :

1. ✖ High-voltage transmission in fair weather

2. ✖ Low-voltage transmission in humid weather

3. ✔ High-voltage transmission in rainy or foggy weather

4. ✖ Low-voltage transmission in dry weather

Question Number : 78 Question Id : 7520766798 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A symmetrical 3-phase fault occurs at a bus. If the pre-fault voltage is 1.0pu and the Thevenin impedance is j0.2pu, the fault current in per-unit is:

Options :

1. ✖ 0.2pu

2. ✖ 2.0pu

3. ✔ 5.0pu

4. ✖ 10.0pu

Question Number : 79 Question Id : 7520766799 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If a transmission line carries 100 MW at unity power factor, the reactive power is:

Options :

1. ✔ 0 MVAR

2. ✖ 50 MVAR

3. ✖ 1000 MVAR

4. ✖ 10 MVAR

Question Number : 80 Question Id : 7520766800 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a single-phase transformer, the core is laminated primarily to reduce:

Options :

1. ✖ Copper loss

2. ✖ Hysteresis loss

3. ✔ Eddy current loss

4. ✖ Friction loss

Question Number : 81 Question Id : 7520766801 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A 200/100 V transformer has a primary resistance of 0.1 Ω. What is this resistance when referred to the secondary side?

Options :

1. ✖ 0.4 Ω

2. ✖ 0.2 Ω

3. ✖ 0.05 Ω

4. ✔ 0.025 Ω

Question Number : 82 Question Id : 7520766802 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

For two three-phase transformers to operate in parallel, which of these is an absolute requirement?

Options :

1. ✖ Same KVA rating

2. ✖ Same cooling method

3. ✔ Same phase sequence

4. ✖ Same percentage impedance

Question Number : 83 Question Id : 7520766803 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

An auto-transformer is most efficient when the transformation ratio (K = V2/V1) is:

Options :

1. ✖ Near zero

2. ✔ Near unity (1.0)

3. ✖ Exactly 0.5

4. ✖ Greater than 10

Question Number : 84 Question Id : 7520766804 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a DC Machine, the function of the commutator is to:

Options :

1. ✖ Convert AC to DC in a generator

2. ✖ Convert DC to AC in a motor

3. ✔ Convert AC to DC in a generator and DC to AC in a motor

4. ✖ Increase the speed of the machine

Question Number : 85 Question Id : 7520766805 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The effect of "Armature Reaction" in a DC generator mainly results in:

Options :

1. ✔ Cross-magnetization and demagnetization

2. ✖ Increased terminal voltage

3. ✖ Improved commutation

4. ✖ Reduction in mechanical friction

Question Number : 86 Question Id : 7520766806 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A 4-pole, 50 Hz induction motor has a synchronous speed of:

Options :

1. ✖ 1000 rpm

2. ✔ 1500 rpm

3. ✖ 3000 rpm

4. ✖ 750 rpm

Question Number : 87 Question Id : 7520766807 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If the air gap of an induction motor is increased, then,

Options :

1. ✖ Efficiency will increase

2. ✔ Magnetizing current will increase

3. ✖ Power factor will improve

4. ✖ Speed will increase

Question Number : 88 Question Id : 7520766808 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The starting torque of a capacitor-start single-phase induction motor is:

Options :

1. ✖ Zero

2. ✖ Low

3. ✔ High

4. ✖ Same as a shaded-pole motor

Question Number : 89 Question Id : 7520766809 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A synchronous motor can be used for power factor correction when it is:

Options :

1. ✖ Under-excited only

2. ✔ Over-excited only

3. ✖ Operating at no load only

4. ✖ Both Over-excited and Operating at no load

Question Number : 90 Question Id : 7520766810 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

In a synchronous generator, "Voltage Regulation" is negative when the load is:

Options :

1. ✖ Purely resistive

2. ✖ Inductive (Lagging)

3. ✔ Capacitive (Leading)

4. ✖ Unity power factor

Question Number : 91 Question Id : 7520766811 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The "Hunting" in synchronous machines can be prevented by using:

Options :

1. ✖ Slip rings

2. ✔ Damper windings

3. ✖ Carbon brushes

4. ✖ Compensating windings

Question Number : 92 Question Id : 7520766812 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A Servo Motor differs from a standard motor because it:

Options :

1. ✖ Cannot be used for AC

2. ✖ Operates only at very high speeds

3. ✔ Features a feedback mechanism for precise control

4. ✖ Does not have a rotor

Question Number : 93 Question Id : 7520766813 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

What happens if the field winding of a running DC Shunt motor suddenly opens?

