Question 1: START
In a parallel circuit with two resistors, R1 and R2, the total resistance is given by:
Question 1: END

Option_a: R=R1+R2
Option_b: $R=(1/R_1) + (1/R_2)$
Option_c: $(R_1 R_2)/ (R_1+R_2)$
Option_d: $(R_1+R_2)/2$
correct_option: c).$(R_1 R_2)/ (R_1+R_2)$

Question 2: START
According to Kirchhoff's Current Law (KCL), the algebraic sum of currents at a node is:
Question 2: END

Option_a: Zero
Option_b: Equal to the total voltage at the node
Option_c: Equal to the sum of resistances at the node
Option_d: Dependent on the values of current
correct_option: a) Zero

Question 3: START
Ohm's Law states that the current through a conductor between two points is directly proportional to the:
Question 3: END

Option_a: Resistance between the points
Option_b: Voltage between the points
Option_c: Temperature difference
Option_d: Power dissipated
correct_option: b) Voltage between the points

Question 4: START
If a resistor of 10 Ω is connected across a 5 V battery, what is the current flowing through the resistor?
Question 4: END

Option_a: 0.5 A
Option_b: 1 A
Option_c: 2 A
Option_d: 5 A
correct_option: a)0.5 A

Question 5: START
For a simple circuit with a 12 V battery and two series resistors, R1=2 Ω and R2=4Ω, what is the voltage drop across R2?
Question 5: END

Option_a: 4V
Option_b: 6V
Option_c: 8V
Option_d: 12 V
correct_option: c)8 V

Question 6: START
Which of the following statements about Kirchhoff's Voltage Law (KVL) is correct?
Question 6: END

Option_a: The sum of all voltage drops around a closed loop is always positive.
Option_b: The sum of all voltage drops around a closed loop equals the total resistance.
Option_c: The sum of all voltage drops around a closed loop is equal to the sum of all current sources.
Option_d: The sum of all voltages around a closed loop is zero.
correct_option: d)The sum of all voltages around a closed loop is zero.

Question 7: START
In a series circuit, the current flowing through each component is:
Question 7: END

Option_a: The same
Option_b: Different
Option_c: Dependent on the voltage
Option_d: Dependent on the resistance of each component
correct_option: a) The same

Question 8: START
Two resistors of 5 Ω and 10 Ω are connected in parallel. If the current entering the parallel combination is 6 A, what is the current through the 10 Ω resistor?
Question 8: END

Option_a: 2 A
Option_b: 4 A
Option_c: 5 A
Option_d: 6 A
correct_option: a) 2 A

Question 9: START
If a 5 Ω resistor is connected in series with a 10 Ω resistor across a 15 V battery, what is the current in the circuit?
Question 9: END

Option_a: 2 A
Option_b: 4 A
Option_c: 5 A
Option_d: 6 A
correct_option: a) 2 A

Question 10: START
Kirchhoff's Voltage Law (KVL) is based on the conservation of:
Question 10: END

Option_a: Charge
Option_b: Energy

Option_c: Momentum
Option_d: Mass
correct_option: b) Energy

Question 11: START
Two resistors R1=3Ω and R2=6Ω, are connected in series across a 36 V source. What is the voltage across R2 using the voltage division rule?
Question 11: END

Option_a: 12 V
Option_b: 18 V
Option_c: 24 V
Option_d: 30 V
correct_option: c) 24 V

Question 12: START
Three resistors R1=4Ω, R2=5Ω, and R3=6Ω are connected in series across a 45 V source. What is the voltage across R3 using the voltage division rule?
Question 12: END

Option_a: 10 V
Option_b: 15 V
Option_c: 20 V
Option_d: 25 V
correct_option: b) 15 V

Question 13: START
A circuit has two resistors R1=2Ω and R2=8Ω connected in parallel. If the total current entering the parallel combination is 20 A, what is the current through R1 using the current division rule?
Question 13: END

Option_a: 16 A
Option_b: 10 A
Option_c: 4 A
Option_d: 2 A
correct_option: a) 16 A

Question 14: START
Two resistors R1=3Ω and R2=12Ω, are connected in parallel across a 24 V source. What is the current through R1 using the current division rule?
Question 14: END

Option_a: 1 A
Option_b: 2 A
Option_c: 6 A
Option_d: 8 A
correct_option: c) 6 A

Question 15: START
In a series circuit with resistors R1=10Ω, R2=20Ω, and R3=30Ω connected to a 60 V battery, calculate the voltage drop across R1 using the voltage division rule.
Question 15: END

Option_a: 10 V
Option_b: 15 V
Option_c: 20 V
Option_d: 30 V
correct_option: a) 10 V

Question 16: START
Three resistors R1=2Ω, R2=4Ω, and R3=8Ω are connected in parallel. If the total current entering the parallel combination is 24 A, what is the current through R3 using the current division rule?
Question 16: END

Option_a: 6 A
Option_b: 8 A
Option_c: 12 A
Option_d: 18 A
correct_option: a) 6 A

Question 17: START
For a series circuit with resistors R1=1Ω, R2=4Ω, and R3=5Ω, the total resistance is 10 Ω. If the circuit is powered by a 20 V source, what is the voltage drop across R2 using the voltage division rule?
Question 17: END

Option_a: 2 V
Option_b: 8 V
Option_c: 10 V
Option_d: 5 V
correct_option: b) 8 V

Question 18: START
In a parallel circuit, R1=6Ω and R2=3Ω with a total current of 18 A flowing into the combination. Calculate the current through R1 using the current division rule.
Question 18: END

Option_a: 6 A
Option_b: 9 A
Option_c: 12 A
Option_d: 15 A
correct_option: a) 6 A

Question 19: START
A 10 V source is connected across two resistors, R1=3Ω and R2=7Ω, in series. What is the voltage across R1 using the voltage division rule?
Question 19: END

Option_a: 3 V
Option_b: 4 V

Option_c: 5 V
Option_d: 7 V
correct_option: a) 3 V

Question 20: START
In a circuit with resistors R1=5Ω and R2=15Ω connected in parallel, the total current entering the combination is 40 A. Calculate the current through R2 using the current division rule.
Question 20: END

Option_a: 10 A
Option_b: 20 A
Option_c: 30 A
Option_d: 40 A
correct_option: a) 10 A

Question 21: START
Three resistors are connected in a star (Y) configuration with resistances RA=5Ω, RB=10Ω, and RC=15Ω. What is the equivalent resistance between two terminals after converting the network to a delta (Δ) configuration?
Question 21: END

Option_a: 25 Ω
Option_b: 30 Ω
Option_c: 50 Ω
Option_d: 75 Ω
correct_option: b) 30 Ω

Question 22: START
In a delta network, the resistances are given as RAB=12Ω, RBC=24Ω, and RCA=36Ω. What is the equivalent resistance RA in the star network?
Question 22: END

Option_a: 6 Ω
Option_b: 8 Ω
Option_c: 10 Ω
Option_d: 12 Ω
correct_option: a) 6 Ω

Question 23: START
For a delta network with resistances RAB=30Ω, RBC=60Ω, and RCA=90Ω, the equivalent star resistance RB is given by which formula?
Question 23: END

Option_a: RB=(RAB·RBC)/(RAB+RBC+RCA)
Option_b: RB=(RBC·RCA)/(RAB+RBC+RCA)
Option_c: RB=(RCA·RAB)/(RAB+RBC+RCA)
Option_d: RB=(RAB·RBC·RCA)/(RAB+RBC+RCA)
correct_option: b) RB=(RBC·RCA)/(RAB+RBC+RCA)

Question 24: START
In a star network, each resistor has a value of 10 Ω. After converting it to a delta network, what will be the value of each resistor in the delta configuration?
Question 24: END

Option_a: 10 Ω
Option_b: 20 Ω
Option_c: 30 Ω
Option_d: 40 Ω
correct_option: c) 30 Ω

Question 25: START
If a delta network has resistors RAB=6Ω, RBC=12Ω, and RCA=18Ω, find the equivalent star resistance RC.
Question 25: END

Option_a: 3 Ω
Option_b: 4 Ω
Option_c: 5 Ω
Option_d: 6 Ω
correct_option: b) 4 Ω

Question 26: START
In a star network with resistances RA=2Ω, RB=3Ω, and RC=4Ω, what is the equivalent resistance between terminals after converting to a delta configuration?
Question 26: END

Option_a: 9 Ω
Option_b: 12 Ω
Option_c: 15 Ω
Option_d: 18 Ω
correct_option: d) 18 Ω

Question 27: START
A delta network has resistances RAB=10Ω, RBC=15Ω, and RCA=20Ω. What is the value of RA in the equivalent star network?
Question 27: END

Option_a: 5 Ω
Option_b: 7.5 Ω
Option_c: 10 Ω
Option_d: 12 Ω
correct_option: b) 7.5 Ω

Question 28: START
In a balanced delta network, each resistor has a resistance of 12 Ω. If this network is converted to a star configuration, what will be the resistance of each resistor in the star network?
Question 28: END

Option_a: 4 Ω
Option_b: 8 Ω
Option_c: 10 Ω

Option_d: 10 Ω
correct_option: a) 4 Ω

Question 29: START
Given a delta network with resistances RAB=8Ω, RBC=16Ω, and RCA=24Ω, what is the total resistance across terminals A and B after converting it to a star network?
Question 29: END

Option_a: 4 Ω
Option_b: 6 Ω
Option_c: 8 Ω
Option_d: 12 Ω
correct_option: c) 8 Ω

Question 30: START
In Thevenin's Theorem, the Thevenin equivalent circuit for a linear two-terminal network consists of:
Question 30: END

