

ELECTRICIAN

NSQF LEVEL - 5

1st Year

QUESTION BANK

SECTOR : Electrical



Directorate General of Training

DIRECTORATE GENERAL OF TRAINING
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
GOVERNMENT OF INDIA



**NATIONAL INSTRUCTIONAL
MEDIA INSTITUTE, CHENNAI**

Post Box No. 3142, CTI Campus, Guindy, Chennai - 600 032

Sector : Electrical

Duration : 2 - Years

**Trade : Electrician - Question Bank - NSQF Level - 5
1st Year**

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First Edition : June, 2019

Copies : 1,000

Rs.115/-

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Published by:

NATIONAL INSTRUCTIONAL MEDIA INSTITUTE

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Guindy, Chennai - 600 032.**

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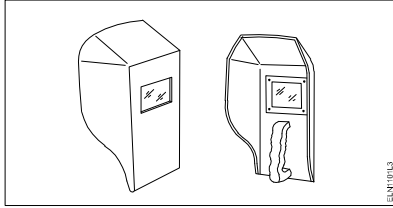
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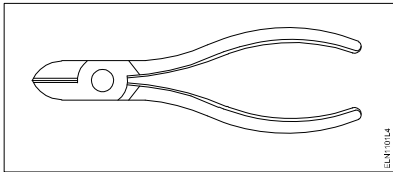
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7 What is the name of PPE?



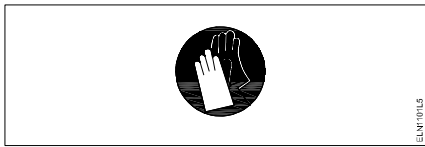
- A Nose mask
- B Head shield
- C Face shield
- D Hand screen

8 What is the name of the tool?



- A Wire stripper
- B Crimping tool
- C Combination pliers
- D Diagonal cutting pliers

9 What is the name of the safety sign?



- A Warning sign
- B Mandatory sign
- C Prohibition sign
- D Information sign

10 What is the name of the cautionary sign?



- A School
- B Guarded
- C Unguarded
- D Pedestrian crossing

Level 2

- 1 Which is the physical hazard?
A Smoking
B Vibration
C Corrosive
D Radio active
- 2 Which is the correct sequence of operation to be performed when using the fire extinguisher?
A Pull, Aim, Squeeze, Sweep
B Pull, Aim, Sweep, Squeeze
C Push, Arrange, Squeeze, Sweep
D Push, Arrange, Sweep, Sequence
- 3 Which plier is used for making wire hooks and loops?
A Flat nose plier
B Long nose plier
C Round nose plier
D Diagonal cutting plier
- 4 What is the use of pincer?
A Twisting the flexible wires
B Cutting small diameter of wires
C Extracting the pin nails from the wood
D Holding small objects, where finger cannot reach
- 5 Which type of fire extinguisher is used for fire on electrical equipment?
A Halon type
B Foam type
C Gas cartridge type
D Stored pressure type
- 6 Which is the waste disposal method that produces heat?
A Recycling
B Composting
C Incineration
D Waste compaction
- 7 Which Personal Protective Equipment (PPE) is used for the protection from fumes?
A Apron
B Goggles
C Ear mask
D Nose mask

- 14 How will you diagnose the victim is suffering under cardiac arrest?
- A Gets pain in spinal guard
 - B Mouth will be closed tightly
 - C Heavy swelling on his stomach
 - D Appears blue colour around his lips
- 15 What will be first-aid to be given to stop the bleeding of the victim?
- A Applying ointment
 - B Keep the injured portion upward
 - C Covering the wound portion by dressing
 - D Applying pressure over the injured portion
- 16 Which is the golden hour for the victim injured on head with risk of dying?
- A First 15 minutes
 - B First 30 minutes
 - C First 45 minutes
 - D First 60 minutes
- 17 Which condition of the victim is referred as COMA stage?
- A Unconscious but can respond to calls
 - B Conscious but cannot respond to calls
 - C Breathing but cannot respond to calls
 - D Lie totally senseless and do not respond to calls

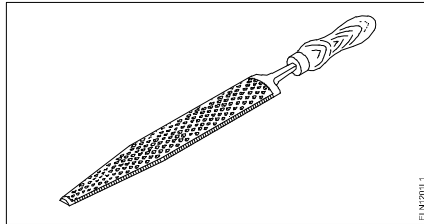
Level 3

- 1 What immediate action should be taken to rescue the victim, if he is still in contact with the electrical power supply?
- A Pull or push him from the contact by hand
 - B Inform your authority about this electric shock
 - C Call someone for helping to remove him from contact
 - D Break the contact by switching OFF the power supply

Module - 2 : Basic Workshop Practice (Allied Trade)

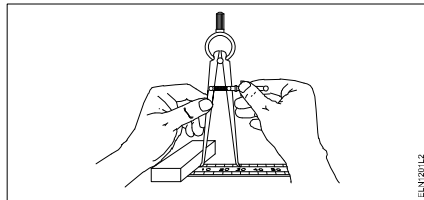
Level 1

1 What is the name of the file?



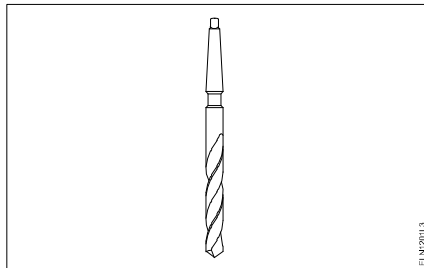
- A Rasp cut file
- B Single cut file
- C Double cut file
- D Curved cut file

2 What is the name of the tool?



- A Divider
- B Inside caliper
- C Odd leg caliper
- D Outside caliper

3 What is the name of the drill bit?



- A Flat drill bit
- B Taper shank bit
- C Countersink bit
- D Straight shank bit

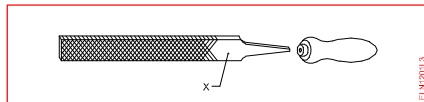
4 What is the name of the stake used for general purpose in sheet metal work?

- A Square stake
- B Hatchet stake
- C Blow horn square stake
- D Bevel edge square stake

5 What is the number 1.25 indicates in ISO metric fine thread M12 x 1.25.?

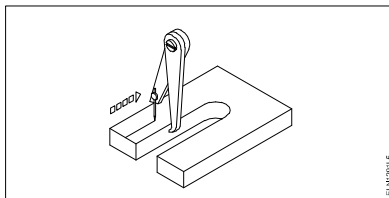
- A Diametric of the thread
- B Pitch of the thread
- C Depth of the thread
- D Length of the thread

6 Name the part marked 'X' of the file.



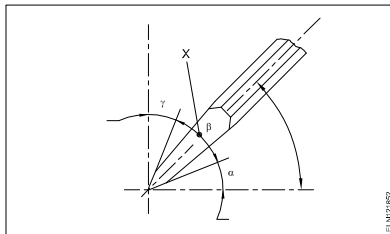
- A Edge
- B Heel
- C Tang
- D Shoulder

7 What is the name of the tool?



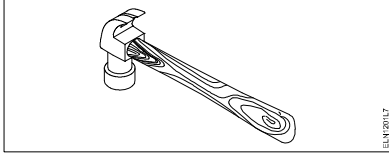
- A Jenny caliper
- B Inside caliper
- C Outside caliper
- D Firm joint caliper

8 What is the name of the angle marked 'X' of the chisel?



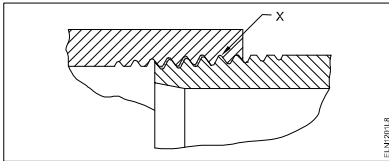
- A Rake angle
- B Point angle
- C Clearance angle
- D Inclination angle

9 What is the name of tool?



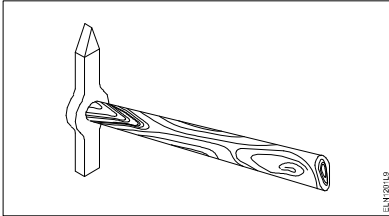
- A Claw hammer
- B Ball pein hammer
- C Cross pein hammer
- D Straight pein hammer

10 What is the name of the formation of thread marked as 'X' in the galvanized sheet pipe joint?



- A Hemp
- B Full form thread
- C Tapered male thread
- D Parallel female thread

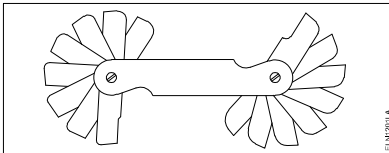
11 What is the name of tool?



- A Claw hammer
- B Tacks hammer
- C Cross pein hammer
- D Straight pein hammer

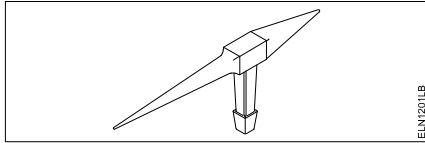
Level 2

1 What is the use of this gauge?



- A Check the internal radius of the job
 - B Check the diameter of cylindrical job
 - C Check the height and parallelism of job
 - D Set the job on machines parallel to datum
- 2 What is the cause for twisting defect in timber?
- A Defective storage
 - B Uneven shrinkage
 - C Improper seasoning
 - D Irregularity in growth of branches
- 3 What is the use of mortise chisel?
- A General chiseling work in wood
 - B Making rectangular holes in wood
 - C Paring and finishing joints in wood
 - D Light chiseling cleaning sharp corners and in wood
- 4 Which type of stake is used for sharp bends in sheet metal?
- A Square stake
 - B Hatchet stake
 - C Blow horn stake
 - D Bevel edge square stake
- 5 Which type of cold chisel is used for squaring materials at the corners?
- A Web chisel
 - B Cross cut chisel
 - C Half round chisel
 - D Diamond point chisel
- 6 Which type of caliper is used to draw parallel lines along the outer edges of the materials?
- A Inside caliper
 - B Jenny caliper
 - C Outside caliper
 - D Spring joint caliper
- 7 Which file is used for sharpening the blunt teeth of a tenon saw?
- A Square file
 - B Round file
 - C Triangular file
 - D Half round file
- 8 What is the use of firmer chisel?
- A Paring and finishing joints
 - B General chiseling work
 - C Making rectangular holes in wood
 - D Light chiseling and to clean sharp corner

17 What is the name of the stake used for sheet metal work?



- A Square stake
- B Hatchet stake
- C Blow-horn stake
- D Bevel-edge square stake

18 Which type of chisel is used for separating metals after chain drilling?

- A Flat chisel
- B Web chisel
- C Cross cut chisel
- D Diamond point chisel

19 Which type of stake is used for riveting or seaming tapered cone shaped articles?

- A Square stake
- B Hatchet stake
- C Blow horn stake
- D Bevel edged square stake

Level 3

1 What defect will occur in timber due to irregularity in growth of the branches?

- A Knot
- B Cupping
- C Cracking
- D Twisting

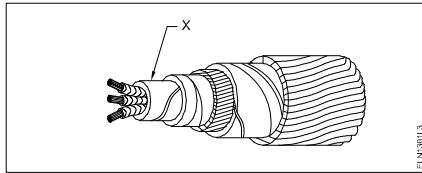
2 Which defect in the timber is caused to reduce its strength?

