



<https://shikshamentor.com/basic-electrical-electronics-engg-for-msbte-k-scheme/>

**312302 - Basic Electrical & Electronics Engg
(BEE-Sem II)**

**As per MSBTE's K Scheme
CO / CM / IF / AI / AN / CW / DS**

Unit III Electrical Safety and Protective Devices		Marks - 10
S. N.	MSBTE Board Asked Questions	Marks
1	<p>What does "MCB" stand for?</p> <p>a) Miniature circuit breaker b) Mini circuit breaker c) Miniature capacitor breaker d) Mini Capacitance breaker</p> <p>Answer: a) Miniature circuit breaker</p> <p>Explanation: "MCB" stands for Miniature circuit breaker. It works on magnetic effect of electric current. When there is overflow of electric current, it creates a magnetic field that repels the magnet present in the switch. This repulsion breaks the circuit and restricts the flow of current.</p>	1M
2	<p>What is the principal on which MCB (Miniature circuit breaker) works?</p> <p>a) Magnetic effect of electric current b) Lenz law c) Faradays law of electric current d) Flemings Right hand rule</p>	1M

	<p>Answer: a) Magnetic effect of electric current</p> <p>Explanation: MCB (Miniature circuit breaker) works on magnetic effect of electric current. When there is overflow of electric current, it creates a magnetic field that repels the magnet present in the switch. This repulsion breaks the circuit and restricts the flow of current.</p>	
3	<p>What is the standard colour of ac supply ground wire in India?</p> <p>a) Red b) Magenta c) Pink d) Green</p> <p>Answer: d) Green</p> <p>Explanation: The standard colour of ac supply ground wire in India is green. Separate standard colours are assigned for wires carrying AC (Alternating current) supply which comes in our homes in order to easily understand the significance of each wires.</p>	1M
4	<p>What is the standard colour of ac supply live wire in India?</p> <p>a) Red b) Magenta c) Pink d) Green</p> <p>Answer: a) Red</p> <p>Explanation: The standard colour of ac supply live wire in India is Red. Separate standard colours are assigned for wires carrying AC (Alternating current) supply which comes in our homes in order to easily understand the significance of each</p>	1M

	wires.	
5	<p>What is the standard colour of ac supply neutral wire in India?</p> <p>a) Red b) Black c) Pink d) Green</p> <p>Answer: b) Black</p> <p>Explanation: The standard colour of ac supply neutral wire in India is Black. Separate standard colours are assigned for wires carrying AC (Alternating current) supply which comes in our homes in order to easily understand the significance of each wires.</p>	1M
6	<p>Green and yellow striped wire is also used to indicate ac (alternating current) supply live wire.</p> <p>a) True b) False</p> <p>Answer: b) False</p> <p>Explanation: Green and yellow striped wire is also not used to indicate 220 volt ac(alternating current) supply live wire. It is used to denote ground wire of an ac (alternating current) supply. It is also called as earthing wire.</p>	1M
7	<p>Live wire and hot wire are same.</p> <p>a) True b) False</p> <p>Answer: a) True</p> <p>Explanation: Live wire and hot wire are same. Live wires are sometimes also referred as hot wires which carry's the supply voltage. In India red colour is assigned for the indication of AC (alternating current) live wire.</p>	1M

8	<p>Fuse is a device which is used for _____.</p> <ul style="list-style-type: none"> a) protection b) amplification c) impedance matching d) none of above <p>Answer: a) protection</p> <p>Explanation: A fuse protects a system or equipment from overload and short-circuit faults by cutting off the power to them.</p>	1M
9	<p>Fuse are connected in Parallel.</p> <ul style="list-style-type: none"> a)True b)False <p>Answer: b) False</p> <p>Explanation:Fuses are always connected in series with the circuit to be protected from excessive current. When the fuse blows it will open the entire circuit and interrupt or stop the flow of current through the circuit.</p>	1M
10	<p>Fuse are used in circuit for _____.</p> <ul style="list-style-type: none"> a) Equipment Safety b) Human Safety c) None of Above d) a & b are correct <p>Answer: d) a & b are correct</p> <p>Explanation: The primary use of an electric fuse is to protect electrical equipment from excessive current and to prevent short circuits or mismatched loads. Apart from protecting equipment, they are also used as safety measures to prevent any safety hazards to humans.</p>	1M