Option_a: An ideal current source and a resistor in series
Option_b: An ideal voltage source and a resistor in series
Option_c: A capacitor and a resistor in parallel
Option_d: An inductor and a resistor in parallel
correct_option: b) An ideal voltage source and a resistor in series

Question 31: START
For a given circuit, the open-circuit voltage across terminals A and B is 12 V, and the equivalent resistance seen from these terminals is 4 Ω. What is the Thevenin equivalent voltage and resistance?
Question 31: END

Option_a: 6 V, 4 Ω
Option_b: 12 V, 4 Ω
Option_c: 12 V, 8 Ω
Option_d: 24 V, 4 Ω
correct_option: b) 12 V, 4 Ω

Question 32: START
In a circuit with a Thevenin equivalent voltage of 15 V and a Thevenin resistance of 5 Ω, what load resistance will maximize the power transferred to the load?
Question 32: END

Option_a: 2.5 Ω
Option_b: 5 Ω
Option_c: 10 Ω
Option_d: 15 Ω
correct_option: b) 5 Ω

Question 33: START
Thevenin's Theorem is applicable only to circuits that are:
Question 33: END

Option_a: Linear and bilateral

Option_b: Non-linear and unilateral
Option_c: Linear and time-invariant
Option_d: Non-linear and time-variant
correct_option: a) Linear and bilateral

Question 34: START
If the load resistance RL is connected to a Thevenin equivalent circuit with a Thevenin voltage Vth=10V and Thevenin resistance Rth=5Ω, what is the current through RL when RL=5Ω?
Question 34: END

Option_a: 1 A
Option_b: 2 A
Option_c: 0.5 A
Option_d: 10 A
correct_option: a) 1 A

Question 35: START
In a circuit, the open-circuit voltage across two terminals is 20 V, and the short-circuit current across the same terminals is 5 A. What is the Thevenin resistance?
Question 35: END

Option_a: 2 Ω
Option_b: 4 Ω
Option_c: 5 Ω
Option_d: 10 Ω
correct_option: b) 4 Ω

Question 36: START
A complex circuit has a Thevenin equivalent voltage of 25 V and a Thevenin resistance of 50 Ω. If a 50 Ω load is connected to the Thevenin equivalent, what is the voltage across the load?
Question 36: END

Option_a: 12.5 V
Option_b: 25 V
Option_c: 50 V
Option_d: 0 V
correct_option: a) 12.5 V

Question 37: START
For maximum power transfer in a circuit, the load resistance RL should be:
Question 37: END

Option_a: Twice the Thevenin resistance
Option_b: Half the Thevenin resistance
Option_c: Equal to the Thevenin resistance
Option_d: Very large compared to the Thevenin resistance
correct_option: C) Equal to the Thevenin resistance

Question 38: START
A network has an internal Thevenin resistance of 10 Ω and a Thevenin voltage of 40 V. To maximize power transfer, what power is delivered to the load?
Question 38: END

Option_a: 40 W
Option_b: 80 W
Option_c: 160 W
Option_d: 200 W
correct_option: b) 80 W

Question 39: START
For a circuit with Thevenin equivalent voltage Vth=12V and Thevenin resistance Rth=6Ω, what is the current through a load resistance RL=12Ω when connected across the terminals?
Question 39: END

Option_a: 0.5 A
Option_b: 1 A
Option_c: 1.5 A
Option_d: 2 A
correct_option: a) 0.5 A

Question 40: START
In Norton's Theorem, the Norton equivalent circuit of a linear two-terminal network consists of:
Question 40: END

Option_a: An ideal current source and a resistor in series
Option_b: An ideal voltage source and a resistor in series
Option_c: An ideal current source and a resistor in parallel
Option_d: A capacitor and an inductor in series
correct_option: c) An ideal current source and a resistor in parallel

Question41: START
In superposition theorem, when we consider the effect of one voltage source, all the other voltage sources are
Question41: END

Option_a: Shorted
Option_b: Opened
Option_c: Removed
Option_d: Undisturbed
correct_option: Shorted

Question 42: START
In superposition theorem, when we consider the effect of one current source, all the other voltage sources are
Question42: END

Option_a: Shorted
Option_b: Opened
Option_c: Removed

Option_d: Undisturbed
correct_option: Shorted

Question43: START
In superposition theorem, when we consider the effect of one voltage source, all the other current sources are
Question43: END

Option_a: Shorted
Option_b: Opened
Option_c: Removed
Option_d: Undisturbed
correct_option: Opened

Question44: START
In superposition theorem, when we consider the effect of one current source, all the other current sources are
Question44: END

Option_a: Shorted
Option_b: Opened
Option_c: Removed
Option_d: Undisturbed
correct_option: Opened

Question45: START
Superposition theorem is valid for
Question45: END

Option_a: Linear systems
Option_b: Non-linear systems
Option_c: Both linear and non-linear systems
Option_d: Neither linear nor non-linear systems
correct_option: Linear systems

Question46: START
Superposition theorem does not work for
Question46: END

Option_a: Current
Option_b: Voltage
Option_c: Power
Option_d: Works for all: current, voltage and power
correct_option: Power

Question47: START
Which of the following statements is/are correct regarding superposition theorem
(1). It can be used to calculate voltage , current and power
(2). It can be used to calculate voltage and current in a circuit containing resistor , inductor and diode.

(3). It can be used to calculate voltage and current in a circuit having linear elements resistor , capacitor and inductor
Question47: END

Option_a: (1),(2) and (3)
Option_b: (1) and (2) only
Option_c: (3) only
Option_d: (3) and (2) only
correct_option: (3) only

Question48: START
For applying the superposition theorem, we need
Question48: END

Option_a: No source
Option_b: Only one source
Option_c: Two or more sources
Option_d: None of the options
correct_option: Two or more sources

Question49: START
The maximum power drawn from source depends on _____
Question49: END

Option_a: Value of source resistance
Option_b: Value of load resistance
Option_c: Both source and load resistance
Option_d: Neither source or load resistance
correct_option: Value of load resistance

Question50: START
The maximum power is delivered from a source to its load when the load resistance is _____ the source resistance.
Question50: END

Option_a: greater than
Option_b: less than
Option_c: equal to
Option_d: less than or equal to
correct_option: equal to

Question51: START
What is the principle of the transformer?
Question51: END

Option_a: Gauss law
Option_b: Coulomb’s law
Option_c: Electromagnetic induction
Option_d: Ampere’s law

correct_option: Electromagnetic induction

Question52: START
Voltage induced in secondary coil of transformer is given by_____.
Question52: END

Option_a: N_P*V_P/N_S
Option_b: N_S*V_P/N_P
Option_c: $(N_P/V_P)*N_S$
Option_d: $N_P/(V_P*N_S)$
correct_option: N_S*V_P/N_P

Question53: START
According to _____ induced e.m.f. opposes the cause due to which they are produced
Question53: END

Option_a: Lenz law
Option_b: Newton's law
Option_c: Faraday's law
Option_d: Coulomb's law
correct_option: Lenz law

Question54: START
The emf induced in a coil having N turns is?
Question54: END

Option_a: E = φ/t
Option_b: E = N*φ/t
Option_c: E = N*φ*t
Option_d: $E = N^2*\varphi*t$
correct_option: E = N*φ/t

Question55: START
According to _____ induced emf is equal to rate of change of magnetic flux
Question55: END

Option_a: Newton's law
Option_b: Lenz law
Option_c: Faraday's law
Option_d: Coulomb's law
correct_option: Faraday's law

Question56: START
Transformer cores are laminated to reduce
Question56: END

Option_a: Copper loss

Option_b: Eddy current loss
Option_c: Hysteresis loss
Option_d: All of the above
correct_option: Eddy current loss

Question57: START
To reduce hysteresis loss, transformer core is made of
Question57: END

Option_a: Silicon steel
Option_b: Aluminium
Option_c: Copper
Option_d: Lead
correct_option: Silicon steel

Question58: START
If the transformer is loaded then the secondary terminal voltage _____ for lagging power factor.
Question58: END

Option_a: falls
Option_b: rise
Option_c: double
Option_d: none of the above
correct_option: falls

Question59: START
The efficiency of the transformer will be maximum when
Question59: END

Option_a: Iron losses is equal to the twice of the copper losses
Option_b: Copper losses is equal to the twice of the iron losses
Option_c: Iron losses is equal to the copper losses
Option_d: All of these
correct_option: Iron losses is equal to the copper losses

Question60: START
Copper losses occurs due to ohmic resistance in
Question60: END

Option_a: Primary winding
Option_b: Secondary winding
Option_c: Both primary and secondary winding
Option_d: None of these
correct_option: Both primary and secondary winding

Question61: START
In transformer if the secondary is open circuited then its terminal voltage is

Question61: END

Option_a: kW
Option_b: KVAR
Option_c: kWh
Option_d: KVA
correct_option: KVA

Question62: START
Which of the following does not change in an ordinary transformer
Question62: END

Option_a: Frequency
Option_b: Voltage
Option_c: Current
Option_d: Power
correct_option: Frequency

Question63: START
If primary number of turns are higher then, transformer is called _____
Question63: END

Option_a: Step-down
Option_b: Step-up
Option_c: One-one
Option_d: Autotransformer
correct_option: Step-down

Question64: START
If secondary number of turns are higher then, transformer is called _____
Question64: END

Option_a: Step-down
Option_b: Step-up
Option_c: One-one
Option_d: Autotransformer
correct_option: Step-up