- A Twisting
- B Cupping
- C Cracking
- D Irregularity

3 Which cause for knot defect in timbers?

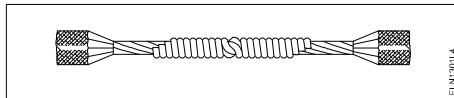
- A Defective storage
- B Uneven shrinkage
- C Growth of branches
- D Improper seasoning

7 What is the name of the part marked 'X' in UG cables?



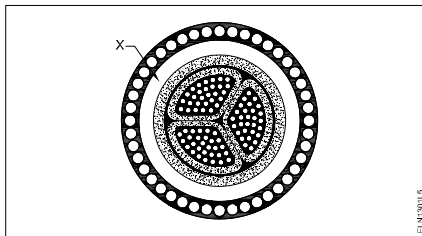
- A Serving
- B Bedding
- C Armouring
- D Lead sheath

8 What is the name of the joint?



- A Married joint
- B Scarfed joint
- C Western union joint
- D Britannia straight joint

9 Name the part marked 'X' of belted U.G cable.



- A Jute filling
- B Armouring
- C Lead sheath
- D Paper insulation

10 What does the number 1.40 represent if a stranded conductor is designated as 7/1.40?

- A Area of cross section
- B Radius of one conductor
- C Diameter of all conductor
- D Diameter of each conductor

11 What is the value of electrical conductivity of aluminium conductor?

- A 61 mho/m
- B 56 mho/m
- C 35 mho/m
- D 28 mho/m

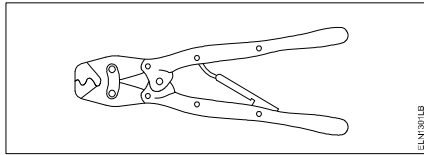
12 What is the rating factor of cable provided with coarse excess current protection?

- A 1.11
- B 1.23
- C 0.81
- D 0.707

13 What is the size of neutral conductor compared to phase conductor in U.G cable?

- A Same size of phase conductor
- B Half size of phase conductor
- C 1/4 size of phase conductor
- D 1/3 size of phase conductor

14 What is the name of the tool?

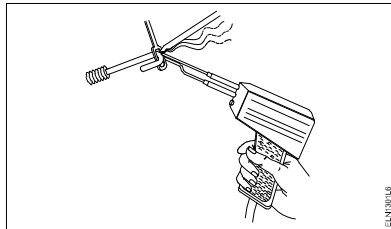


- A Cutting plier
- B Wire stripper
- C Crimping tool
- D Side cutting plier

15 What is the unit for Quantity of electricity?

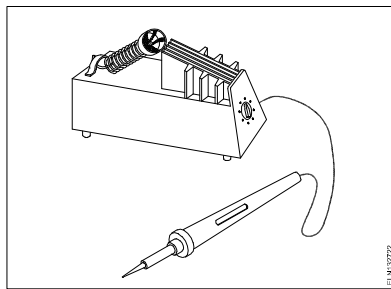
- A Mho
- B Coulomb
- C Volt /second
- D Ampere/second

16 What is the name of the soldering method?



- A Dip soldering
- B Soldering iron
- C Soldering gun
- D Soldering with flame

- 17 Which formula is used to find Electro Motive Force (EMF)?
- A EMF = Potential difference - voltage drop
 - B EMF = Potential difference + voltage drop
 - C EMF = Potential difference + voltage drop/2
 - D EMF = Potential difference + 2 x voltage drop
- 18 What is the current rating factor for close excess current protection of cable?
- A 0.81
 - B 0.92
 - C 1.23
 - D 1.5
- 19 What is the name of the soldering method?



- A Dip soldering
- B Soldering with blow lamp
- C Soldering with soldering gun
- D Temperature controlled soldering

Level 2

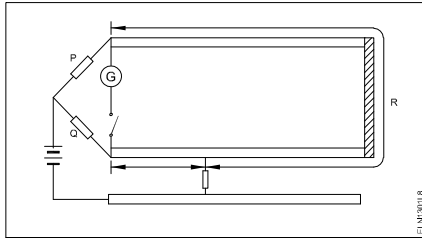
- 1 What is the current carrying capacity of 32 amp.rated cable, if it is protected by the rewirable fuse?
- A 13 Amp
 - B 16 Amp
 - C 26 Amp
 - D 39 Amp
- 2 Which type of soldering flux is used for soldering galvanised iron?
- A Rosin
 - B Zinc chloride
 - C Sal ammonia
 - D Hydrochloric acid

- 10 What is the effect on molten solder due to repeated melting?
- A Tin content reduced
 - B Lead content reduced
 - C Prevent slug formation
 - D Uneven flowing in joints
- 11 Which method of cable laying is suitable for congested areas?
- A Racks in air
 - B Duct pipes
 - C Along buildings
 - D Direct in ground
- 12 Which part of the underground cable is protecting the metallic sheath against corrosion?
- A Serving
 - B Bedding
 - C Armouring
 - D Lead sheath
- 13 Why the soldering iron must be kept into a stand that not in use while soldering?
- A It prevents burns and fire
 - B To control the excessive heat
 - C To save the time of soldering process
 - D To save the operator from electric shock
- 14 Which type of wire joint is found in the junction box?
- A Aerial tap joint
 - B Plain tap joint
 - C Rat tail joint
 - D Married joint
- 15 What is the use of Britannia 'T' joint?
- A Extending the length of the lines
 - B Inside and outside wiring installation
 - C Mechanical stress not required on conductor
 - D Tapping the service connection from overhead lines
- 16 Which type of soldering method is used for servicing and repairing work?
- A Dip soldering
 - B Soldering with a flame
 - C Soldering with soldering gun
 - D Soldering with a soldering iron

- 23 Which method of soldering is used for repairing the vehicle body?
- A Dip soldering B Soldering with flame
C Soldering with soldering iron D Soldering with soldering gun
- 24 What is the advantage of stranded conductor over solid conductor?
- A Cost is less B More flexible
C Less voltage drop D More insulation resistance
- 25 What is the current capacity of the 16 Amp. Cable, if it is protected by coarse excess current protection?
- A 11 A B 13 A
C 15 A D 18 A
- 26 What is the disadvantage of solid conductor compared to stranded conductor?
- A Less rigidity B Less flexibility
C Low melting point D Low mechanical strength
- 27 What is the cause for cold solder defect in soldering?
- A Excessive heating B Insufficient heating
C Incorrect use of solder D High wattage soldering iron
- 28 Which is the example for coarse excess current protection?
- A MCB B MCCB
C H.R.C fuses D Rewireable type fuse unit
- 29 Which conductors are used for distribution lines?
- A Insulated conductors B Insulated solid conductors
C Bare conductors D Two core cable

Level 3

1 Which type of fault of U.G Cable can be located by this loop test?

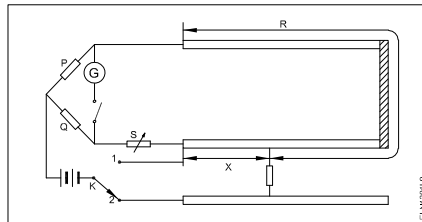


- A Ground fault B Short circuit fault
C Open circuit fault D Weak insulation fault

2 What will happen to PVC insulation in cable carries excess current continuously for long period?

- A Voltage drop increases B Voltage drop decreases
C Insulation resistance increases D Insulation resistance decreases

3 What is the fault of U.G cable identified in the circuit?



- A Ground fault B Short circuit fault
C Open circuit fault D Weak insulation fault

4 What happens to the voltmeter if it is connected as an ammeter?

- A Low reading B No deflection
C Meter burns out D Overshoot deflection

Module - 4 : Basic Electrical Practice

Level 1

1 How many electrons are there in the third cell of the copper atom?

- A 8
B 13
C 18
D 29

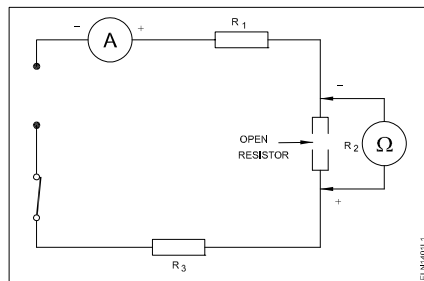
2 Which law states that in closed electric circuit, the applied voltage is equal to the sum of the voltage drops?

- A Ohm's law
B Laws of resistance
C Kirchoff's first law
D Kirchoff's second law

3 What is the formula for the equivalent resistance (R_T) of the three resistors R_1 , R_2 & R_3 are connected in parallel circuit?

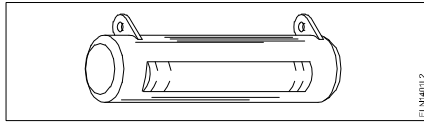
- A $R_T = R_1 + R_2 + R_3$
B $R_T = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$
C $R_T = \frac{1}{R_1 + R_2 + R_3}$
D $R_T = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}}$

4 What is the reading of ohmmeter across opened ' R_2 ' resistor?



- A Indicate zero reading
B Indicate infinite resistance
C Total resistance value of the circuit
D Value of sum of the resistance of R_1 and R_3 only

5 What is the name of the resistor?



- A Metal film resistor
- B Wire wound resistor
- C Carbon - film resistor
- D Carbon composition resistor

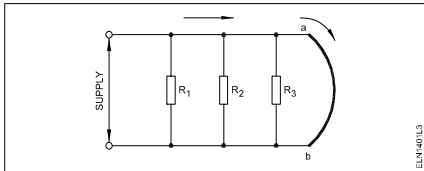
6 What electrical quantities are related in Ohm's law?

- A Current, resistance and power
- B Current, voltage and resistivity
- C Current, voltage and resistance
- D Voltage, resistance and current density

7 What is the unit of resistivity?

- A ohm / cm
- B ohm / cm²
- C ohm - metre
- D ohm / metre

8 What is the effect of the circuit, if 'ab' points are shorted?



- A Circuit resistance will be zero
- B Same current will flow in all branches
- C Supply voltage will exist in each branch
- D Total circuit current is equal to each branch circuit current

9 What is the formula for Quantity of electricity (Q)?

- A Current x Time
- B Voltage x Current
- C Current x Resistance
- D Voltage x Resistance

10 What is the unit of conductance?

- A Mho
- B Ohm
- C Ohm-m
- D Ohm/m

- 11 Which one defines the change in resistance in Ohm per degree centigrade ($^{\circ}\text{C}$)?
- A Temperature effect B Laws of temperature
C Temperature constant D Temperature co-efficient
- 12 What is the S.I unit of specific resistance?
- A Ohm/cm B Ohm/metre²
C Ohm-metre D Micro ohm/cm²
- 13 Which formula is used to calculate the power of a DC circuit?
- A Voltage x time B Current x voltage
C Current x resistance D Voltage x resistance
- 14 What is the specific resistance value of copper conductor?
- A 1.72 Ohm/cm³ B 1.72 Micro ohm
C 1.72 Micro ohm/cm³ D 1.72 Micro ohm/m

Level 2

- 1 Which is the semiconductor material?
- A Eureka B Ebonite
C Manganin D Germanium
- 2 What is the indication of neon polarity indicator used for checking A.C. supply?
- A Both electrodes will glow B Only one electrode will glow
C Both electrodes will be flickering
D One electrode will glow and another will be flickering
- 3 Calculate the electrical energy in unit consumed by 500W lamp for 5 hours.
- A 0.5 unit B 1.0 unit
C 1.5 unit D 2.5 unit

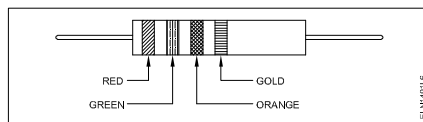
10 What is the effect of the parallel circuit with one branch opened?