11	<p>Fuse is an Electronic Component used for _____.</p> <p>a) current limiting b) power limiting c) a & b are correct d) none of above</p> <p>Answer: a) current limiting</p> <p>Explanation: a fuse is defined as an electrical <i>safety device that provides over-current protection to the functional electrical circuit.</i></p>	1M
12	<p>The melting point of Fuse element is _____.</p> <p>a) low b) medium c) high d) all are correct</p> <p>Answer: a) low</p> <p>Explanation: A fuse is a piece of wire made of a material with a very low melting point, which means it melts and breaks when the temperature rises above its melting point.</p>	1M
13	<p>Fuse wire is always connected with _____.</p> <p>a) live b) neutral c) earth d) all are correct</p> <p>Answer: a) live</p> <p>Explanation: The fuse wire is always connected in the live wire of the circuit because if the fuse is put in the neutral wire, then due to excessive flow of current when the fuse burns, current stops flowing in the circuit, but the appliance remains connected to the high potential point of the supply</p>	1M

	<p>through the live wire.</p>	
14	<p>Digital multimeter is used for _____</p> <p>a) measuring a.c. and d.c. current, voltage and resistance b) measuring a.c. current and voltage c) measuring d.c. current and resistance d) measuring a.c. voltage and resistance</p> <p>Answer: a) measuring a.c. and d.c. current, voltage and resistance</p> <p>Explanation: Digital multimeter is usually used for the measurement of a.c. current, voltage and resistance. It is also used for the measurement of d.c. current, voltage and resistance as well over several range.</p>	1M
15	<p>Current is converted to voltage _____</p> <p>a) through a voltmeter b) through a resistance c) through an ammeter d) through a galvanometer</p> <p>Answer: b) through a resistance</p> <p>Explanation: Current is passed through a low shunt resistance and is converted to voltage. A.C. quantities are converted to D.C. through various rectifiers and filter circuits. Voltmeter and ammeter are used for voltage and current measurement respectively.</p>	1M
16	<p>Quantities are digitised using _____</p> <p>a) D/A converter b) oscillator c) amplifier d) A/D converter</p> <p>Answer: d) A/D converter</p> <p>Explanation: Quantities such as current, voltage and resistance are digitised by making use of an A/D converter.</p>	1M

	<p>They are then displayed on the screen by making use of a digital display.</p>	
17	<p>Analog multimeters require power supply.</p> <p>a) True b) False</p> <p>Answer: b) False</p> <p>Explanation: Analog multimeters are less affected by electric noise and isolation problems. As a result analog multimeters don't require a power supply.</p>	1M
18	<p>Output of a digital multimeter is _____</p> <p>a) mechanical b) optical c) electrical d) analog</p> <p>Answer: c) Electrical</p> <p>Explanation: Digital multimeter gives an electrical signal as the output. A/D converter is employed for the conversion from analog to digital signal. This can be used for interfacing with external equipment.</p>	1M
19	<p>Basic building blocks of digital multimeter are _____</p> <p>a) oscillator, amplifier b) diode, op amp c) rectifier, schmitt trigger d) A/D, attenuator, counter</p> <p>Answer: d) A/D, attenuator, counter</p> <p>Explanation: Usually dual slope integrating type ADC is preferred in multimeter. It basically consists of several A/D converters, counter circuits and an attenuation circuit.</p>	1M

20	<p>Resistance is measured using _____</p> <p>a) constant current source b) constant voltage source c) variable current source d) variable voltage source</p> <p>Answer: a) constant current source</p> <p>Explanation: Constant current source is used to measure resistance in a digital multimeter. Standard known value of current is passed through an unknown resistance and the drop in voltage across the resistance is measured.</p>	1M
21	<p>A.C. voltages are measured using _____</p> <p>a) oscillators and op amps b) rectifiers and filters c) resistor and capacitor d) inductor and resistor</p> <p>Answer: b) rectifiers and filters</p> <p>Explanation: Rectifiers and filter circuits with various configurations are employed for measuring A.C. voltages. A.C. is converted to D.C. and is applied to the A/D converter.</p>	1M
22	<p>Which material is commonly used for making the arch of circuit breakers?</p> <p>a) Copper b) Tungsten c) Aluminium d) Copper tungsten alloy</p> <p>Answer: d) Copper tungsten alloy</p> <p>Explanation: Copper tungsten alloy is commonly used for making the arch of circuit breakers. Tungsten has an advantage that it has a very high level temperature resistance, whereas copper provides an excellent conducting property.</p>	1M