Question65: START
The open circuit test in a transformer is used to measure__
Question65: END

Option_a: Copper loss
Option_b: Winding loss
Option_c: Total loss
Option_d: Core loss
correct_option: Core loss

Question66: START
Why OC test is performed on LV side?
Question66: END

Option_a: Simple construction
Option_b: Less voltage is required and parameters can be transformed to HV side
Option_c: It'll not give losses if conducted on HV side
Option_d: HV side does not have connections for voltage
correct_option: Less voltage is required and parameters can be transformed to HV side

Question67: START
While conducting short-circuit test on a transformer which side is short circuited?
Question67: END

Option_a: High voltage side
Option_b: Low voltage side
Option_c: Primary side
Option_d: Secondary side
correct_option: Low voltage side

Question68: START
Which types of windings are used in transformer?
Question68: END

Option_a: Helical winding
Option_b: Cylindrical winding
Option_c: Continuous disc winding
Option_d: All of above
correct_option: All of above

Question69: START
Breather is provided in a transformer to
Question69: END

Option_a: Absorb moisture of air during breathing
Option_b: provide cold air in the transformer
Option_c: The filter of transformer oil
Option_d: None of above
correct_option: Absorb moisture of air during breathing

Question70: START
Oil is provided in an oil filled transformer for
Question70: END

Option_a: Lubrication
Option_b: Insulation
Option_c: cooling
Option_d: both cooling and insulation
correct_option: both cooling and insulation

Question71: START
Which of the following is not a part of transformer?
Question71: END

Option_a: Conservator
Option_b: breather
Option_c: Exciter
Option_d: Buchholz relay
correct_option: Exciter

Question72: START
Noise of transformer mainly due to
Question72: END

Option_a: Cooling fan
Option_b: magnetostriction in an iron core
Option_c: Mechanical vibration
Option_d: All of the above
correct_option: magnetostriction in an iron core

Question73: START
The part of a transformer which is visible from outside
Question73: END

Option_a: Bushings
Option_b: Core
Option_c: Primary winding
Option_d: Secondary winding
correct_option: Bushings

Question74: START
Part of the transformer which undergoes most damage from overheating is __
Question74: END

Option_a: Iron core
Option_b: Copper winding
Option_c: Winding insulation
Option_d: Frame or case
correct_option: Winding insulation

Question75: START
Which is the most common, famous and adopted method of cooling of a power transformer?
Question75: END

Option_a: Air blast cooling
Option_b: Natural air cooling

Option_c: Oil cooling
Option_d: Any of the above method can be used
correct_option: Oil cooling

Question76: START
Function of conservator in an electrical transformer is
Question76: END

Option_a: Supply cooling oil to transformer in time of need
Option_b: Provide fresh air for cooling the transformer
Option_c: Protect the transformer from damage when oil expends due to heating
Option_d: Cannot be determined
correct_option: Protect the transformer from damage when oil expends due to heating

Question77: START
Which chemical is used in breather?
Question77: END

Option_a: Asbestos fibre
Option_b: Silica sand
Option_c: Sodium chloride
Option_d: Silica gel
correct_option: Silica gel

Question78: START
Buchholz's relay will give warning and protection against _____
Question78: END

Option_a: Electrical fault inside the transformer itself
Option_b: Electrical fault outside the transformer in outgoing feeder
Option_c: For both outside and inside faults
Option_d: Cannot be determined
correct_option: Electrical fault inside the transformer itself

Question79: START
An auto transformer can be used as
Question79: END

Option_a: Step up device
Option_b: Step down device
Option_c: Both step up and step down
Option_d: None of the above
correct_option: Both step up and step down

Question80: START
In an Auto Transformer, The Primary and Secondary are_____coupled.
Question80: END

Option_a: Electrically only
Option_b: Magnetically only
Option_c: Both electrically & magnetically
Option_d: None of the above
correct_option: Both electrically & magnetically

Question81: START
A load test on a single-phase induction motor is conducted to evaluate its performance under different load conditions.
Question81: END

Option_a: To determine the voltage drop
Option_b: To evaluate motor performance under varying loads
Option_c: To measure the speed of the motor only
Option_d: To test the insulation resistance
correct_option: To evaluate motor performance under varying loads

Question82: START
The efficiency of a single-phase transformer is maximum at:
Question82: END

Option_a: Full load
Option_b: Half load
Option_c: No load
Option_d: Quarter load
correct_option: Half load

Question83: START
In an LVDT, the output voltage is zero when:
Question83: END

Option_a: The core is at the null position
Option_b: The core is fully inserted
Option_c: The supply voltage is maximum
Option_d: The frequency is maximum
correct_option: The core is at the null position

Question84: START
Which type of meter is commonly used to measure energy consumption in households?
Question84: END

Option_a: Ammeters
Option_b: Voltmeters
Option_c: Energy meters
Option_d: Ohmmeters
correct_option: Energy meters

Question85: START
The purpose of using a wattmeter is to measure:

Question85: END

Option_a: Voltage
Option_b: Current
Option_c: Power
Option_d: Resistance
correct_option: Power

Question86: START
A Moving Coil (MC) instrument is primarily used for:
Question86: END

Option_a: AC measurements
Option_b: DC measurements
Option_c: Both AC and DC measurements
Option_d: Frequency measurements
correct_option: DC measurements

Question87: START
The sensitivity of a wattmeter can be increased by:
Question87: END

Option_a: Increasing the resistance of the current coil
Option_b: Decreasing the resistance of the current coil
Option_c: Increasing the inductance of the voltage coil
Option_d: Decreasing the inductance of the voltage coil
correct_option: Increasing the resistance of the current coil

Question88: START
An induction motor is commonly used in:
Question88: END

Option_a: Power plants
Option_b: Domestic appliances
Option_c: Aircraft engines
Option_d: Nuclear reactors
correct_option: Domestic appliances

Question89: START
The function of a capacitor in a single-phase motor is to:
Question89: END

Option_a: Start the motor
Option_b: Increase the speed
Option_c: Reduce the voltage
Option_d: Decrease the current
correct_option: Start the motor

Question90: START
The standard frequency of AC supply in India is:

Question90: END

Option_a: 50 Hz
Option_b: 60 Hz
Option_c: 75 Hz
Option_d: 100 Hz
correct_option: 50 Hz

Question91: START
In the two wattmeter method, when the power factor is zero, the readings of wattmeters are:
Question91: END

Option_a: Both positive
Option_b: Both negative
Option_c: One positive, one negative
Option_d: Zero
correct_option: One positive, one negative

Question92: START
The primary advantage of using an LVDT is its:
Question92: END

Option_a: High accuracy
Option_b: Low cost
Option_c: Large size
Option_d: High power consumption
correct_option: High accuracy

Question93: START
The scale of a Moving Coil (MC) meter is typically:
Question93: END

Option_a: Non-uniform
Option_b: Uniform
Option_c: Exponential
Option_d: Logarithmic
correct_option: Uniform

Question94: START
What is the phase difference between current and voltage in a purely capacitive circuit?
Question94: END

Option_a: 0 degrees
Option_b: 90 degrees
Option_c: 180 degrees
Option_d: 270 degrees
correct_option: 90 degrees

Question95: START
Which instrument is used to measure high-frequency AC signals?

Question95: END

Option_a: Moving Iron (MI) meter
Option_b: Moving Coil (MC) meter
Option_c: Electrodynamometer
Option_d: Digital Oscilloscope
correct_option: Digital Oscilloscope

Question96: START
The power factor of a purely inductive circuit is:
Question96: END

Option_a: Unity
Option_b: Zero
Option_c: 0.5
Option_d: Negative
correct_option: Zero

Question97: START
In an energy meter, the term 'creep' refers to:
Question97: END

Option_a: Unwanted slow rotation of the disc
Option_b: Sudden increase in current
Option_c: Sudden decrease in voltage
Option_d: Constant power factor
correct_option: Unwanted slow rotation of the disc

Question98: START
LVDTs are best suited for measuring:
Question98: END

Option_a: High temperatures
Option_b: Large displacements
Option_c: Small displacements
Option_d: High pressures
correct_option: Small displacements

Question99: START
The slip of an induction motor increases with:
Question99: END

Option_a: Increase in load
Option_b: Decrease in load
Option_c: Increase in speed
Option_d: Increase in voltage
correct_option: Increase in load

Question100: START
The moving coil meter works on the principle of:

Question100: END

Option_a: Electromagnetic induction
Option_b: Electrostatic effect
Option_c: Thermionic emission
Option_d: Motor effect
correct_option: Motor effect

Question101: START
If a device consumes 2 kW power for 5 hours, the energy consumed is:
Question101: END

Option_a: 10 kWh
Option_b: 1 kWh
Option_c: 5 kWh
Option_d: 0.5 kWh
correct_option: 10 kWh

Question102: START
What is the typical range of slip for a single-phase induction motor at full load?
Question102: END

Option_a: 0% to 1%
Option_b: 5% to 7%
Option_c: 10% to 15%
Option_d: 20% to 30%
correct_option: 5% to 7%

Question103: START
The scale of a Moving Iron (MI) instrument is typically:
Question103: END

Option_a: Uniform across all ranges
Option_b: Narrower at low readings and wider at higher readings
Option_c: Wider at low readings and narrower at higher readings
Option_d: Identical to a Moving Coil (MC) instrument scale
correct_option: Narrower at low readings and wider at higher readings

Question104: START
The primary winding of a transformer is connected to:
Question104: END

Option_a: The load
Option_b: The power supply
Option_c: A capacitor
Option_d: A resistor
correct_option: The power supply