- A Current will remain same
- B Whole circuit will not function
- C No current will flow in that branch
- D Voltage drop increase in the opened branch

11 Which type of resistor is used for Arc quenching protection in circuit breakers?

- A Varistors
- B Sensistors
- C Thermistors
- D Light Dependent Resistor (LDR)

12 Calculate the value of resistance by colour coding method?



- A $22 \times 10^3 \pm 10\%$
- B $23 \times 10^4 \pm 10\%$
- C $25 \times 10^3 \pm 5\%$
- D $36 \times 10^4 \pm 5\%$

13 Which is the application of series circuit?

- A Voltmeter connection
- B Lighting circuits in home
- C Shunt resistor in ammeter
- D Multiplier resistor of a voltmeter

14 What is the effect on opened resistor in series circuit?

- A No effect in opened resistor
- B Full circuit current will flow in opened resistor
- C Total supply voltage will appear across the opened resistor
- D No voltage will appear across the opened resistor

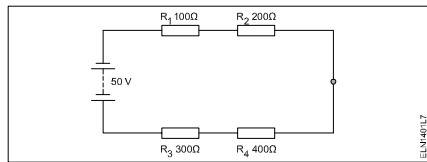
15 What is the name of the resistor if its resistance value increase with increase in temperature?

- A Varistors
- B Senistors
- C Thermistors
- D Light Dependent Resistor (LDR)

16 Which type of meter is used to test the polarity of battery?

- A Moving iron ammeter
- B Moving coil voltmeter
- C Moving iron voltmeter
- D Dynamo meter type wattmeter

17 What is the voltage drop in resistor 'R₂' in the series circuit?



- A 5 volt
- B 10 volt
- C 15 volt
- D 20 volt

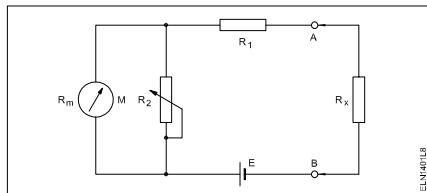
18 Which is the application of series circuit?

- A Fuse in circuit
- B Voltmeter connection
- C Electrical lamp in homes
- D Shunt resistor in ammeter

19 Which method is used for measuring 1 Ohm to 100K Ohm range resistance?

- A Substitution method
- B Kelvin bridge method
- C Wheat stone bridge method
- D Voltmeter and ammeter method

20 What is the purpose of the shunt resistor 'R₂' used in series type Ohm meter circuit?

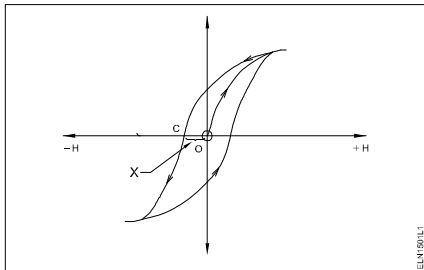


- A To limit the current in the circuit
- B To increase the value of meter resistance
- C To adjust the zero position of the pointer
- D To prevent the excess current in the circuit

Module - 5 : Magnetism Capacitors

Level 1

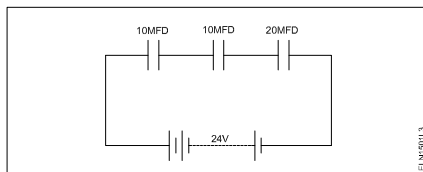
- 1 What is the unit of capacitance?
A Mho
B Henry
C Farad
D Coulomb
- 2 What is the unit of permeance?
A Ampere - turns
B Weber/Ampere turns
C Ampere turns/Weber
D Weber/Square metre
- 3 Which rule is applied to find the direction of magnetic field in a solenoid coil?
A Cork screw rule
B Right hand palm rule
C Flemings left hand rule
D Flemings right hand rule
- 4 What is the part marked as 'X' in B.H curve?



- A Coercivity
B Saturation point
C Magnetizing force
D Residual magnetism
- 5 What is the unit of Reluctance?
A Weber / metre²
B Weber / metre
C Ampere turns / Weber
D Ampere turns / metre²

- 4 Which factor affects the polarity of the electromagnet?
- A Length of the coil B Direction of current
 C Strength of current D Strength of the magnetic field
- 5 What is the total inductance if 3 inductors (L_1 , L_2 and L_3) are connected in series?
- A $L_T = L_1 \times L_2 \times L_3$ B $L_T = L_1 + L_2 + L_3$
 C $L_T = \frac{1}{L_1} + \frac{1}{L_2} + \frac{1}{L_3}$ D $L_T = \frac{1}{L_1 + L_2 + L_3}$

- 6 Calculate the total value of capacitance of series capacitor circuit.



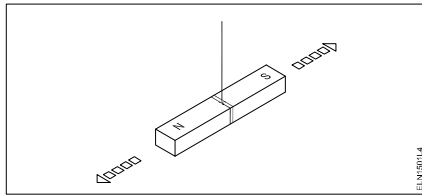
- A $4\mu\text{fd}$ B $10\mu\text{fd}$
 C $15\mu\text{fd}$ D $40\mu\text{fd}$
- 7 Which material is the paramagnetic substance?
- A Cleat wiring B Copper
 C Bismuth D Graphite
- 8 What is the similar term in magnetic circuit for "conductance" in electrical circuit??
- A Reluctivity B Permeance
 C Reluctance D Permeability
- 9 Which is the correct expression of capacitance 'C' if the electric charge is 'Q' and the voltage is 'V'?
- A $C = \frac{Q}{V}$ B $C = \frac{V}{Q}$
 C $C = VQ$ D $C = \sqrt{VQ}$

- 10 What is the effect on surrounding metal placed in a magnetic field?
- A Hysteresis
 - B Skin effect
 - C Eddy current
 - D Dielectric stress
- 11 Which device the air capacitors are used?
- A TV tuner
 - B Oscillator
 - C Loudspeaker
 - D Radio receiver
- 12 Which is the diamagnetic substance?
- A Wood
 - B Nickel
 - C Platinum
 - D Manganese
- 13 What indicates the shape of a BH curve (Hysteresis loop) of material?
- A Reluctance of the material
 - B Field intensity of the substance
 - C Magnetic properties of the material
 - D Pulling power of the magnetic material
- 14 Which electrical quantity is directly proportional to the eddy current?
- A Voltage
 - B Current
 - C Frequency
 - D Resistance
- 15 Which is the cause for changing the Permeability?
- A Length
 - B Flux density
 - C Field intensity
 - D Magneto motive force
- 16 Which type of capacitor is used for space electronics?
- A Plastic film type
 - B Ceramic disc type
 - C Electrolytic-Aluminum type
 - D Electrolytic-Tantalum type
- 17 What is the effect of the electrolytic capacitor, if open circuit fault occurs?
- A It will not function
 - B It will burst at once
 - C It will become leaky
 - D It will function normally

18 What will be the change in value of capacitance if the distance of the plates are decreased in the capacitor?

- A Becomes zero
- B Remains same
- C Decreases
- D Increases

19 Which property of magnet is illustrated?



- A Directive property
- B Induction property
- C Saturation property
- D Poles existing property

20 Which is a paramagnetic substance?

- A Air
- B Steel
- C Glass
- D Water

21 Which method of magnetization is used to make commercial purpose permanent magnets?

- A Induction method
- B Single touch method
- C Double touch method
- D Divided touch method

22 What is the effect of inductance if the distance between the turns increases?

- A Increases
- B Decreases
- C Becomes zero
- D Remains same

23 What is the function of dielectric insulator in capacitor?

- A Increases the strength of capacitance
- B Prevents any current flow between plates
- C Protects from short circuit between the plates
- D Helps to hold the charge in capacitor for long period

- 24 Which factor is determining the value of capacitance in capacitor?
- A Area of the plates
 - B Shape of the plates
 - C Material of the plates
 - D Thickness of the plates
- 25 Which type of capacitors are used in RF coupling circuit?
- A Tantalum
 - B Monolithic
 - C Electrolytic
 - D Metalized poly propylene

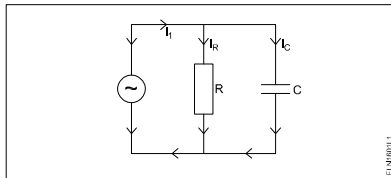
Level 3

- 1 How the value of capacitance can be decreased?
- A Increasing the plate area
 - B Increasing the resistance of the plates
 - C Increasing the distance between the plates
 - D Using high dielectric constant material
- 2 What precaution to be taken before connecting the different voltage rating capacitors in series?
- A All the capacitors must be same manufacturer
 - B Each capacitors voltage drop must be less than its voltage rating
 - C Total capacitors value must be less than the lowest value of capacitor
 - D Break down voltage of each capacitor must be same
- 3 How can you increase the pulling strength of an electromagnet?
- A increase the field intensity
 - B Reduce the current in the coil
 - C Reduce the number of turns in the coil
 - D Increase the B-H curve of the material
- 4 What will happen, if the polarized electrolytic capacitor is reversely connected?
- A No effect on the capacitor
 - B Explode due to excessive heat
 - C Current is reduced in the circuit
 - D Value of capacitance will be increased

Module - 6 : AC Circuits

Level 1

- What is the unit of susceptance?
 - Mho
 - Ohm
 - Henry
 - Farad
- What is the formula to find 3 phase Reactive power (P_r) if the line voltage is ' V_L ' and line current is ' I_L '?
 - $P_r = V_L I_L$
 - $P_r = 3 V_L I_L \cos\theta$
 - $P_r = \sqrt{3} V_L I_L \sin\theta$
 - $P_r = \sqrt{3} V_L I_L \cos\theta$
- What is the formula for Reactive Power (P_r) in an AC circuit?
 - $P_r = VI$
 - $P_r = \sqrt{2} VI$
 - $P_r = VI \cos\theta$
 - $P_r = VI \sin\theta$
- What is the phase displacement in a single phase AC circuit?
 - 90°
 - 120°
 - 180°
 - 270°
- What is the formula to calculate the impedance (Z) of the R.L.C series circuit, if the inductive reactance (X_L) is less than capacitive reactance (X_C)?
 - $Z = R^2 + \sqrt{X_L^2 + X_C^2}$
 - $Z = \sqrt{R^2 + (X_L - X_C)^2}$
 - $Z = \sqrt{R^2 + (X_L^2 - X_C^2)}$
 - $Z = \sqrt{R^2 + (X_C - X_L)^2}$
- What is the formula to calculate the line current (I_L) of this single phase R - C parallel circuit?