Options :

1. ✖ The motor stops immediately

2. ✖ The motor speed remains constant

3. ✔ The motor attains dangerously high speed

4. ✖ The motor starts running in reverse

Question Number : 94 Question Id : 7520766814 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A signal $x(t) = \cos(2\pi t) + \sin(3\pi t)$ is:

Options :

1. ✔ Periodic only

2. ✖ Aperiodic only

3. ✖ Both periodic and even

4. ✖ Neither periodic nor odd

Question Number : 95 Question Id : 7520766815 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $x[n] = u[n]$ and $h[n] = u[n-2]$, find the value of y[5].

Options :

1. ✖ 3

2. ✔ 4

3. ✖ 5

4. ✖ 6

Question Number : 96 Question Id : 7520766816 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If energy of $x(t) = e^{-2t}u(t)$ is 0.25, find a:

Options :

1. ✖ 1

2. ✔ 3

3. ✖ 2

4. ✖ $\frac{1}{4}$

Question Number : 97 Question Id : 7520766817 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $x(t) \leftrightarrow X(\omega)$, then FT of $tx(t)$is:

Options :

1. ✔ $j\frac{dX(\omega)}{d\omega}$

2. ✖ $-j\frac{dX(\omega)}{d\omega}$

3. ✖ $jX(\omega)$

4. ✖ $\frac{X(\omega)}{\omega}$

Question Number : 98 Question Id : 7520766818 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A signal contains frequencies up to 4π rad/sec. Minimum sampling frequency is

Options :

1. ✖ 4π

2. ✔ 8π

3. ✖ 2π

4. ✖ 16π

Question Number : 99 Question Id : 7520766819 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Given $X(s) = \frac{1}{s+2}$, ROC: $Re(s) > -2$. Signal is:

Options :

1. ✔ $e^{-2t}u(t)$

2. ✖ $-e^{-2t}u(-t)$

3. ✖ $e^{2t}u(t)$

4. ✖ $e^{-2t}u(-t)$

Question Number : 100 Question Id : 7520766820 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Find the z-transform of $x[n] = \delta[n] + \delta[n+1]$:

Options :

1. ✖ $1 + z^{-1}$

2. ✖ $z + 1$

3. ✔ $1 + z$

4. ✖ z^{-1}

Question Number : 101 Question Id : 7520766821 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If the Impulse response is $h[n] = (0.5)^n u(n)$ *them, the* system is

Options :

1. ✖ unstable

2. ✔ stable

3. ✖ marginally stable

4. ✖ time-varying

Question Number : 102 Question Id : 7520766822 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The z-transform of $a^n u(n)$ is:

Options :

1. ✔ $\frac{z}{z-a}$

2. ✖ $\frac{1}{1-az}$

3. ✖ $\frac{1}{z-a}$

4. ✖ $\frac{1}{1+az}$

Question Number : 103 Question Id : 7520766823 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which of the following system is linear?

Options :

1. ✖ $y(t) = x^2(t)$

2. ✖ $y(t) = 3x(t) + 2$

3. ✔ $y(t) = x(t) + x(t-1)$

4. ✖ $y(t) = \sin(x(t))$

Question Number : 104 Question Id : 7520766824 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A band limited signal with $f_{max} = 5Hz$ is sampled at 8kHz. The result is:

Options :

1. ✖ Perfect reconstruction

2. ✔ Aliasing

3. ✖ No distortion

4. ✖ Infinite bandwidth

Question Number : 105 Question Id : 7520766825 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Aliasing occurs when,

Options :

1. ✖ Sampling rate is higher than Nyquist rate

2. ✔ Sampling rate is lower than Nyquist rate

3. ✖ Signal is periodic

4. ✖ Signal is even

Question Number : 106 Question Id : 7520766826 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The SCR triggers when:

Options :

1. ✔ Gate pulse with forward bias

2. ✖ Reverse voltage

3. ✖ Temperature rises

4. ✖ Current zero

Question Number : 107 Question Id : 7520766827 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

$3-\phi$ fully controlled rectifier $Vavg \propto$:

Options :

1. ✖ $(3V_m/\pi)cos\alpha$

2. ✔ $(3\sqrt{3}V_m/\pi)cos\alpha$

3. ✖ $(6V_m/\pi)cos\alpha$

4. ✖ $(V_m/\pi)cos\alpha$

Question Number : 108 Question Id : 7520766828 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The FIFO structure represents a:

Options :

1. ✖ Stack

2. ✔ Queue

3. ✖ Tree

4. ✖ Graph

Question Number : 109 Question Id : 7520766829 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Output of the statement $int\ x = 5;\ printf(\%d, x++)\ is;$

Options :

1. ✔ 5

2. ✖ 6

3. ✖ 0

4. ✖ Error

Question Number : 110 Question Id : 7520766830 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Advantages of Renewable energy sources are:

Options :

1. ✖ High cost

2. ✖ Pollution

3. ✔ Sustainability

4. ✖ Low efficiency

Question Number : 111 Question Id : 7520766831 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Consider the following system of equations

$$x - 2y + 3z = -1$$

$$x - 3y + 4z = 1$$

$$-2x + 4y - 6z = k$$

The value of k for which the system has infinitely many solutions is _____

Options :