Question105: START
The power factor of a purely resistive circuit is:

Question105: END

Option_a: 0
Option_b: 0.5
Option_c: 1
Option_d: Negative
correct_option: 1

Question106: START
What type of losses occur in the core of a transformer?
Question106: END

Option_a: Copper losses
Option_b: Hysteresis losses
Option_c: Windage losses
Option_d: Mechanical losses
correct_option: Hysteresis losses

Question107: START
In an LVDT, what is the function of the core?
Question107: END

Option_a: To provide insulation
Option_b: To induce voltage
Option_c: To measure temperature
Option_d: To change the frequency
correct_option: To induce voltage

Question108: START
The slip of an induction motor is defined as:
Question108: END

Option_a: The difference between synchronous speed and rotor speed
Option_b: The ratio of voltage to current
Option_c: The difference between input and output power
Option_d: The ratio of frequency to speed
correct_option: The difference between synchronous speed and rotor speed

Question109: START
The standard unit for measuring electrical energy is:
Question109: END

Option_a: Watt
Option_b: Joule
Option_c: Kilowatt-hour
Option_d: Volt
correct_option: Kilowatt-hour

Question110: START
The direction of rotation of a three-phase motor can be changed by:

Question110: END

Option_a: Changing the voltage
Option_b: Reversing two of the phase connections
Option_c: Increasing the frequency
Option_d: Adding a capacitor
correct_option: Reversing two of the phase connections

Question111: START
The voltage regulation of a transformer is:
Question111: END

Option_a: The ratio of load voltage to no-load voltage
Option_b: The change in secondary voltage from no-load to full-load
Option_c: The efficiency of the transformer
Option_d: The resistance of the winding
correct_option: The change in secondary voltage from no-load to full-load

Question112: START
What is the function of the commutator in a DC motor?
Question112: END

Option_a: To change AC to DC
Option_b: To reverse the direction of current
Option_c: To increase voltage
Option_d: To decrease resistance
correct_option: To reverse the direction of current

Question113: START
An energy meter is calibrated in:
Question113: END

Option_a: Volts
Option_b: Watts
Option_c: Amperes
Option_d: kWh
correct_option: kWh

Question114: START
The purpose of a starter in an induction motor is to:
Question114: END

Option_a: Increase the speed
Option_b: Limit the starting current
Option_c: Decrease the voltage
Option_d: Improve power factor
correct_option: Limit the starting current

Question115: START
The efficiency of a transformer under full load is:

Question115: END

Option_a: Always 100%
Option_b: Less than 100%
Option_c: More than 100%
Option_d: Equal to the power factor
correct_option: Less than 100%

Question116: START
A Moving Iron (MI) instrument is primarily used for:
Question116: END

Option_a: DC measurements
Option_b: High-frequency measurements
Option_c: AC measurements
Option_d: Resistance measurements
correct_option: AC measurements

Question117: START
The purpose of a fuse in an electrical circuit is to:
Question117: END

Option_a: Increase current
Option_b: Protect against overcurrent
Option_c: Measure voltage
Option_d: Store energy
correct_option: Protect against overcurrent

Question118: START
The typical range of efficiency for an induction motor is:
Question118: END

Option_a: 50-60%
Option_b: 70-80%
Option_c: 85-95%
Option_d: 100%
correct_option: 85-95%

Question119: START
In a star-connected three-phase system, the line voltage is:
Question119: END

Option_a: Equal to the phase voltage
Option_b: Less than the phase voltage
Option_c: More than the phase voltage
Option_d: Zero
correct_option: More than the phase voltage

Question120: START
The primary function of a circuit breaker is to:

Question120: END

Option_a: Provide insulation
Option_b: Switch the circuit on and off
Option_c: Protect against overload
Option_d: Store electrical energy
correct_option: Protect against overload

Question 121: START
In a DC shunt motor, speed is related to armature current as
Question 121: END

Option_a: Directly proportional to the armature current
Option_b: Proportional to the square of the current
Option_c: Independent of armature current
Option_d: Inversely proportional to the armature current
correct_option: Inversely proportional to the armature current

Question 122: START
In a DC shunt motor for zero armature current we get speed
Question 122: END

Option_a: Non-zero and minimum
Option_b: Zero
Option_c: Non-zero and maximum
Option_d: Doesn't depend on armature current
correct_option: - Zero

Question 123: START
As the load is increased the speed of DC shunt motor will
Question 123: END

Option_a: Reduce slightly
Option_b: Increase slightly
Option_c: Increase proportionately
Option_d: Reduce rapidly
correct_option: Increase slightly

Question 124: START
The armature torque of the DC shunt motor is proportional to
Question 124: END

Option_a: Field flux only
Option_b: Armature current only
Option_c: Field flux and armature current
Option_d: Field current
correct_option: Armature current only

Question 125: START
Correct equation of speed-torque characteristic of DC shunt motor is
Question 125: END

Option_a: $[V_t / k\Phi] = [R_a / k^l \Phi^2] T$
Option_b: $[V_t / k\Phi^2] = [R_a / k^l \Phi^2] T$
Option_c: $[V_t / k\Phi] = [R_a / k^l \Phi] T$
Option_d: $[V_t / k\Phi^2] = [R_a / k^l \Phi^2] T$
correct_option: $[V_t / k\Phi] – [R_a / k^l \Phi^2] T$

Question 126: START
For some percentage increase in the torque, which DC motor will have the least percentage increase of input current?
Question 126 : END

Option_a: Series motor
Option_b: Shunt motor
Option_c: Cumulative compound motor
Option_d: Separately exited motor
correct_option: Shunt motor

Question 127: START
If a DC shunt motor is working at full load and if shunt field circuit suddenly opens
Question 127: END

Option_a: Will make armature to take heavy current, possibly burning it
Option_b: Will result in excessive speed, possibly destroying armature due to excessive centrifugal stresses
Option_c: Nothing will happen to motor
Option_d: Motor will come to stop
correct_option: Will make armature to take heavy current, possibly burning it

Question 128: START
The speed of a DC shunt motor can be made more than full load speed by
Question 128: END

Option_a: Reducing the field current
Option_b: Decreasing the armature current
Option_c: Increasing the armature current
Option_d: Increasing the excitation current
correct_option: Reducing the field current

Question 129: START
No load speed of the DC shunt motor is 1322 rpm while full load speed is 1182 rpm. What will be the speed regulation?
Question 129: END

Option_a: 12.82 %
Option_b: 11.8 %
Option_c: 16.6 %
Option_d: 14.2 %
correct_option: 11.8 %

Question 130: START
Magnitude of flux in an energy meter varies _

Question 130: END

Option_a: due to abnormal currents and voltages
Option_b: due to high resistance and inductance values
Option_c: due to changes in the transformer turns
Option_d: due to the induced e.m.f in the windings
correct_option: due to abnormal currents and voltages

Question 131: START
Energy meter creeps due to
Question 131: END

Option_a: due to change in supply
Option_b: due to reversal in polarity of voltage
Option_c: due to asymmetry in magnetic circuit
Option_d: due to turns ratio of transformer
correct_option: due to asymmetry in magnetic circuit

Question 132: START
How is the flux of shunt coil related to voltage?
Question 132: END

Option_a: flux is proportional to square of voltage
Option_b: directly proportional
Option_c: inversely proportional
Option_d: independent of each other
correct_option: flux is proportional to square of voltage

Question 133: START
Supply voltage in an energy meter is
Question 133: END
Option_a: constant always
Option_b: zero always
Option_c: depends on the load
Option_d: can fluctuate
correct_option: can fluctuate

Question134: START
How is the flux of shunt coil related to voltage?
Question134: END

Option_a: flux is proportional to square of voltage
Option_b: directly proportional
Option_c: inversely proportional
Option_d: independent of each other
correct_option: flux is proportional to square of voltage

Question 135: START
How can temperature effect be compensated in an energy meter?
Question 135: END

Option_a: through heat sinks
Option_b: by a temperature shunt
Option_c: by using resistance
Option_d: by using a coolant
correct_option: by a temperature shunt

Question 136: START
In some energy meters, creeping can be avoided by
Question 136: END

Option_a: attaching small gold pieces
Option_b: attaching small aluminium pieces
Option_c: attaching small iron pieces
Option_d: attaching small zinc pieces
correct_option: attaching small iron pieces

Question: 137 START
Routh Hurwitz criterion gives:
Question 137: END

Option_a: Number of roots in the right half of the s-plane
Option_b: Value of the roots
Option_c: Number of roots in the left half of the s-plane
Option_d: Number of roots in the top half of the s-plane
correct_option: Number of roots in the right half of the s-plane

Question138: START
Routh Hurwitz criterion cannot be applied when the characteristic equation of the system containing coefficient's which is/are
Question138: END

Option_a: Exponential function of s
Option_b: Sinusoidal function of s
Option_c: Complex
Option_d: Exponential and sinusoidal function of s and complex
correct_option: Exponential and sinusoidal function of s and complex

Question139: START
Consider the following statement regarding Routh Hurwitz criterion
Question139: END

Option_a: It gives absolute stability
Option_b: It gives gain and phase margin
Option_c: It gives the number of roots lying in RHS of the s-plane
Option_d: It gives gain, phase margin and number of roots lying in RHS of the s-plane
correct_option: it gives gain, phase margin and number of roots lying in RHS of the s-plane

Question140: START
The order of the auxiliary polynomial is always:

Question140: END

Option_a: Even
Option_b: Odd
Option_c: May be even or odd
Option_d: None of the mentioned
correct_option: Even