- $I_L = I_R - I_C$
- $I_L = I_R + I_C$
- $I_L = \sqrt{I_R^2 + I_C^2}$
- $I_L = \sqrt{I_R^2 + I_C^2}$

- 7 What is the formula to calculate the three phase active power (P) if the line voltage (V_L) and line current is I_L and phase angle is 'q'?
- A $P = V_L I_L \sin \theta$ B $P = 3 V_L I_L \cos \theta$
 C $P = \sqrt{3} V_L I_L \sin \theta$ D $P = \sqrt{3} V_L I_L \cos \theta$
- 8 What is the formula for form factor(K_f)?
- A $K_f = \frac{\text{Average value}}{\text{RMS value}}$ B $K_f = \frac{\text{RMS value}}{\text{Average value}}$
 C $K_f = \frac{\text{Maximum value}}{\text{Average value}}$ D $K_f = \frac{\text{RMS value}}{\text{Maximum value}}$
- 9 Which electrical term is defined as the total opposition to current in AC parallel circuit?
- A Resistance B Impedance
 C Admittance D Susceptance
- 10 What is the form factor (K_f) for sinusoidal AC?
- A 1.00 B 1.11
 C 2.22 D 4.44
- 11 What is the reciprocal of inductance in AC parallel circuit?
- A Reactance B Admittance
 C Conductance D Susceptance
- 12 Which formula is used to calculate Form factor (K_f)?
- A $K_f = \frac{\text{Effective value}}{\text{Average value}}$ B $K_f = \frac{\text{Average value}}{\text{Effective value}}$
 C $K_f = \frac{\text{Effective value}}{\text{Maximum value}}$ D $K_f = \frac{\text{Average value}}{\text{Maximum value}}$

13 Which formula is used to calculate the impedance (z) of a RLC series circuit?

- A $Z = R^2 + (x_L \sim x_c)^2$ B $Z = \sqrt{R + (x_L \sim x_c)}$
C $Z = \sqrt{R^2 + (x_L \sim x_c)}$ D $Z = \sqrt{R^2 + (x_L \sim x_c)^2}$

14 What is the phase displacement between phases in a 3 phase circuit?

- A 90° B 120°
C 180° D 360°

Level 2

1 What is the main cause for below 0.5 lagging power factor in 3 phase system?

- A Due to fluctuation of voltage
B True power due to resistive load
C Reactive power due to more inductive load
D Reactive power due to more capacitive load

2 What is the current in neutral conductor in 3 phase unbalanced load in star connected system?

- A No current will flow
B The algebraic sum of current in 3 phases
C The algebraic sum of current in 2 phases only
D Lesser than the lowest current in any one of the phases

3 What will be the readings of two watt meters (W_1 & W_2) in 3 phase power measurement, if the power factor is zero?

- A W_1 & W_2 both are positive reading
B W_1 is Positive and W_2 is negative reading
C W_1 is equal to W_2 but with opposite signs
D Zero W_1 is Positive reading, and W_2 is negative reading

4 What is the maximum value of voltage for 240 volt RMS?

- A 240V B 415V
C 339.5V D 376.8V

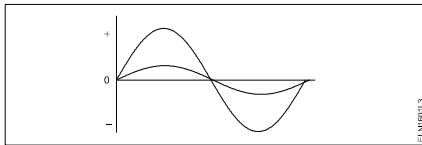
11 In a 3 phase system, if the active power is 4 KW and the apparent power is 5 KVA, calculate the reactive power?

- A 1 KVAR
- B 2 KVAR
- C 3 KVAR
- D 4 KVAR

12 In which condition resonance will occur in R-L-C series circuit?

- A Inductive reactance (X_L) is zero
- B Inductive reactance (X_L) is equal to capacitive reactance (X_C)
- C Inductive reactance (X_L) is greater than capacitive reactance (X_C)
- D Inductive reactance (X_L) is less than capacitive reactance (X_C)

13 What relationship is illustrated in between the current and voltage?



- A Current and voltage are "in phase"
- B Current and voltage are in out of phase
- C Current lags behind the voltage
- D Current leads ahead of the voltage

14 Calculate the total power by two wattmeter (W_1 & W_2) method, if one of the wattmeter (W_2) reading is taken after reversing.

- A $W_1 \times 2$
- B W_1 only
- C $W_1 - W_2$
- D $W_1 + W_2$

15 Which 3 phase system, the artificial neutral is required to measure the phase voltage?

- A 3 wire star connected system
- B 3 phase 4 wire star connected system
- C 3 wire delta connected system
- D 4 wire delta connected system

16 What is the line voltage in 3 phase system if the phase voltage is 240V?

- A 380 Volt
- B 400 Volt
- C 415 Volt
- D 440 Volt

17 Which condition is called as resonance RLC circuit?

- A $X_L > X_C$
- B $X_C > X_L$
- C $X_L = X_C$
- D $R < X_L$

18 Which quantity is rotating at a constant angular velocity?

- A Scalar quantity
- B Vector quantity
- C Phasor quantity
- D Algebraic quantity

Level 3

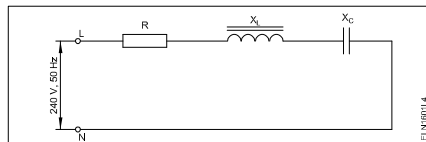
1 What is the resistance of the inductive coil takes 5A current across 240V, 50Hz supply at 0.8 power factor?

- A 48 Ω
- B 42.5 Ω
- C 38.4 Ω
- D 26.6 Ω

2 How the resonance frequency (f_r) can be increased in A.C series circuit?

- A Increasing the inductance value
- B Reducing the capacitance value
- C Increasing the capacitance value
- D Increasing the value of resistance

3 Calculate the apparent power in KVA of 3 phase 415V, 50 Hz, star system, if the line current (I_L) is 16A at 0.8 power factor.



- A 15.2 KVA
- B 11.5 KVA
- C 9.2 KVA
- D 5.3 KVA

- 7 What is the Electro Chemical Equivalent (ECE) of silver?
- A 0.001182 mg/coloumb B 0.01182 mg/coloumb
 C 0.1182 mg/coloumb D 1.1182 mg/coloumb
- 8 What does the letter 'Z' indicate in the formula $M = Zit$?
- A Time in seconds B E.C.E of electrolyte
 C Amount of current in Amp D Mass deposited in grams
- 9 What is the Electro Chemical Equivalent (ECE) of copper?
- A 0.329 mg / coulomb B 0.329 g / coulomb
 C 1.1182 mg / coulomb D 1.1182 g / coulomb

Level 2

- 1 Which device converts sunlight into electrical energy?
- A Photo voltaic cell B Liquid crystal diode
 C Light emitting diode D Light dependent resistor
- 2 What is the method of charging if the battery is to be charged for short duration at higher rate?
- A Initial charge B Boost charge
 C Trickle charge D Freshening charge
- 3 Which electrolyte used in carbon zinc dry cells?
- A Dilute sulphuric acid B Ammonium chloride
 C Potassium hydroxide D Concentrated hydrochloric acid
- 4 Which effect causes by passing electric current in liquids?
- A Heating B Lighting
 C Magnetic D Chemical
- 5 Which material is used to make negative plates in lead acid battery?
- A Lead dioxide B Sponge lead
 C Lead peroxide D Lead sulphate

13 Which material is used as cathode (-ve) electrode in silver oxide battery?

- A Zinc
- B Copper
- C Carbon
- D Silver oxide

14 What is the outcome of the chemical reaction that takes place in negative plate of lead acid battery during discharging?

- A Sponge lead(Pb)
- B Lead peroxide(PbO₂)
- C Lead sulphate(PbSO₄)
- D Lead sulphate + water

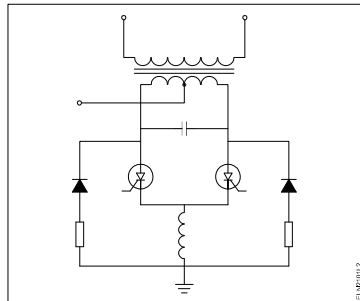
15 What is the purpose of separator in lead acid battery?

- A To provide a path for electrolyte
- B To hold the positive and negative plate firmly
- C To avoid short in between the positive and negative plates
- D To keep positive and negative plate in a sequence array

16 Which instrument is used to measure the specific gravity of electrolyte in lead acid battery?

- A Barometer
- B Hydrometer
- C Anima meter
- D High rate discharge tester

17 Which type of inverter circuit?



- A Driven inverter
- B SCR used inverter
- C Single transistor inverter
- D Two winding transformer inverter

- 4 What is the effect on output power with respect to temperature in solar cells?
- A No effect on change in temperature
 - B Increases with increase in temperature
 - C Decreases with increase in temperature
 - D Decreases with decrease in temperature
- 5 Why the vent plug is kept open during charging of a battery?
- A To escape the gas freely
 - B To allow oxygen enter inside
 - C To check the level of electrolyte
 - D To check the colour changes in the plates
- 6 How the hard sulphation defect in lead acid battery can be rectified?
- A Changing with new electrolyte
 - B Replacing with new electrodes
 - C Recharging the battery for a longer period at low current
 - D Recharging the battery for short period at high current
- 7 What is the effect of buckling defect in a lead acid battery?
- A Bending of the electrodes
 - B Reducing the strength of electrolyte
 - C Making short between the electrodes
 - D Increasing the internal resistance
- 8 What happens to the terminal voltage of a cell if load increases?
- A Increases
 - B Decreases
 - C Falls to zero
 - D Remains same
- 9 How local action defect is prevented in voltaic cell?
- A By connecting cells in series
 - B By using a depolarizing agent
 - C By connecting cells in parallel
 - D By amalgamating the zinc plate
- 10 Which is the cause for buckling defect in lead acid battery?
- A Overcharging or over discharging
 - B Charging with low rate for short period
 - C Formation of sediments falling from the plate
 - D Battery is kept in discharged condition for long period

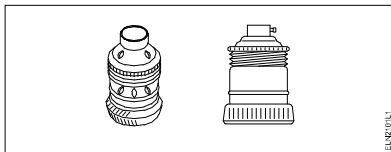
Module - 2 : Basic Wiring Practice

Level 1

- 1 How the conduit pipes are specified?
 - A Length in metre
 - B Wall thickness in mm
 - C Inner diameter in mm
 - D Outer diameter in mm

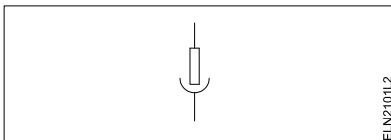
- 2 What is the fusing factor for rewirable fuse?
 - A 1.1
 - B 1.4
 - C 2.1
 - D 2.5

- 3 What is the name of electrical accessory?



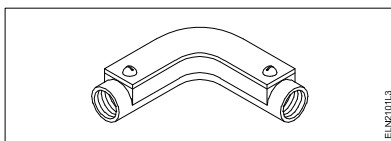
- A Bracket holder
 - B Edison screw type holder
 - C Angle swivel lamp holder
 - D Goliath Edison screw lamp holde

- 4 What is the name of symbol used in wiring circuit?