1. ✖ 0

2. ✖ 1

3. ✔ 2

4. ✖ -1

Question Number : 112 Question Id : 7520766832 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If a 2×2 matrix A has eigenvalues 1 and 4 with the corresponding eigenvectors $\begin{pmatrix} 1 \\ -1 \end{pmatrix}$ and $\begin{pmatrix} 2 \\ 1 \end{pmatrix}$, respectively, then A is _____

Options :

1. ✖ $\begin{pmatrix} -4 & -8 \\ 5 & 9 \end{pmatrix}$

2. ✖ $\begin{pmatrix} 9 & -8 \\ 5 & -4 \end{pmatrix}$

3. ✖ $\begin{pmatrix} 2 & 2 \\ 1 & 3 \end{pmatrix}$

4. ✔ $\begin{pmatrix} 3 & 2 \\ 1 & 2 \end{pmatrix}$

Question Number : 113 Question Id : 7520766833 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Let $f(x)$ be a differentiable function at $x = a$ with $f'(a) = 4$ and $f(a) = 8$.

Then,

$$\lim_{x \to a} \frac{xf(a) - af(x)}{x - a} = \_\_\_\_\_$$

Options :

1. ✖ $4(1 - 2a)$

2. ✖ $4(2a - 1)$

3. ✔ $4(2 - a)$

4. ✖ $4(a-2)$

Question Number : 114 Question Id : 7520766834 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The directional derivative of $f(x,y) = x^2 + 3xy$ at the point (1,2) in the direction of the vector $3\hat{i}+4\hat{j}$ is

Options :

1. ✖ $\frac{22}{5}$

2. ✖ $\frac{24}{5}$

3. ✖ $\frac{12}{5}$

4. ✔ $\frac{36}{5}$

Question Number : 115 Question Id : 7520766835 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

If $y(x)$ satisfies the differential equation $(\sin x)\frac{dy}{dx} + y\cos x - 1 = 0$ subject to the condition $y\left(\frac{\pi}{2}\right) = 0$, then $y\left(\frac{\pi}{6}\right) =$ _____

Options :

1. ✖ $\frac{\pi}{3}$

2. ✔ $\frac{-2\pi}{3}$

3. ✖ $\frac{-\pi}{6}$

4. ✖ $\frac{-\pi}{3}$

Question Number : 116 Question Id : 7520766836 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Which one of the following functions is analytic over the entire complex plane?

Options :

1. ✖ $e^{\frac{1}{z}}$

2. ✔ $\cos z$

3. ✖ $\frac{2}{1-z}$

4. ✖ $\ln z$

Question Number : 117 Question Id : 7520766837 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Two dice are thrown. Let A be the event that the sum of the points on the faces is 9. Let B be the event that at least one of them is 6. Then, $(\bar{A} \cup \bar{B}) =$ _____, where $\bar{A}$ and $\bar{B}$ are the complementary events of A and B, respectively.

Options :

1. ✔ $\frac{17}{18}$

2. ✖ $\frac{1}{18}$

3. ✖ $\frac{1}{9}$

4. ✖ $\frac{8}{9}$

Question Number : 118 Question Id : 7520766838 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Let C be the circle $|z| = \frac{3}{2}$ in the complex plane that is oriented in the counter clockwise direction. The value of a for which $\int_C \left(\frac{z+1}{z^2-3z+2} + \frac{a}{z-1} \right) dz = 0$ is ____

Options :

1. ✖ 1

2. ✖ -1

3. ✔ 2

4. ✖ -2

Question Number : 119 Question Id : 7520766839 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The regression lines of a sample are $x + 6y = 6$ and $3x + 2y = 10$. Then the sample means and the correlation coefficient are ____

Options :

1. $\bar{x}=3,\bar{y}=\frac{1}{2},r=-\frac{1}{3}$ ✔

2. $\bar{x}=3,\bar{y}=\frac{1}{2},r=\frac{1}{3}$ ✖

3. $\bar{x}=\frac{1}{2},\bar{y}=3,r=-\frac{1}{3}$ ✖

4. $\bar{x}=\frac{1}{2},\bar{y}=3,r=\frac{1}{3}$ ✖

Question Number : 120 Question Id : 7520766840 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Consider the fixed-point iteration $x_{k+1}=g(x_k)$ with $g(x)=\frac{x}{3}+\frac{4}{3x}$. Which root-finding problem is this equivalent to?

Options :

1. $x-\frac{1}{3}+\frac{4}{3x^2}=0$ ✖

2. ✖ $\frac{x}{3}+\frac{4}{3x}=0$

3. ✖ $\frac{1}{3}-\frac{4}{3x^2}=0$

4. ✔ $x^2-2=0$