Question141: START
Which of the test signals are best utilized by the stability analysis.
Question141: END

Option_a: Impulse
Option_b: Step
Option_c: Ramp
Option_d: Parabolic
correct_option: Impulse

Question142: START
The characteristic equation of a system is given as3s4+10s3+5s2+2=0. This system is:
Question142: END

Option_a: Stable
Option_b: Marginally stable
Option_c: Unstable
Option_d: Linear
correct_option: Unstable

Question143: START
The characteristic equation of a system is given ass3+25s2+10s+50=0. What is the number of the roots in the right half s-plane and the imaginary axis respectively?
Question143: END

Option_a: 1,1
Option_b: 0,0
Option_c: 2,1
Option_d: 1,2
correct_option: 0,0

Question144: START
The necessary condition for the stability of the linear system is that all the coefficients of characteristic equation 1+G(s)H(s) =0, be real and have the
Question144: END

Option_a: Positive sign
Option_b: Negative sign
Option_c: Same sign
Option_d: Both positive and negative
correct_option: Same sign

Question145: START

For making an unstable system stable:
Question145: END

Option_a: Gain of the system should be increased
Option_b: Gain of the system should be decreased
Option_c: The number of zeroes to the loop transfer function should be increased
Option_d: The number of poles to the loop transfer function should be increased
correct_option: Gain of the system should be decreased

Question 146: START
The order of the auxiliary polynomial is always:
Question 146: END

Option_a: Even
Option_b: Odd
Option_c: May be even or odd
Option_d: None of the mentioned
correct_option: Even

Question147: START
The major components of a controller are
Question147: END

Option_a: Control element
Option_b: Error detector and control element
Option_c: Feedback element
Option_d: Error detector and feedback element
correct_option: Error detector and control element

Question148: START
What is an electric drive?
Question148: END

Option_a: A machine that converts electrical energy into kinetic energy
Option_b: A machine that converts mechanical energy into electrical energy
Option_c: A machine that converts electrical energy into mechanical energy
Option_d: A machine that converts kinetic energy into electrical energy
correct_option: A machine that converts electrical energy into mechanical energy

Question149: START
Which of the following is used to build a electric drive?
Question149: END

Option_a: Source
Option_b: Motor
Option_c: Control unit
Option_d: All of the mentioned
correct_option: All of the mentioned

Question150: START

Which of the following is/are components of an electric drive?
Question150: END

Option_a: Control unit and Power Modulator
Option_b: Electric Motor and Control System
Option_c: Input Command
Option_d: Sensing Device and Electric Motor
correct_option: Electric Motor and Control System

Question151: START
Which of the following is a function of electric drive?
Question151: END

Option_a: Transport energy from the storage system to the wheels
Option_b: Transport energy from the control system to the wheels
Option_c: Transport fuel from the electric motor to the wheels
Option_d: Transport fuel from the storage system to the wheels
correct_option: Transport energy from the storage system to the wheels
Question152: START
Which of the following exhibits linearly rising load torque characteristics
Question152: END

Option_a: Rolling Mills
Option_b: Fan load
Option_c: Separately excited dc generator connected to the resistive load
Option_d: Elevators
correct_option: Separately excited dc generator connected to the resistive load

Question153: START
What is the maximum number of lighting points that can be connected in a circuit?
Question153: END

Option_a: 5
Option_b: 10
Option_c: 8
Option_d: 12
correct_option:10

Question154: START
Which material is used for wiring continuous bus bar?
Question154: END

Option_a: Aluminium
Option_b: Copper
Option_c: Both (A) and (B)
Option_d: None of these
correct_option: Aluminium

Question155: START
For what voltage levels are the screwed conduit circuits used?
Question155: END

Option_a: Less than 250 V
Option_b: For voltages between 250 V – 600 V
Option_c: For voltages above 600 V
Option_d: None of these
correct_option: For voltages between 250 V – 600 V

Question156: START
Which among these is a method of wiring?
Question156: END

Option_a: Joint box
Option_b: Tee system
Option_c: Loop in system
Option_d: All of these
correct_option All of these

Question157: START
Blinking of fluorescent tube may be on account of
Question157: END

Option_a: Low circuit voltage
Option_b: Loose contact
Option_c: Defective starter
Option_d: Any of the above
correct_option: Any of the above

Question158: START
For operation of fluorescent tube on DC supply the additional device incorporated in the Tube circuit is a
Question158: END

Option_a: Transformer
Option_b: Resistor
Option_c: Inductor
Option_d: All of the above
correct_option: Resistor

Question159: START
A capacitor is connected across the fluorescent tube circuit in order to
Question 159: END

Option_a: Eliminate the noise
Option_b:. Limit the current
Option_c: Improve the power factor of the tube circuit
Option_d: None of the mentioned
correct_option: Improve the power factor of the tube circuit

Question160: START
The Flickr effect of fluorescent lamps is more pronounced at
Question160: END

Option_a: Lower voltages
Option_b: Higher voltages
Option_c: Higher frequencies
Option_d: Lower frequencies
correct_option: Lower frequencies

Question161: START
For a given system response y(t) to a unit step input u(t), what characteristic of the system can be determined if the response includes an exponential decay term?
Question161: END

Option_a: The system is unstable
Option_b: The system has underdamped poles
Option_c: The system is critically damped
Option_d: The system has no damping
correct_option: The system has underdamped poles

Question162: START
If a unit impulse signal δ(t)\delta(t)δ(t) is applied to a linear time-invariant (LTI) system, which of the following can best describe the resulting output?
Question162: END

Option_a: The output will be a scaled version of δ(t)\delta(t)δ(t)
Option_b: The output will be the impulse response of the system
Option_c: The output will be the step response of the system
Option_d: The output will be zero for all time
correct_option: The output will be the impulse response of the system

Question163: START
A unit ramp function r(t)=tu(t) is applied to a first-order system with a time constantWhich of the following best describes the output response?
Question163: END

Option_a: It will have a constant steady-state value
Option_b: It will linearly increase with time indefinitely
Option_c: It will approach a steady-state ramp with a slope determined by τ\tauτ
Option_d: It will exhibit an oscillatory response
correct_option: It will approach a steady-state ramp with a slope determined by τ\tauτ

Question164: START
In control systems, which of the following input signals is often used to test the transient response characteristics of a system, particularly in feedback control design?
Question164: END

Option_a: Unit ramp signal
Option_b: Unit impulse signal
Option_c: Exponential decay signal
Option_d: Sinusoidal signal
correct_option: Unit impulse signal

Question165: START
Which of the following best describes the response of a second-order system when excited by a unit step signal, if the system is underdamped?
Question165: END

Option_a: A smooth exponential decay to zero
Option_b: An oscillatory response with a decaying amplitude
Option_c: A ramp response with steady-state error
Option_d: A steady-state constant response with zero overshoot
correct_option: An oscillatory response with a decaying amplitude

Question166: START
When comparing the Fourier series representation of a square wave and a sinusoidal wave of the same frequency, what key characteristic distinguishes them?
Question166: END

Option_a: Square wave contains only even harmonics
Option_b: Sinusoidal wave contains more harmonics
Option_c: Square wave contains odd harmonics, sinusoidal contains only the fundamental
Option_d: Sinusoidal wave has a flat amplitude spectrum
correct_option: Square wave contains odd harmonics, sinusoidal contains only the fundamental

Question167: START
In a DIT-FFT algorithm, what key operation differentiates it from the direct computation of the Discrete Fourier Transform (DFT)?
Question167: END

Option_a: Computation is based on breaking the input sequence into even and odd parts
Option_b: The output sequence is reversed
Option_c: It only calculates half of the DFT coefficients
Option_d: It requires complex conjugate multiplications at each step
correct_option: Computation is based on breaking the input sequence into even and odd parts

Question168: START
In a DIF-FFT algorithm, what is the main reason for performing decimation on the output instead of the input sequence?
Question168: END

Option_a: To minimize the total number of computations required
Option_b: To apply twiddle factors more efficiently
Option_c: To ensure that the input sequence remains in natural order
Option_d: To reduce the memory usage during computation
correct_option: To ensure that the input sequence remains in natural order

Question169: START
In a scenario where you need to minimize the number of arithmetic operations for a large input sequence, which FFT structure (DIT or DIF) would you prefer, and how would the choice impact the computation?