- A Link
 - B Fuse
 - C Pull switch
 - D Plug and socket

- 5 What is the name of the conduit accessory?



- A Solid bend
 - B Solid elbow
 - C Inspection Bend
 - D Inspection elbow

11 What is the name of the four insulated conductors group?

- A Pair
- B Core
- C Quad
- D Layer

12 How many two way switches are required in godown wiring circuit to control four lamps?

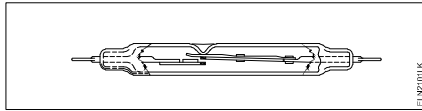
- A 2
- B 3
- C 4
- D 5

13 What is the symbol indicates?



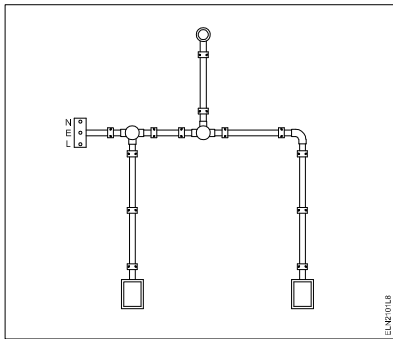
- A Table fan
- B Ceiling fan
- C Bracket fan
- D Exhaust fan

14 What is the name of the relay?



- A Impulse relay
- B Dry reed relay
- C Electromagnetic relay
- D Mercury wetted contact relay

15 What is the name of the diagram?



- A Layout plan
- B Wiring diagram
- C Installation plan
- D Schematic diagram

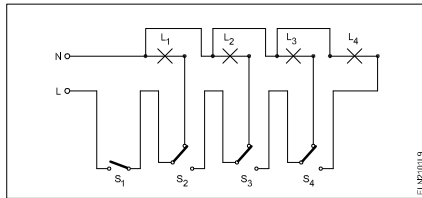
16 What is the term for the time taken by a fuse to interrupt the circuit in fault?

- A Time factor
- B Fusing factor
- C Cut-off factor
- D Fusing current

17 What is the maximum PVC conduit size to make safe cold bending?

- A 12 mm
- B 19 mm
- C 25 mm
- D 50 mm

18 What is the name of the lighting circuit?

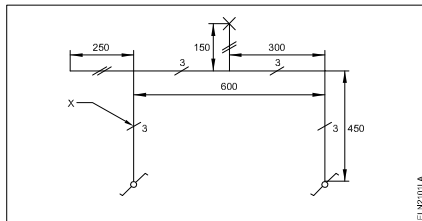


- A Tunnel lighting wiring
- B Corridor lighting wiring
- C Godown lighting wiring
- D Staircase lighting wiring

19 What is the expansion of MCB?

- A Minute Control Breaker
- B Miniature Circuit Breaker
- C Minimum Current Breaker
- D Maximum Current Breaker

20 What does the symbol marked 'X' indicate?

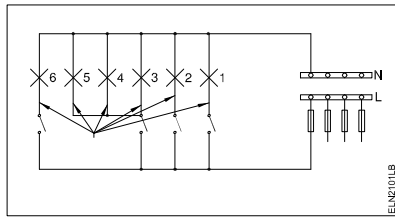


- A Number of wires run on the limb
- B Number of switches to be connected
- C Number of battern (or) pipe to be fixed
- D Number of clamps (or) clips to be fixed

21 What is the minimum size of aluminum earth continuity conductor used in single phase domestic wiring as per BIS?

- A 3.5 Sq.mm
- B 3 Sq.mm
- C 2.5 Sq.mm
- D 1.5 Sq.mm

22 What is the name of wiring method?



- A Joint box method
- B Looping back method
- C Loop in method using 3 plate ceiling rose
- D Loop in method using 2 plate ceiling rose

23 What is length of thread on rigid conduits as per BIS?

- A 9mm - 20mm
- B 11mm - 27mm
- C 13mm - 25mm
- D 15mm - 30mm

24 How many link clips are packed in cardboard boxes as per BIS rules?

- A 50 clips
- B 75 clips
- C 100 clips
- D 150 clips

25 What is the expansion of ECC?

- A Earth Conductor Continuity
- B Earth Continuity Conductor
- C Earth Carrying Conductor
- D Earth Continuity Cable

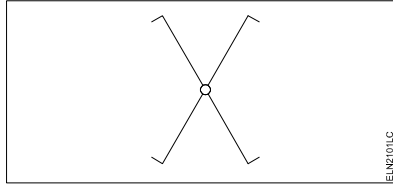
26 Which type of lamp holder is used for the lamps above 300 watts?

- A Edison screw holder
- B Goliath screw holder
- C Angle holder
- D Brachet holder

27 What is the expansion of AWG?

- A American Wire Gauge
- B American Wire Grade
- C American Wire Group
- D American Wire Guard

28 What is the name of BIS symbol?



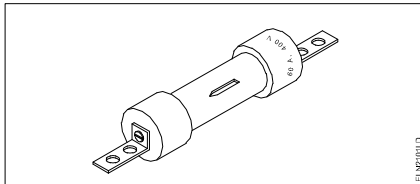
- A Lamp
- B Two way switch
- C Intermediate switch
- D Multi - position switch

Level 2

1 What is the purpose of underwriter's knot for pendent holder connection?

- A Avoid loose connections
- B Increase mechanical strength
- C Prevent excessive cap cover pressure
- D Reduce the strain from the terminals of accessories

2 What is the type of fuse?



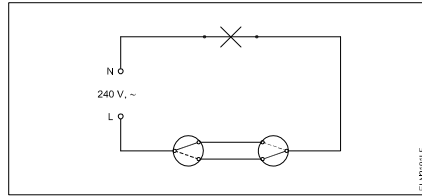
- A Knife edge cartridge fuse
- B High rupturing capacity fuse
- C Ferrule contact cartridge fuse
- D Diazed screw type cartridge fuse

3 Which type of load is protected by the L-series MCB?

- A Motors
- B Geyser
- C Hand tools
- D Air conditioner

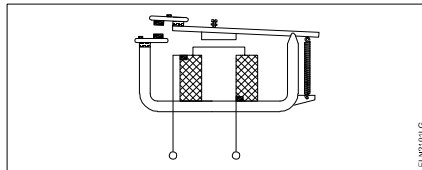
- 19 What is the purpose of the fuse cut out provided at the incoming power supply?
- A To ensure the line is not over loaded
 - B To maintain the stabilised supply voltage
 - C To protect the circuit from the leakage current
 - D To protect the human beings from electric shock
- 20 What is the use of die stock set?
- A Cut external threads on square pipe
 - B Cut internal threads on cylindrical pipe
 - C Cut external threads on cylindrical pipe
 - D Cut internal threads on rectangular pipe
- 21 Which classification of accessory the ceiling rose is classified?
- A Outlet accessories
 - B Safety accessories
 - C Holding accessories
 - D General accessories
- 22 What is the purpose of the circuit diagram in wiring installation?
- A To show the physical position of accessories
 - B To estimate the various accessories in the circuit
 - C To inform the reader quickly what for the circuit is designed
 - D To show the schematic connection of the circuit for a specific task
- 23 Which electrical equipment is provided with 'L' series MCB?
- A General lighting
 - B Motors
 - C Air conditioner
 - D Halogen lamp
- 24 Why the looping-back (loop in) method is preferred in domestic wiring installation?
- A Easy to identify the faults
 - B No separate joints are used
 - C More number of tappings can be taken
 - D More number of sub-circuits can be made

25 What is the type of wiring?



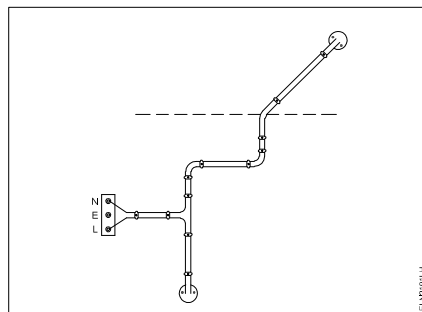
- A Staircase wiring
- B Godown wiring
- C Hostel wiring
- D Tunnel wiring

26 What is the type of relay?



- A Impulse relay
- B Dry reed relay
- C Latching relay
- D Electromagnetic relay

27 What is the type of wiring?

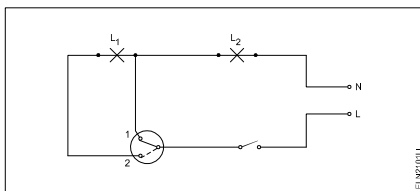


- A CTS wiring
- B Cleat wiring
- C PVC conduit wiring
- D PVC casing and capping wiring

28 Which type of conduit used for gas tight explosive installation?

- A Flexible conduits
- B Rigid steel conduits
- C Rigid non-metallic conduits
- D Flexible non-metallic conduits

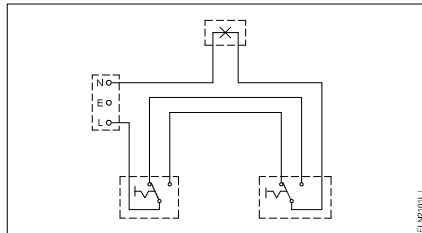
- 29 What is the function of circuit breaker?
- A Making contact at normal condition
 - B Making contact at abnormal condition
 - C Breaking automatically at abnormal condition
 - D Physical breaking contact at abnormal condition
- 30 What is the function of bimetallic strip in MCB ?
- A Over load protection
 - B Short circuit protection
 - C Over voltage protection
 - D Earth leakage protection
- 31 What protection offered by residual current circuit breaker?
- A Protection from shock
 - B Protection from over load
 - C Protection from short circuit
 - D Protection from leakage current
- 32 Which wiring is suitable for temporary installations?
- A Cleat wiring
 - B Concealed wiring
 - C PVC conduit wiring
 - D Metal conduit wiring
- 33 Where the phase conductor is looped in looping system of wiring?
- A Switch box
 - B Junction box
 - C Distribution box
 - D Socket connection
- 34 What is the application of the wiring circuit?