Question169: END

Option_a: DIT, because it reduces complex multiplications in each stage
Option_b: DIT, as it performs bit-reversal at the output, optimizing the sequence
Option_c: DIF, as it places the twiddle factor multiplications in initial stages, reducing overall complexity
Option_d: DIF, because it limits additions in the later stages
correct_option: DIF, as it places the twiddle factor multiplications in initial stages, reducing overall complexity

Question170: START
How does the butterfly computation in DIT-FFT differ from that in DIF-FFT with respect to the application of twiddle factors?
Question170: END

Option_a: DIT-FFT applies twiddle factors after the butterfly operation
Option_b: DIT-FFT applies twiddle factors only at the last stage
Option_c: DIF-FFT applies twiddle factors before the butterfly operation
Option_d: Both algorithms apply twiddle factors at every stage
correct_option: DIF-FFT applies twiddle factors before the butterfly operation

Question171: START
In an 8-point FFT, the DIT-FFT and DIF-FFT produce the same result but in different orders. What output difference specifically distinguishes the final outputs of DIT-FFT from DIF-FFT?
Question171: END

Option_a: DIT-FFT provides output in bit-reversed order, while DIF-FFT provides it in natural order
Option_b: DIT-FFT provides output in natural order, while DIF-FFT provides it in bit-reversed order
Option_c: Both algorithms output in bit-reversed order
Option_d: Both algorithms output in natural order
correct_option: DIT-FFT provides output in bit-reversed order, while DIF-FFT provides it in natural order

Question172: START
Given that both DIT and DIF FFTs involve recursive butterfly operations, in what case would the butterfly structure in DIT be more advantageous than DIF, especially in terms of implementation on a software-based digital signal processor (DSP)?
Question172: END

Option_a: When the input data is naturally in bit-reversed order
Option_b: When the algorithm needs to minimize memory for each butterfly stage
Option_c: When the DSP is optimized for forward-order computations, aligning with DIT's bit-reversed input order
Option_d: When minimizing latency across stages is essential
correct_option: When the DSP is optimized for forward-order computations, aligning with DIT's bit-reversed input order

Question173: START
You are comparing the speed and efficiency of DIT and DIF FFT algorithms for a research project on high-frequency data processing. Which key factors would you prioritize in selecting one algorithm over the other, and what would be your choice?
Question173: END

Option_a: Choose DIT for lower frequency resolution and simplicity

Option_b: Choose DIF for faster computation in hardware due to in-place input structure Option_c: Choose DIT to reduce the total memory requirement
Option_d: Choose DIF to minimize frequency resolution in final stages
correct_option: Choose DIF for faster computation in hardware due to in-place input structure

Question174: START
In designing an FFT algorithm for adaptive filtering applications, where rapid and efficient frequency updates are essential, would DIT or DIF be preferable, and why?
Question174: END

Option_a: DIT, since it can more easily accommodate dynamic input changes
Option_b: DIF, as it optimizes the use of twiddle factors in each stage
Option_c: DIT, due to its reduced need for twiddle factor adjustments
Option_d: DIF, as it allows for quick adjustments with natural order inputs
correct_option: DIF, as it allows for quick adjustments with natural order inputs

Question175: START
If your goal is to implement a parallel FFT computation on a multicore processor, which algorithm (DIT or DIF) would facilitate more efficient parallel processing, and what is the reason behind this choice?
Question175: END

Option_a: DIT, as it allows parallel processing through its decimation structure
Option_b: DIF, because it organizes computations such that later stages can be parallelized
Option_c: DIF, as it provides natural ordering at each stage, simplifying data distribution across cores
Option_d: DIT, since it inherently minimizes the interdependencies between stages
correct_option: DIF, as it provides natural ordering at each stage, simplifying data distribution across cores

Question176: START
If you were given an 8-point FFT to compute by hand and needed the simplest approach to verify the results, which algorithm (DIT or DIF) would you select, and what would be the rationale behind your choice?
Question176: END

Option_a: DIT, because it provides intermediate results that are easy to validate at each stage
Option_b: DIF, as it maintains a straightforward order of input operations
Option_c: DIF, since it produces outputs in natural order, making verification easier
Option_d: DIT, as it minimizes the twiddle factor computations required for each step correct_option: DIF, since it produces outputs in natural order, making verification easier

Question177: START
system produces zero output for one input and same gives the same output for several other inputs. What is the system called?
a) Non – invertible System
b) Invertible system
c) Non – causal system
d) Causal system
Question177: END

Option_a: Non – invertible System
Option_b: Invertible system

Option_c: Non – causal system
Option_d: Causal system
correct_option Non – invertible System

Question178: START
How is a linear function described as?
a) Zero in Finite out
b) Zero in infinite out
c) Zero in zero out
d) Zero in Negative out
Question178: END

Option_a: Zero in Finite out
Option_b: Zero in infinite out
Option_c: Zero in zero out
Option_d: Zero in Negative out
correct_option: Zero in zero out

Question179: START
If n tends to infinity, is the accumulator function an unstable one?
Question179: END

Option_a: The function is marginally stable
Option_b: The function is unstable
Option_c: The function is stable
Option_d: None of the mentioned
correct_option: The function is unstable

Question180: START
Determine the discrete-time signal: $x(n)=1$ for $n\geq 0$ and $x(n)=0$ for $n<0$
Question180: END

Option_a: Unit ramp sequence
Option_b: Unit impulse sequence
Option_c: Exponential sequence
Option_d: Unit step sequence
correct_option: Unit step sequence

Question181: START
In the context of digital filter design, what is the primary purpose of using the Bilinear Transformation technique?
Question181: END

Option_a: To preserve the frequency response of an analog filter exactly
Option_b: To perform a one-to-one mapping of the impulse response
Option_c: To optimize the phase response of the filter
Option_d: To map the entire analog frequency range to the digital frequency range without aliasing
correct_option To map the entire analog frequency range to the digital frequency range without aliasing

Question182: START
Which of the following best describes how the Bilinear Transformation maps the analog s-plane to the digital z-plane?

Question182: END

Option_a: It maps the entire left half of the s-plane to the entire z-plane
Option_b: It maps the origin of the s-plane to infinity in the z-plane
Option_c: It maps the jω-axis to the unit circle in the z-plane
Option_d: It maps the right half of the s-plane to the left half of the z-plane
correct_option: It maps the jω-axis to the unit circle in the z-plane

Question183: START
In Impulse Invariant Transformation, what is a primary drawback that may arise when designing digital filters from analog prototypes?
Question183: END

Option_a: Aliasing, as it does not prevent overlap of the frequency spectrum
Option_b: Frequency warping, causing an inaccurate mapping of frequencies
Option_c: Non-causal filter design, making it impossible for real-time applications
Option_d: A need for high sampling rates to achieve accurate results
correct_option: Aliasing, as it does not prevent overlap of the frequency spectrum

Question184: START
What is the nature of the following function: y[n] = y[n-1] + x[n]?
Question184: END

Option_a: Integrator
Option_b: Differentiator
Option_c: Subtractor
Option_d: Accumulator
correct_option: Accumulator

Question185: START
Which of the following transformations is better suited for low-pass filter designs when a precise match between analog and digital frequency response is critical?
Question185: END

Option_a: Impulse Invariant Transformation, as it avoids aliasing
Option_b: Bilinear Transformation, as it warps frequencies to maintain shape
Option_c: Impulse Invariant Transformation, due to its simple one-to-one mapping
Option_d: Bilinear Transformation, as it provides a more accurate mapping at low frequencies correct_option: Bilinear Transformation, as it provides a more accurate mapping at low frequencies

Question186: START
In Bilinear Transformation, what effect does the frequency warping have on high-frequency components when transforming from analog to digital?
Question186: END

Option_a: High-frequency components are compressed toward the Nyquist frequency Option_b: High-frequency components are stretched uniformly across the frequency axis
Option_c: High-frequency components are mapped to low frequencies, creating aliasing Option_d: High-frequency components remain unaffected by warping
correct_option: High-frequency components are compressed toward the Nyquist frequency

Question187: START
In designing a high-pass filter using Impulse Invariant Transformation, what must be considered to reduce the effects of aliasing?
Question187: END

Option_a: Use a very low cutoff frequency
Option_b: Increase the sampling frequency to minimize aliasing
Option_c: Apply a pre-warping technique
Option_d: Design a low-pass filter instead and convert it to high-pass
correct_option: Increase the sampling frequency to minimize aliasing

Question188: START
How does the Impulse Invariant Transformation maintain the time-domain characteristics of an analog filter when transforming it to a digital filter?
Question188: END

Option_a: It maps each impulse response sample in the analog domain to the digital domain
Option_b: It applies a pre-warping effect to match impulse timings
Option_c: It mirrors the analog filter's poles exactly onto the z-plane
Option_d: It uses zero-order hold to approximate the analog response
correct_option: It maps each impulse response sample in the analog domain to the digital domain

Question189: START
Consider designing a band-pass digital filter. Given that both Bilinear Transformation and Impulse Invariant Transformation are options, which would you choose and why?
Question189: END

Option_a: Impulse Invariant, to maintain the time-domain characteristics of the analog filter
Option_b: Impulse Invariant, to simplify the mapping of high frequencies
Option_c: Bilinear, to avoid frequency warping in the lower frequency range
Option_d: Bilinear, to avoid aliasing and ensure accurate frequency mapping
correct_option: Bilinear, to avoid aliasing and ensure accurate frequency mapping

Question190: START
For an analog filter with a cutoff frequency close to the Nyquist limit, why would Bilinear Transformation be less ideal for digital conversion, and what would you do to mitigate this issue?
Question190: END

Option_a: Frequency warping distorts high frequencies, so apply pre-warping to compensate
Option_b: It fails to map lower frequencies accurately; increase sampling rate
Option_c: Impulse response aliasing; switch to Impulse Invariant Transformation
Option_d: It inverts the phase response; adjust the pole-zero configuration
correct_option: Frequency warping distorts high frequencies, so apply pre-warping to compensate

Question191: START
Which of the following best explains why a Low Pass Filter is often used in anti-aliasing applications?
Question191: END

Option_a: It allows only high frequencies to pass, reducing high-frequency noise
Option_b: It blocks low frequencies, ensuring only high-frequency components are sampled

Option_c: It attenuates high frequencies, limiting the bandwidth and preventing aliasing
Option_d: It mirrors frequencies to reduce spectral overlap
correct_option It attenuates high frequencies, limiting the bandwidth and preventing aliasing

Question192: START
For audio applications where low-frequency noise is common, which filter type is typically used to remove low-frequency interference while preserving high-frequency components of the signal?
Question192: END

Option_a: Low Pass Filter
Option_b: High Pass Filter
Option_c: Band Pass Filter
Option_d: Band Reject Filter
correct_option: High Pass Filter

Question193: START
In designing a Band Pass Filter, what characteristic must be carefully controlled to ensure the filter accurately targets the desired frequency band?
Question193: END

Option_a: The passband ripple
Option_b: Only the cutoff frequency of the high-pass component
Option_c: The roll-off rate of both the low- and high-frequency cutoffs
Option_d: The gain of the entire frequency range
correct_option: The roll-off rate of both the low- and high-frequency cutoffs

Question194: START
Which of the following filter types would be most effective in removing a specific interfering frequency within a signal while leaving the surrounding frequencies largely unaffected?
Question194: END

Option_a: Low Pass Filter
Option_b: High Pass Filter
Option_c: Band Pass Filter
Option_d: Band Reject Filter
correct_option: Band Reject Filter

Question195: START
Suppose you are designing a filter for an audio application to enhance vocals between 300 Hz and 3 kHz while attenuating other frequencies. Which type of filter is most appropriate, and why?
Question195: END

Option_a: Low Pass Filter, to allow all frequencies below 3 kHz
Option_b: High Pass Filter, to remove frequencies below 300 Hz
Option_c: Band Pass Filter, to pass frequencies only between 300 Hz and 3 kHz
Option_d: Band Reject Filter, to eliminate all frequencies except 300 Hz to 3 kHz

Question196: START
When designing a High Pass Filter for a real-time signal processing system, what potential limitation should you consider regarding the filter's cutoff frequency, and why?
Question196: END

Option_a: The cutoff should be very low to preserve low-frequency components
Option_b: The cutoff should be chosen carefully to avoid unwanted phase distortion near the cutoff frequency
Option_c: The cutoff should be very high to allow only high-frequency signals to pass through Option_d: The cutoff must be flexible to adapt to different signal requirements
correct_option: The cutoff should be chosen carefully to avoid unwanted phase distortion near the cutoff frequency

Question197: START
In wireless communication systems, which type of filter would be chosen to eliminate unwanted signals from neighboring frequency bands, and what is a key requirement of this filter's design?
Question197: END

Option_a: Low Pass Filter, with sharp roll-off
Option_b: High Pass Filter, with gradual roll-off
Option_c: Band Pass Filter, with a narrow bandwidth
Option_d: Band Reject Filter, with selective attenuation
correct_option: Band Reject Filter, with selective attenuation

Question198: START
For a seismic signal processing application that requires monitoring frequencies between 0.1 Hz and 10 Hz, which filter design would you choose and why?
Question198: END

Option_a: Low Pass Filter, to attenuate all frequencies above 10 Hz
Option_b: High Pass Filter, to pass all frequencies above 0.1 Hz
Option_c: Band Pass Filter, to pass frequencies only between 0.1 Hz and 10 Hz
Option_d: Band Reject Filter, to eliminate frequencies outside of the range 0.1 Hz to 10 Hz
correct_option: Band Pass Filter, to pass frequencies only between 0.1 Hz and 10 Hz

Question199: START
You are developing a filter to isolate and analyze harmonic frequencies within a power signal. Which type of filter would allow you to observe harmonic components while filtering out both high- and low-frequency noise?
Question199: END

Option_a: Low Pass Filter, with a low cutoff frequency
Option_b: High Pass Filter, with a high cutoff frequency
Option_c: Band Pass Filter, with a narrow passband centered on the harmonic frequencies
Option_d: Band Reject Filter, tuned to remove the fundamental frequency only
correct_option: Band Pass Filter, with a narrow passband centered on the harmonic frequencies

Question200: START
If you need to design a filter for biomedical signals to suppress 60 Hz power line interference while preserving other signal frequencies, which filter type would you select and how would it be configured?
Question200: END

Option_a: Low Pass Filter with cutoff below 60 Hz
Option_b: High Pass Filter with cutoff above 60 Hz
Option_c: Band Pass Filter targeting the desired biomedical signal frequencies only
Option_d: Band Reject Filter centered at 60 Hz to suppress interference specifically
correct_option: Band Reject Filter centered at 60 Hz to suppress interference specifically

Question201: START
A circuit has a Norton equivalent current of 3 A and a Norton resistance of 4 Ω. What is the equivalent Thevenin voltage?
Question201: END

Option_a: 3 V
Option_b: 6 V
Option_c: 12 V
Option_d: 15 V
correct_option: c) 12 V

Question202: START
A circuit has a Norton equivalent current of 3 A and a Norton resistance of 4 Ω. What is the equivalent Thevenin voltage?
Question202: END

Option_a: 1 Ω
Option_b: 2 Ω
Option_c: 3 Ω
Option_d: 4 Ω
correct_option: b) 2 Ω

Question203: START
If the open-circuit voltage across terminals is 24 V and the short-circuit current across the same terminals is 6 A, what is the Norton resistance?
Question203: END

Option_a: 2 Ω
Option_b: 3 Ω
Option_c: 4 Ω
Option_d: 6 Ω
correct_option: b) 4 Ω

Question204: START
In a Norton equivalent circuit with Norton current I_N=10 A and Norton resistance R_N=5Ω, what is the current through a 5 Ω load connected across the terminals?
Question204: END

Option_a: 2 A
Option_b: 5 A
Option_c: 7.5 A
Option_d: 10 A
correct_option: b) 5 A

Question205: START
The Norton resistance of a network is found to be 10 Ω, and the Norton current is 2 A. If a load resistance of 10 Ω is connected across the terminals, what is the voltage across the load?
Question205: END

Option_a: 5 V
Option_b: 10 V
Option_c: 15 V
Option_d: 20 V
correct_option: b) 10 V

Question206: START
In Norton's Theorem, what happens to all independent sources in the network while calculating the Norton resistance?
Question206: END

Option_a: All voltage sources are short-circuited, and current sources are left open
Option_b: All voltage sources are open-circuited, and current sources are shorted
Option_c: All sources are turned off, meaning voltage sources are shorted, and current sources are opened
Option_d: No change is made to the sources
correct_option: c) All sources are turned off, meaning voltage sources are shorted, and current sources are opened

Question207: START
For a network with a Norton equivalent current of 15 A and a Norton resistance of 3 Ω, calculate the power delivered to a 3 Ω load resistor.
Question207: END

Option_a: 37.5 W
Option_b: 56.25 W
Option_c: 75 W
Option_d: 112.5 W
correct_option: b) 56.25 W

Question208: START
A Norton equivalent circuit has a current source of 8 A and a parallel resistance of 6 Ω. If a 12 Ω resistor is connected across the terminals, what is the equivalent current through the 12 Ω resistor.
Question208: END

Option_a: 2 A
Option_b: 3 A
Option_c: 4 A
Option_d: 6 A
correct_option: b) 3 A

Question209: START
In a circuit, the open-circuit voltage is measured as 50 V, and the short-circuit current is 5 A. What is the Norton equivalent current and resistance?

Question209: END

Option_a: 5 A, 10 Ω
Option_b: 10 A, 5 Ω
Option_c: 2.5 A, 20 Ω
Option_d: 4 A, 12.5 Ω
correct_option: a) 5 A, 10 Ω

Question210: START
Norton's theorem is used to simplify which of the following types of electrical circuits?
Question210: END

Option_a: Only AC circuits
Option_b: Only DC circuits
Option_c: Both AC and DC circuits
Option_d: Only resistive circuits
correct_option: c) Both AC and DC circuits

Question211: START
What is the maximum power that can be transferred to R in the circuit shown below?
Question211: END

Option_a: 2 W
Option_b: 4 W
Option_c: 8 W
Option_d: 16 W
correct_option: 8 W

Question212: START
When the load resistance equal to source resistance, which of the following is maximum
Question212: END

Option_a: Voltage
Option_b: Current
Option_c: Power
Option_d: Power factor
correct_option: Power

Question213: START
Which of the following transformer, Buchholz's relay can be fixed on?
Question213: END

Option_a: Welding transformers
Option_b: Oil cooled transformers
Option_c: Auto-transformers
Option_d: Air-cooled transformers
correct_option: Oil cooled transformers

Question214: START
An ideal transformer will have maximum efficiency at a load such that _____
Question214: END

Option_a: copper loss > iron loss
Option_b: cannot be determined
Option_c: copper loss = iron loss
Option_d: copper loss < iron loss
correct_option: copper loss = iron loss

Question215: START
For a transformer with primary turns 400, secondary turns 100, if 20A current is flowing through primary, we will get _____
Question215: END

Option_a: 800A at secondary
Option_b: 40A at secondary
Option_c: 80A at secondary
Option_d: 5A at secondary
correct_option: 80A at secondary

Question216: START
The full-load copper loss of a transformer is 1600 W. At half-load, the copper loss will be _____
Question216: END

Option_a: 1600 W
Option_b: 6400 W
Option_c: 400 W
Option_d: 800 W
correct_option: 400 W

Question217: START
Power transformers other than distribution transformers are generally designed to have maximum efficiency around _____
Question217: END

Option_a: 10% overload
Option_b: Near full-load
Option_c: Half-load
Option_d: No-load
correct_option: Near full-load

Question218: START
No-load current in the transformer is _____
Question218: END

Option_a: Sinusoidal distorted
Option_b: Sinusoidal
Option_c: Steps
Option_d: Straight DC
correct_option: Sinusoidal distorted

Question219: START
For a 20kVA transformer with a turn ratio of 0.4 what amount of total power is transferred inductively?
Question219: END