- A Two lamps dim operation only
- B Two lamps controlled by one switch
- C Two lamps controlled by two switches
- D One lamp bright and two lamp dim operation

- 35 What is the reason for home theatre wiring not to run along with power wiring?
- A Avoid leakage current in home theatre wiring
 - B Control temperature in home theatre wiring
 - C Avoid electrical interference in audio, video system
 - D Reduce the power consumption in power supplies
- 36 What will happen to the value of earth resistance if length of the earth pipe is increased?
- A Remain same
 - B Increases
 - C Decreases
 - D Infinity
- 37 Which types of accessories are used to operate a portable appliance?
- A Safety accessories
 - B Holding accessories
 - C Outlet accessories
 - D Controlling accessories
- 38 Which insulation is necessary for proper function and basic protection?
- A Double insulation
 - B Functional insulation
 - C Reinforced insulation
 - D Supplementary insulation
- 39 Which type of accessories of fuse is comes under?
- A Controlling accessories
 - B Holding accessories
 - C Safety accessories
 - D Outlet accessories
- 40 Which type MCBs suitable for halogen lamps?
- A 'L' series MCBs
 - B 'G' series MCBs
 - C 'DC' series MCBs
 - D 'L' and 'G' series MCBs

41 What is the type of diagram?



- A Wiring diagram B Circuit diagram
C Installation plan D Layout diagram

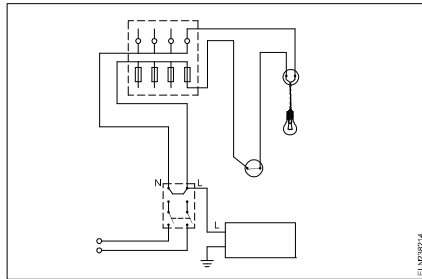
Level 3

- 1 What is the effect of low current rated cable used to connect higher current load?
- A Voltage drop increases B Load current increases
C Voltage drop decreases D Cable damage due to heat
- 2 Calculate the earth fault loop impedance, if the ELCB tripping current is 30 mA?
- A 166 Ω B 1666 Ω
C 16.66 Ω D 16666 Ω

5 Which instrument is used to test new domestic wiring installation?

- A Multimeter
- B Megger
- C Shunt type ohmmeter
- D Series type ohmmeter

6 What is the type of test in the wiring installation?



- A Polarity test
- B Open circuit test
- C Insulation resistance test between conductors
- D Insulation resistance test between conductors and earth

7 Where system earthing is done?

- A Generating station
- B Electroplating installation
- C Small industrial installation
- D Domestic wiring installation

8 What is the test to be carried out by using megger?

- A Polarity test
- B Insulation resistance test
- C Earth electrode resistance test
- D Earth conductor continuity test

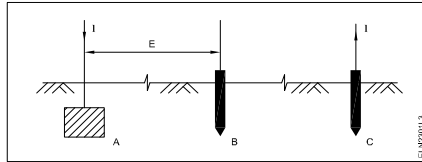
9 What is the reason of lamp glowing dim and motor running slow in a domestic wiring circuit?

- A Open circuit in the neutral line
- B Short circuit between conductors
- C High value series resistance fault
- D Open circuit in the earth conductor

10 Which wiring installation the System earthing is to be done?

- A Substations
- B Godown wiring
- C Domestic wiring
- D Commercial wiring

11 Which method of earth resistance measurement is illustrated?



- A Fall of current
- B Fall of potential
- C Current dividing
- D Potential dividing

12 What is the function of current reverser in earth resistance tester?

- A Converts A.C. into D.C
- B Reverses the polarity of D.C
- C Changes D.C. supply into A.C supply
- D Reverses the direction of rotation of the generator

13 What is the advantage of stranded conductor over solid conductor?

- A Cost is less
- B More flexible
- C Less voltage drop
- D More insulation resistance

14 What is the reason for supplying AC to the electrodes for measuring earth resistance?

- A Provide electrostatic shield
- B Protect the coils in the meter
- C Reduce the value of current in the meter
- D Avoid the effect of electrolytic emf interference

15 Why the pointer is not stable at zero on the scale as the megger is not in use?

- A It is not having controlling Torque
- B Provided with air friction damping
- C The deflecting torque is directly proportional to the current
- D The deflecting torque is directly proportional to the square of the current

16 Which is proportional for the deflection of ohmmeter needle in earth resistance tester?

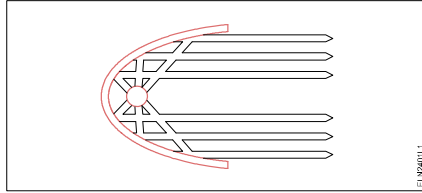
- A Current in current coil
- B Current in potential coil
- C Speed of the handle rotation
- D Ratio of the current in two coils

- 17 Why system earthing is different in utilization than equipment earthing?
- A It protects human only
 - B It protects from all circuit faults
 - C It is associated with current carrying conductors
 - D It is connected to the non current carryin metal work
- 18 What is the effect if a person receives a shock current of 20 mA?
- A No sensation
 - B Painful shock
 - C Heart convulsions
 - D Become unconscious
- 19 Which electrical equipment 'L' series type MCB's are used?
- A Oven
 - B Locomotives
 - C AC motors
 - D Air conditioners
- 20 What is the megger reading in a dead short wiring installation?
- A 0 M Ω
 - B 1 M Ω
 - C 500 M Ω
 - D Infinity
- 21 What is the advantage of crimping?
- A Gives neat appearance
 - B Reduce load current
 - C Avoid loose connections
 - D Easy to replace

Level 3

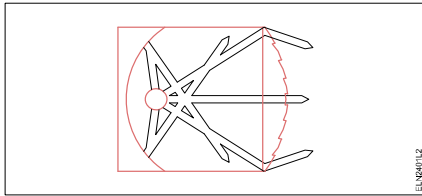
- 1 How to control harmonic distortions in neutral connections as per IE rule?
- A Earthing through impedance
 - B Providing by plate earthing
 - C Increasing conductor size
 - D Providing parallel earthing
- 2 How the earth resistance can be reduced?
- A Providing double earthing
 - B Reducing the pit depth for earthing
 - C Increasing the length of the electrodes
 - D Decreasing the length of the electrodes

7 What is the name of the reflector?



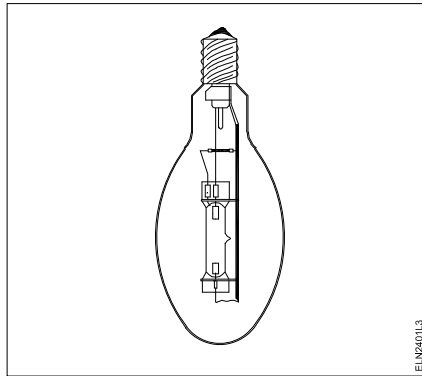
- A Mirror type
- B Soft light type
- C Parabolic type
- D Dispersive type

8 What is the name of light?



- A Spot light
- B Bulk light
- C Flood light
- D Flash light

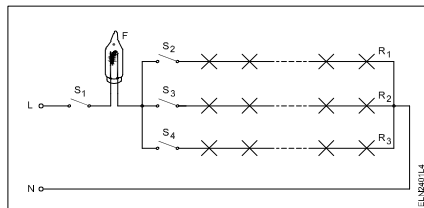
9 What is the name of lamp?



- A MAT type MV lamp
- B HP metal halide lamp
- C MB type HPMV lamp
- D MA type HPMV lamp

Level 2

- 1 Which material is coated in tungsten electrode of a fluorescent tube lamp?
A Silver oxide
B Phosphor powder
C Fluorescent powder
D Barium and strontium oxide
- 2 Which position MB type high pressure mercury vapour lamps are operated?
A Vertical
B Inclined
C Horizontal
D Any position
- 3 What is the function of leak transformer in high pressure sodium vapour lamp circuit?
A Reduce the starting current
B Reduce the working voltage
C Increase the working voltage
D Ignite the high voltage initially
- 4 What is the current carrying capacity of flasher, if the current is 100 mA in each row?



- A 50 mA
B 100 mA
C 200 mA
D 300 mA
- 5 What is the purpose of ignitor in high pressure sodium vapour lamp circuit?
A Decreases the starting current
B Increases the running voltage
C Decreases the running current
D Generates high voltage pulse at starting
- 6 Which type of light fitting design has free from glare?
A Semi direct type
B Semi indirect type
C Direct lighting type
D Indirect lighting type

- 7 Why the outer tube of a high pressure metal halide lamp made of boro silicate glass?
- A Increase the lighting effect B Withstand heavy temperature
 C Withstand atmospheric pressure
 D Reduce the ultra violet radiation from lamp
- 8 What is the main advantage of coiled coil lamp?
- A High melting point B Higher light output
 C Low operating voltage D Low power consumption
- 9 Which device provides ignition voltage and act as choke in a HPSV lamp?
- A Arc tube B Sodium vapour
 C Leak transformer D High pressure aluminium oxide
- 10 Which type of lighting system is used for flood and industrial lighting?
- A Direct lighting B Indirect lighting
 C Semi-direct lighting D Semi-indirect lighting
- 11 Which is the cold cathode lamp?
- A Halogen lamp B Neon sign lamp
 C Fluorescent lamp D Mercury vapour lamp

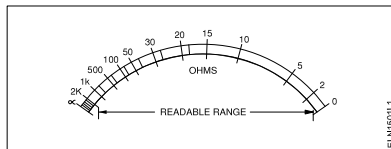
Level 3

- 1 How stroboscopic effect in industrial twin tube light fitting is reduced?
- A Connecting capacitor parallel to supply
 B Connecting capacitor in series with supply
 C Connecting capacitor in series with one tube light
 D Connecting two capacitors in series to each tube light
- 2 How the rate of evaporation in a vacuum bulb is reduced?
- A Filling inert gas B Producing arc in bulb
 C Reducing filament resistance D Increasing filament resistance

Module - 5 : Measuring Instruments

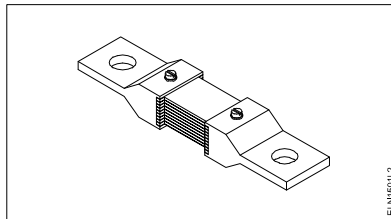
Level 1

1 What is the name of the scale?



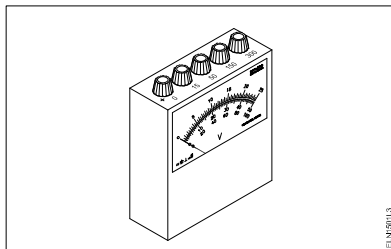
- A Linear scale
B Coarse scale
C Extended scale
D Non-linear scale

2 What is the name of the shunt resistance material?



- A Copper
B Eureka
C Nichrome
D Manganin
- 3 Which electrical effect that the single phase energy meter works?
A Heating effect
B Induction effect
C Chemical effect
D Electrostatic effect

4 What is the name of meter?

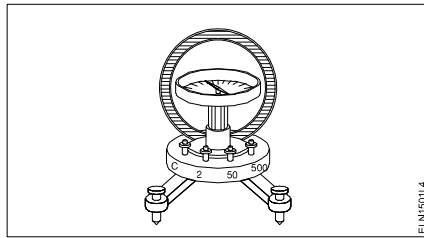


- A AC multirange ammeter
B DC multirange voltmeter
72 C AC and DC multirange ammeter
D AC and DC multirange voltmeter

5 What is the unit of sensitivity in instruments?

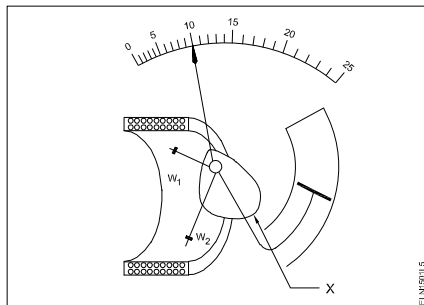
- A Volt / ohm
- B Ohm / volt
- C Ohm. metre
- D Ohm / metre

6 What is the name of the instrument?



- A Absolute instrument
- B Indicating instrument
- C Recording instrument
- D Integrating instrument