Option_a: 10kVA
Option_b: 8kVA

Option_c: 50kVA
Option_d: 12kVA
correct_option: 12kVA

Question220: START
Which of the following is the major requirement for the transformers used for electronic purposes?
Question220: END

Option_a: Constant amplitude voltage gain
Option_b: Perfect DC isolation, maximum efficiency and constant voltage gain
Option_c: Perfect DC isolation
Option_d: Maximum efficiency
correct_option: Constant amplitude voltage gain

Question221: START
Which type of motor is typically used in electric vehicles for its high torque capabilities?
Question221: END

Option_a: Induction Motor
Option_b: Synchronous Motor
Option_c: Stepper Motor
Option_d: DC Shunt Motor
correct_option: Induction Motor

Question222: START
The primary purpose of using a voltage stabilizer in an electrical system is to:
Question222: END

Option_a: Increase power factor
Option_b: Reduce energy consumption
Option_c: Maintain constant voltage output
Option_d: Protect against short circuits
correct_option: Maintain constant voltage output

Question223: START
What is the typical power factor range for industrial loads?
Question223: END

Option_a: 0.2 to 0.5
Option_b: 0.5 to 0.7
Option_c: 0.7 to 0.9
Option_d: 0.9 to 1.0
correct_option: 0.7 to 0.9

Question224: START
In a three-phase power system, the type of connection that allows for reduced conductor material is:
Question224: END

Option_a: Delta connection
Option_b: Star connection
Option_c: Series connection

Option_d: Parallel connection
correct_option: Star connection

Question225: START
The insulation resistance of a good electrical cable should be:
Question225: END

Option_a: High
Option_b: Low
Option_c: Zero
Option_d: Variable
correct_option: High

Question226: START
The synchronous speed of a 4-pole motor operating on a 50 Hz supply is:
Question226: END

Option_a: 750 RPM
Option_b: 1500 RPM
Option_c: 3000 RPM
Option_d: 3600 RPM
correct_option: 1500 RPM

Question227: START
A rheostat is used in an electrical circuit to:
Question227: END

Option_a: Increase current
Option_b: Decrease voltage
Option_c: Control resistance
Option_d: Store charge
correct_option: Control resistance

Question228: START
The primary function of a transformer is to:
Question228: END

Option_a: Convert AC to DC
Option_b: Step up or step down voltage
Option_c: Store electrical energy
Option_d: Regulate current flow
correct_option: Step up or step down voltage

Question229: START
Which material is commonly used for the core of a transformer?
Question229: END

Option_a: Aluminum
Option_b: Copper
Option_c: Silicon steel
Option_d: Plastic

correct_option: Silicon steel

Question230: START
A power factor of 1 indicates that the load is:
Question230: END

Option_a: Purely resistive
Option_b: Purely inductive
Option_c: Purely capacitive
Option_d: Non-linear
correct_option: Purely resistive

Question 231: START
The Routh-Hurwitz criterion cannot be applied when the characteristic equation of the system contains any coefficients which is :
Question 231: END

Option_a: Negative real and exponential function
Option_b: Negative real, both exponential and sinusoidal function of s
Option_c: Both exponential and sinusoidal function of s
Option_d: Complex, both exponential and sinusoidal function of s
correct_option: Negative real, both exponential and sinusoidal function of s

Question 232: START
The given characteristic equation $s^4+s^3+2s^2+2s+3=0$ has:
Question 232: END

Option_a: Zero root in the s-plane
Option_b: One root in the RHS of s-plane
Option_c: Two root in the RHS of s-plane
Option_d: Three root in the RHS of s-plane
correct_option: Two root in the RHS of s-plane

Question 233: START
The wattmeter reading while measuring the reactive power with wattmeter is?
Question 233: END

Option_a: $V_LI_L\sec\emptyset$
Option_b: $V_LI_L\sin\emptyset$
Option_c: $V_LI_L\tan\emptyset$
Option_d: $V_LI_L\cos\emptyset$
correct_option: - $V_LI_L\sin\emptyset$

Question 234: START
The total reactive power in the load while measuring the reactive power with wattmeter is? Question 234: END

Option_a: $\sqrt{3}V_LI_L\cos\emptyset$
Option_b: $\sqrt{3}V_LI_L\tan\emptyset$
Option_c: $\sqrt{3}V_LI_L\sin\emptyset$
Option_d: $\sqrt{3}\ V_LI_L\sec\emptyset$

correct_option: $\sqrt{3}V_L I_L \sin\emptyset$

Question 235: START
In which of the following motor, ratio of starting torque to full-load torque will be least?
Question 235: END

Option_a: DC series motors
Option_b: DC shunt motors
Option_c: DC compound motors
Option_d: Synchronous motors
correct_option: DC shunt motors

Question 236: START
Which of the following is a function of electric drive?
Question 236: END

Option_a: Transport energy from the storage system to the wheels
Option_b: Transport energy from the control system to the wheels
Option_c: Transport fuel from the electric motor to the wheels
Option_d: Transport fuel from the storage system to the wheels
correct_option: Transport energy from the storage system to the wheels

Question 237: START
In the rotor voltage injection method, when an external voltage source is in phase with the main voltage then speed will
Question 237: END

Option_a: Decrease
Option_b: First increases then decrease
Option_c: Increase
Option_d: Remain unchanged
correct_option: Increase

Question 238: START
Which of the following motor is a 1-Φ AC motor?
Question 238: END

Option_a: Shunt motor
Option_b: Capacitor run
Option_c: Series motor
Option_d: Synchronous motor
correct_option: Capacitor run

Question 239: START
The wattmeter method is used to measure power in a three-phase load. The wattmeter readings are 400W and -35W. Calculate the total active power.
Question 239: END

Option_a: 360
Option_b: 365

Option_c: 370
Option_d: 375
correct_option: 365

Question 240: START
What is the unit of the apparent or complex power?
Question 240: END

Option_a: VA
Option_b: ohm
Option_c: Volt
Option_d: VAR
correct_option: VA

Question241: START
Analyze the purpose of a low pass filter in an audio system. In what scenarios would it be most effectively applied?
Question241: END

Option_a: To allow high frequencies for bass enhancement
Option_b: To pass only low frequencies, filtering out noise
Option_c: To block interference in low-frequency bands
Option_d: To pass all frequencies uniformly
correct_option: To pass only low frequencies, filtering out noise

Question242: START
Identify the application that would benefit from a high pass filter. Why is this choice significant?
Question242: END

Option_a: To improve the bass response in a subwoofer
Option_b: To allow only high frequencies in tweeters
Option_c: Band Pass Filter targeting the desired biomedical signal frequencies only
Option_d: To enhance the entire frequency range in speakers
correct_option: To allow only high frequencies in tweeters

Question243: START
If you need to allow a specific range of frequencies to pass through a system while attenuating others, which filter would you use and why?
Question243: END

Option_a: Low pass filter for reducing high frequencies
Option_b: High pass filter for reducing low frequencies
Option_c: Band pass filter to isolate a frequency range
Option_d: Band reject filter for suppressing a range
correct_option: Band pass filter to isolate a frequency range

Question244: START
Evaluate a band reject filter's role in eliminating specific interference signals. In what type of signal processing is this useful?
Question244: END

Option_a: Low pass filter for audio signal noise
Option_b: High pass filter for eliminating low-frequency hums
Option_c: Notch filter to remove 60 Hz electrical noise
Option_d: Band pass filter for passing only desired signals
correct_option: Notch filter to remove 60 Hz electrical noise

Question245: START
Compare the frequency response characteristics of band pass and band reject filters. What insights can be drawn from their operational differences?
Question245: END

Option_a: Band pass filter passes all frequencies
Option_b: Band reject filter passes frequencies within a certain range
Option_c: Band pass filter blocks all frequencies
Option_d: Band pass passes within a range; band reject blocks a range
correct_option: Band pass passes within a range; band reject blocks a range

Question246: START
Explain the significance of the cutoff frequency in a filter design. How does this affect the filter's performance?
Question246: END

Option_a: It defines where 90% power is transmitted
Option_b: It is where the output falls to 70.7% of input power
Option_c: It has no significant effect on performance
Option_d: It causes full power output at all frequencies
correct_option: It is where the output falls to 70.7% of input power

Question247: START
If a system requires the elimination of high-frequency noise, which type of filter would you analyze and choose?
Question247: END

Option_a: High pass filter to block low-frequency signals
Option_b: Band pass filter to block a wide range
Option_c: Low pass filter to eliminate high-frequency noise
Option_d: Band reject filter to eliminate specific noise frequencies
correct_option: Low pass filter to eliminate high-frequency noise

Question248: START
Examine why an operational amplifier is essential in an active filter circuit. What role does it play in signal processing?
Question248: END

Option_a: Provides resistance
Option_b: Supplies capacitance for frequency adjustment
Option_c: Adds gain and stability to filter performance
Option_d: Reduces the signal power
correct_option: Adds gain and stability to filter performance

Question249: START
Analyze the relationship between the highest and lowest cutoff frequencies in a band pass filter. How would this define the filter's bandwidth?
Question249: END

Option_a: The sum of the frequencies
Option_b: The difference between the frequencies
Option_c: The product of the frequencies
Option_d: Double the highest frequency
correct_option: The difference between the frequencies

Question250: START
Consider a scenario where frequencies within a narrow range need to be blocked while all others are allowed. Which filter would you choose and why?
Question250: END

Option_a: Low pass filter for only low-frequency signals
Option_b: High pass filter for only high-frequency signals
Option_c: Band pass filter to allow a specific range
Option_d: Band reject filter to block a specific frequency range
correct_option: Band reject filter to block a specific frequency range