7 Name the name of instrument.



- A Attraction type moving iron
- B Repulsion type moving iron
- C Permanent magnet moving coil
- D Dynamo meter type moving coil

8 Which is an absolute instrument?

- A Ammeter
- B Volt meter
- C Energy meter
- D Tangent galvanometer

9 Which quantity is measured by an electro dynamic type instrument?

- A Power
- B Current
- C Voltage
- D Resistance

Level 2

- 1 Which force is required to move the pointer from zero position in an indicating instrument?
 - A Controlling force
 - B Deflecting force
 - C Air friction damping
 - D Eddy current damping

- 2 Which is the position to use the instrument provided with gravity control?
 - A Any position
 - B Vertical position
 - C Inclined position
 - D Horizontal position

- 3 Which instrument is used to measure one ohm and below one ohm resistance value accurately?
 - A Megohm meter
 - B Multimeter (analog)
 - C Shunt type ohm meter
 - D Series type ohm meter

- 4 What is the purpose of the 3rd terminal provided in a advanced megohm meter?
 - A Get higher ohmic values
 - B Pass the excess voltage to ground
 - C Pass the excess current to ground
 - D Get accurate readings without oscillation

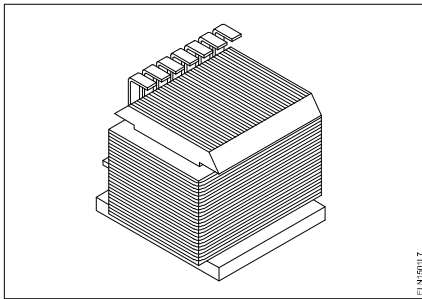
- 5 What is the reason for the moving coil meter having uniform scale?
 - A Deflecting torque is directly proportional to the current
 - B Deflecting torque is inversely proportional to the current
 - C Deflecting torque is inversely proportional to the square of the current
 - D Deflecting torque is directly proportional to the square of the current

- 6 What is the purpose of variable resistor connected across shunt type ohm meter?
 - A Avoid draining of battery
 - B Minimize the error in reading
 - C Adjust the current to safe value
 - D Adjust the pointer to zero adjustment

13 Which type of energy meter works with neutral connection?

- A Three phase two element
- B Three phase three element
- C Single phase single element
- D Three phase two element with CT & PT

14 What is the type of frequency meter?



- A Weston type
- B Ratio meter type
- C Electro dynamic type
- D Mechanical resonance type

15 Why damping force is required in a moving coil instrument?

- A Makes the needle movement faster
- B Helps the deflecting force to act fast
- C Brings the needle to its zero position
- D Arrests the needle without oscillations

16 What is the function of soft iron core in a moving coil instrument?

- A Strengthens the deflection force
- B Controls the needle's movement
- C Provides meter with maximum sensitivity
- D Provide uniform distribution of magnetic flux in air gap

17 Which parameter is the cause for loading effect on measuring instruments?

- A Low accuracy
- B High sensitivity
- C Low sensitivity
- D Low influence error

- 18 Which meter is used to measure revolution per minute of a motor?
- A Tachometer B Energy meter
C Ampere hour meter D Centre zero ammeter
- 19 How to identify the moving iron type instrument?
- A No terminal marking B Terminal marked (+) only
C One terminal coloured red D Terminal marked (+) and (-)
- 20 Which force produces movement of pointer in an indicating instrument?
- A Damping force B Deflecting force
C Repulsion force D Controlling force
- 21 What is the function of integrating instrument?
- A Displays the quantity B Indicates the quantity
C Registers the quantity D Measures the quantity
- 22 Which position an instrument using fluid friction damping reads accurately?
- A Any position B Vertical position
C Inclined position D Horizontal position

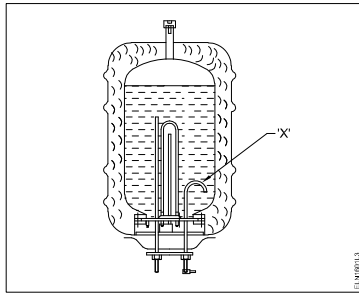
Level 3

- 1 Which error is caused by the incorrect position of instrument reading?
- A Device error B Human error
C Influence error D Switching error
- 2 Which error if the energy meter disc rotating continuously on no load?
- A Speed error B Phase error
C Friction error D Creeping error
- 3 What is the effect on CT if its secondary is kept open?
- A CT primary burns out B Volt ampere capacity reduces
C Volt ampere capacity increases
D CT secondary winding burns out

- 4 How the creeping error is controlled in energy meter?
- A By reducing rated voltage
 - B By increasing the inductive load
 - C By adjusting the brake magnet position
 - D By drilling two holes diametrically opposite on disc
- 5 Which source of measuring error is caused by the effect of magnetic fields?
- A Device error
 - B Human error
 - C Influence error
 - D Switching error
- 6 Why two straight holes are provided in the aluminium disc in energy meter?
- A To reduce the disc weight
 - B For power factor correction
 - C To prevent the flux leakage
 - D To arrest the creeping error
- 7 How to achieve maximum accuracy in measurement using analog instrument?
- A Keep low input impedance
 - B Keep high input impedance
 - C Use short connecting leads
 - D Provide correct damping system
- 8 Calculate the value of shunt resistance required to measure 10 mA with one mA meter and meter resistance $30\ \Omega$?
- A $3\ \Omega$
 - B $30\ \Omega$
 - C $0.3\ \Omega$
 - D $300\ \Omega$

- 2 What is the function of stirrer motor in microwave oven?
- A Draws cooling air inside B Spreads the heat uniformly
 C Exhausts the hot air outside
 D Revolves and reflects the electromagnetic energy

- 3 What is the purpose of U bend marked as 'X' in geyser?

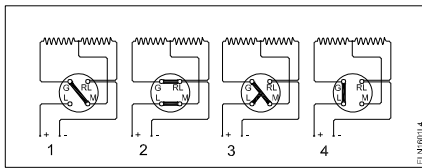


- A Prevents draining of water B Avoids the forming of scales
 C Reduces the pressure of outlet pipe
 D Restricts the air locking inside the tank

- 4 Which type of AC single phase motor is used in food mixer?

- A Universal motor B Repulsion motor
 C Split phase motor D Shaded pole motor

- 5 Which is the position for maximum output of the heater?



- A Position 1 B Position 2
 C Position 3 D Position 4

- 6 Calculate the heat generated in a electric heater of 1000 watt, 240 volt, worked for 5 minutes?

- A 70.5 Kilo calories B 71.0 Kilo calories
 C 71.6 Kilo calories D 72.1 Kilo calories

- 7 What is the purpose of protection grooves at various places in a heater base plate?
- A Radiate the heat properly B Retain the heating element firmly
 C Place the vessels firmly on heater plate
 D Protect the heating element from damage
- 8 What is the purpose of sole plate in electric kettle?
- A Acts as a balancing weight B Acts as an insulator for element
 C Protect the kettle base from damage
 D Keep the element in close contact with container
- 9 What is the function of neutral path in AC supply system for appliances?
- A Provides current return path B Provides voltage level constant
 C Reduces voltage drop in wiring D Maintains load current constant
- 10 What is the function of magnetron tube in a microwave oven?
- A Amplifies the microwave signal
 B Changes the polarity every half cycle
 C Oscillate and produce cooking frequency
 D Converts microwave energy to electrical energy
- 11 Which type of motor is used in the wet grinder?
- A Universal motor B Repulsion motor
 C Capacitor start induction run motor
 D Capacitor start capacitor run motor

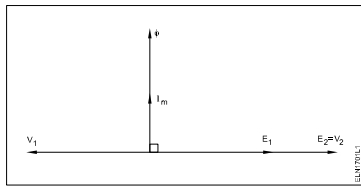
Level 3

- 1 What is the fault in a food mixer if it runs intermittently?
- A Worn out brushes B Armature coil open
 C Defective commutator D Field winding partially short
- 2 What is the defect in a single phase pump motor if it runs with slow speed?
- A Defective capacitor B Open starting winding
 C Short in starting winding D Dielectric stress

Module - 7 : Transformer

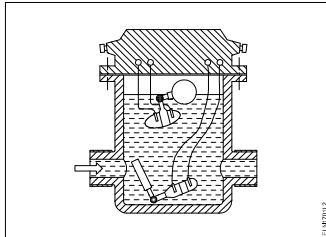
Level 1

1 What is the relationship between primary voltage (E_1, V_1) and secondary voltage (E_2, V_2) in a ideal transformer?



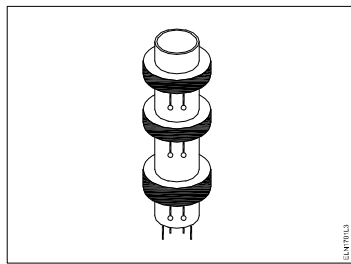
- A $E_1 = V_1$ and $E_2 = V_2$
- B $E_1 > V_1$ and $E_2 > V_2$
- C $E_1 < V_1$ and $E_2 < V_2$
- D $E_1 = V_2$ and $E_2 = V_1$

2 What is the name of the part in power transformer?



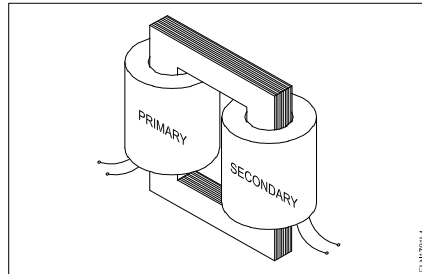
- A Breather
- B Tap charger
- C Explosion vent
- D Buchholz relay

3 What is the name of transformer?



- A Air core transformer
- B Iron core transformer
- C Ring core transformer
- D Ferrite core transformer

4 What is the name of transformer?



- A Auto transformer
- B Core type transformer
- C Shell type transformer
- D Audio frequency transformer

5 What is the composition of steel and silicon steel in transformer core?

- A Steel 97% and silicon 3%
- B Steel 95% and silicon 5%
- C Steel 93% and silicon 7%
- D Steel 90% and silicon 10%

Level 2

1 Which type of transformer is used for high frequency application?

- A Ring core transformer
- B Ferrite core transformer
- C Silicon steel core transformer
- D Grain oriented core transformer

2 What is the function of conservator in transformer?

- A Prevents the moisture entry
- B Transfers the heat to atmosphere
- C Allows to release internal pressure
- D Allows expansion of oil level due to load variation

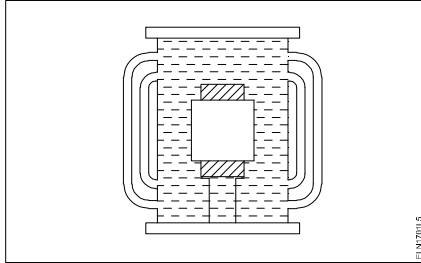
3 Which loss of transformer is determined by short circuit test?

- A Copper loss
- B Windage loss
- C Hysteresis loss
- D Eddy current loss

4 What is the purpose of using laminated core in transformer?

- A Reduce copper loss
- B Reduce hysteresis loss
- C Reduce mechanical loss
- D Reduce eddy current loss

5 What is the cooling method of transformer?



- A Oil natural cooling
- B Oil natural air forced cooling
- C Oil forced air forced cooling
- D Oil natural water forced cooling

6 What is the condition for obtaining maximum efficiency from transformer?

- A Copper loss > Iron loss
- B Copper loss < Iron loss
- C Copper loss = Iron loss
- D Copper loss = Eddy current loss

7 What is the function of top float switch of buchholz relay in transformer?

- A Activate in moisture presence
- B Activate at overloading condition
- C Activate at open circuit condition
- D Activate at high temperature condition

8 Why the core of current transformer is having low reactance and low core losses?

- A To minimise the burden
- B To maintain constant output
- C To prevent high static shield
- D To minimise the error in reading

9 Why the load is disconnected before the OFF load tap changing operation?

- A To disconnect the tapplings from neutral point
- B To disconnect the moving contact of the diverter
- C To avoid heavy sparking at the contact points
- D To provide an electrical isolation for the windings

- 10 Which condition is absolutely essential for parallel operation of two transformers?
- A Nature of load B Type of cooling
C Phase sequence D Class of insulation used
- 11 Which transformer is used to measure high voltage installations?
- A Pulse transformers B Ignition transformers
C Potential transformers D Constant voltage transformers
- 12 Which power loss is assessed by open-circuit test on transformer?
- A Hysteresis loss only B Eddy current loss only
C Copper loss D Core loss
- 13 Which is determined by the crackle test of transformer oil?
- A Acidity B Moisture
C Viscosity D Dielectric strength
- 14 Which material is used to make core of power transformer?
- A Soft iron B Rolled steel
C Copper alloy D Cold rolled grain oriented
- 15 What is the purpose of providing explosion vent in a power transformer?
- A Air releasing B Heat releasing
C Pressure releasing D Moisture releasing
- 16 What is the function of buchholz relay in power transformer?
- A Protection from high temperature
B Protection from moisture entering in oil
C Protection from pressure loading in tank
D Protection from both overloading and short circuit
- 17 Why primary of potential transformer is wound with thin wire and large number of turns?
- A To offer high inductance B To obtain required voltage ratio
C To regulate the primary current D To stabilise input and output voltage

- 18 Why distribution transformers are normally connected as primary in delta and secondary in star?
- A To avoid over loading
 - B To maintain constant voltage
 - C To reduce transformer losses
 - D To easy distribution of 3 phase 4 wire system
- 19 Which type of emf is induced in an ideal two winding transformer?
- A Self induced emf
 - B Mutually induced emf
 - C Statically induced emf
 - D Dynamically induced emf
- 20 How to determine copper loss in a transformer?
- A Ratio test
 - B Impulse test
 - C Short circuit test
 - D Open circuit test
- 21 Why ferrite core is used in radio receivers?
- A To reduce the constant losses
 - B To reduce electric interference
 - C To increase the quality of sound
 - D To increase the efficiency of receivers
- 22 What is the advantage of stepped core arrangement in larger transformers?
- A Minimizes copper use
 - B Reduces hysteresis loss
 - C Reduces eddy current loss
 - D Reduces the space for core
- 23 Which material is used in breather to prevent moisture entering in the transformer oil?
- A Silica gel
 - B Sodium chloride
 - C Ammonium chloride
 - D Charcoal and salt mixture
- 24 What is the disadvantage of auto transformer?
- A More losses
 - B Heavier in weight
 - C Poor voltage regulation
 - D Cannot isolate the secondary winding

25 Which cooling method is used in pole mounting distribution transformer?

- A Air natural
- B Oil natural air blast
- C Oil forced air forced
- D Oil natural air natural

26 What is the purpose of tap changing in power transformers?

- A Maintain primary voltage constant
- B Change voltage ratio in distribution
- C Maintain secondary voltage constant
- D Load the transformer for maximum efficiency

Level 3

1 Calculate the voltage regulation in percentage of the transformer if the no load voltage is 240 volt and full load voltage is 220 volt?

- A 7.20%
- B 8.30%
- C 8.71%
- D 9.09%

2 How the error in reading of a potential transformer can be reduced?

- A Using thin laminated core
- B Providing long magnetic path
- C Using high flux density material
- D Providing good quality core material

3 Which construction technique is used to reduce copper loss in larger transformers?

- A Use of laminated core
- B By reducing core thickness
- C By using grain oriented core
- D Use stepped core arrangement

4 How does the moisture is controlled in breather fitted on power transformers?

- A Using silica gel
- B Using transformer oil
- C Using sodium chloride
- D Using ammonium jelly

Semester - 1 : Keys

Module - 1 : Safety Practice and Hand Tools

Level 1	Level 2	Level 3
1 D	1 B	1 D
2 D	2 A	
3 D	3 C	
4 A	4 C	
5 C	5 A	
6 B	6 C	
7 D	7 D	
8 D	8 B	
9 D	9 C	
10 D	10 B	
	11 D	
	12 B	
	13 C	
	14 D	
	15 D	
	16 B	
	17 D	

Module - 2 : Basic Workshop Practice (Allied Trade)

Level 1	Level 2	Level 3
1 A	1 A	1 A
2 B	2 B	2 D
3 B	3 B	3 C
4 A	4 B	
5 B	5 D	
6 B	6 B	
7 A	7 C	
8 B	8 B	
9 A	9 C	
10 D	10 A	
11 B	11 D	
	12 D	
	13 D	
	14 A	

15	A
16	B
17	C
18	B
19	C

Module - 3 : Wire - Joints, Soldering, U.G. Cables

Level 1		Level 2		Level 3	
1	D	1	C	1	B
2	B	2	D	2	D
3	A	3	A	3	B
4	C	4	D	4	A
5	A	5	B		
6	D	6	D		
7	D	7	B		
8	A	8	D		
9	C	9	B		
10	D	10	A		
11	C	11	B		
12	C	12	B		
13	B	13	A		
14	C	14	C		
15	B	15	D		
16	C	16	C		
17	B	17	C		
18	C	18	C		
19	D	19	D		
		20	A		
		21	C		
		22	C		
		23	B		
		24	B		
		25	B		
		26	B		
		27	B		
		28	D		
		29	C		

Module - 4 : Basic Electrical Practice

Level 1	Level 2	Level 3
1 C	1 D	1 B
2 D	2 A	2 C
3 D	3 D	3 B
4 B	4 D	4 D
5 B	5 B	5 B
6 C	6 B	6 D
7 C	7 B	
8 A	8 B	
9 A	9 A	
10 A	10 C	
11 D	11 A	
12 C	12 C	
13 B	13 D	
14 C	14 C	
	15 B	
	16 B	
	17 B	
	18 A	
	19 C	
	20 C	
	21 B	
	22 B	
	23 B	
	24 C	
	25 D	
	26 D	
	27 D	
	28 D	

Module - 5 : Magnetism Capacitors

Level 1	Level 2	Level 3
1 C	1 B	1 C
2 B	2 A	2 B
3 B	3 C	3 A
4 A	4 B	4 B
5 C	5 B	
6 A	6 D	

7 A
8 C

7 B
8 B
9 A
10 C
11 D
12 A
13 C
14 C
15 B
16 D
17 A
18 D
19 A
20 A
21 A
22 A
23 B
24 A
25 B

Module - 6 : AC Circuits

Level 1	Level 2	Level 3
1 A	1 C	1 C
2 C	2 D	2 B
3 D	3 C	3 B
4 A	4 C	4 C
5 D	5 C	5 B
6 D	6 A	6 C
7 D	7 B	7 B
8 B	8 C	8 C
9 C	9 D	9 D
10 B	10 B	10 D
11 D	11 C	11 A
12 A	12 B	12 C
13 D	13 A	13 D
14 B	14 C	
	15 C	
	16 C	
	17 C	
	18 C	

Semester - 2 : Keys

Module - 1 : Cells and Batteries

Level 1	Level 2	Level 3
1 C	1 A	1 A
2 B	2 B	2 B
3 D	3 B	3 C
4 D	4 D	4 D
5 D	5 B	5 A
6 B	6 C	6 C
7 D	7 A	7 A
8 B	8 D	8 B
9 A	9 D	9 D
	10 A	10 A
	11 B	
	12 B	
	13 A	
	14 C	
	15 C	
	16 B	
	17 B	
	18 D	
	19 B	
	20 D	
	21 B	

Module - 2 : Basic Wiring Practice

Level 1	Level 2	Level 3
1 D	1 D	1 D
2 B	2 B	2 B
3 B	3 B	
4 D	4 B	
5 C	5 D	
6 B	6 C	
7 D	7 D	
8 B	8 C	
9 C	9 C	
10 D	10 D	
11 C	11 B	

12 B
 13 B
 14 B
 15 C
 16 C
 17 C
 18 C
 19 B
 20 A
 21 C
 22 B
 23 B
 24 C
 25 B
 26 B
 27 A
 28 C

12 C
 13 B
 14 C
 15 D
 16 C
 17 A
 18 B
 19 A
 20 C
 21 D
 22 D
 23 A
 24 B
 25 A
 26 D
 27 B
 28 B
 29 C
 30 A
 31 A
 32 A
 33 D
 34 D
 35 C
 36 C
 37 C
 38 B
 39 C
 40 B
 41 A

Module - 3 : Wiring Installation and Earthing

Level 1		Level 2		Level 3	
1	D	1	B	1	A
2	A	2	D	2	A
3	D	3	C		
4	D	4	A		
5	C	5	B		
6	C	6	D		
		7	A		

8	B
9	C
10	A
11	B
12	C
13	B
14	D
15	A
16	D
17	C
18	B
19	A
20	A
21	C

Module - 4 : Illumination

Level 1	Level 2	Level 3
1 C	1 D	1 C
2 D	2 D	2 A
3 B	3 D	
4 D	4 D	
5 B	5 D	
6 D	6 B	
7 C	7 D	
8 A	8 B	
9 D	9 C	
	10 A	
	11 B	

Module - 5 : Measuring Instruments

Level 1	Level 2	Level 3
1 D	1 B	1 A
2 D	2 B	2 D
3 B	3 C	3 D
4 B	4 D	4 D
5 B	5 A	5 C
6 A	6 D	6 D
7 A	7 D	7 B
8 D	8 A	8 A

9 A

9 C
10 C
11 B
12 B
13 C
14 D
15 D
16 D
17 C
18 A
19 A
20 B
21 C
22 B

Module - 6 : Domestic Appliances

Level 1	Level 2	Level 3
1 A 2 B 3 D 4 A	1 C 2 D 3 A 4 A 5 B 6 C 7 B 8 D 9 A 10 C 11 C	1 A 2 A

Module - 7 : Transformer

Level 1	Level 2	Level 3
1 A 2 D 3 A 4 B 5 C	1 B 2 D 3 A 4 D 5 A 6 C 7 B 8 D	1 D 2 D 3 D 4 A

9	C
10	C
11	C
12	D
13	B
14	D
15	C
16	D
17	A
18	D
19	B
20	C
21	A
22	A
23	A
24	D
25	D
26	B