23	<p>The full form of ELCB is</p> <ul style="list-style-type: none"> a) Earth Line Circuit Breaker b) Earth Line Current Breaker c) Earth Leakage Current Breaker d) Earth Leakage Circuit Breaker <p>Answer: d) Earth Leakage Circuit Breaker</p> <p>Explanation: Full form of E.L.C.B is Earth Leakage Circuit Breaker. It directly detects current leakage and directs it to the earth from the circuit and breaks the circuit.</p>	1M
24	<p>The rated current of MCB is</p> <ul style="list-style-type: none"> a) Less than 10 A b) Less than 100 A c) More than 100A d) More than 200A <p>Answer: b) Less than 100 A</p> <p>Explanation: The rated current of MCB is less than 100A</p>	1M
25	<p>What is earthing?</p> <ul style="list-style-type: none"> a) connecting electrical machines to earth b) providing a connection to the ground c) connecting the electrical machines to source d) providing a source of current <p>Answer: a) connecting electrical machines to earth</p> <p>Explanation: Connecting electrical machines to the general mass of the earth by making use of a conducting material with very low resistance is known as earthing.</p>	1M
26	<p>What is an earth electrode?</p> <ul style="list-style-type: none"> a) electrode that is connected to earth b) material used for earthing c) electrode connected to the circuit d) electrode which is connected to the mains <p>Answer: b) material used for earthing</p>	1M

	<p>Explanation: Electrode connected to the main is basically a source of e.m.f. Conducting material that is used for connecting electrical machinery to the earth is known as an earth electrode.</p>	
27	<p>Earth electrode provides _____</p> <p>a) high resistance b) medium resistance c) low resistance d) very high resistance</p> <p>Answer: c) low resistance</p> <p>Explanation: In the case of occurrence of any leakage currents due to poor shielding of the apparatus, the earth electrode is used to provide a very low resistance path from the electrical appliances to the earth.</p>	1M
28	<p>How is the condition of an earth electrode measured?</p> <p>a) by measuring the voltage b) by measuring the current c) by measuring the power d) by measuring resistance</p> <p>Answer: d) by measuring resistance</p> <p>Explanation: The resistance of the earth electrode is measured in order to check whether it is in a good condition or not.</p>	1M
29	<p>In a three phase system, the neutral is _____</p> <p>a) earthed b) connected to low voltage c) connected to high voltage d) not connected</p> <p>Answer: a) earthed</p> <p>Explanation: Earthing can be used to maintain a constant line voltage in a three phase system. This is achieved by earthing the neutral.</p>	1M

30	<p>Earthing does not help in protecting the equipment.</p> <p>a) True b) False</p> <p>Answer: b) False</p> <p>Explanation: Spike voltages occurring as a result of lightning or any other fault can be dissipated to ground by earthing, thus protecting the equipment.</p>	1M
31	<p>After earthing, the different parts of an electrical machinery are at _____</p> <p>a) infinite potential b) intermediate potential c) zero potential d) undefined potential</p> <p>Answer: c) zero potential</p> <p>Explanation: After earthing, the various parts of electrical machinery such as casing, armoring of cables, etc are at zero potential.</p>	
32	<p>Connection of the various parts of a circuit to earth has a _____</p> <p>a) medium resistance b) high resistance c) very high resistance d) very low resistance</p> <p>Answer: d) very low resistance</p> <p>Explanation: Once an electrical apparatus is grounded, most of its components are at ground potential. When the different parts of electrical machinery are connected to the ground, they possess very low resistance.</p>	1M
33	<p>Specific resistance of soil is _____</p> <p>a) changes from soil to soil b) is constant c) depends on the circuit connected to it d) depends on the supply voltage</p> <p>Answer: a) changes from soil to soil</p>	1M

	<p>Explanation: Specific resistance depends on the nature and properties of a material. Specific resistance is different for various types of soils such as dry soil, rocky soil, wet soil, etc.</p>	
34	<p>State true or false: Earthing helps prevent the risk of fire hazards.</p> <p>a. TRUE b. FALSE</p> <p>Answer: a) TRUE</p> <p>Explanation: When the insulation fault arises, earthing helps prevent the risk of fire hazards.</p>	1M
35	<p>Earthing helps to prevent</p> <p>a. Water leakage b. Current leakage c. Storms d. Device upgrade</p> <p>Answer: b) Current leakage</p> <p>Explanation: It helps to prevent current leakage and avoid shock.</p>	1M
36	<p>Choose YES or NO: Electric appliances like iron boxes, television, and refrigerator are connected to the earth wire while operating.</p> <p>a. YES b. NO</p> <p>Answer: a) YES</p> <p>Explanation: To safeguard all the equipment mentioned above, they are connected to the Earth while operating.</p>	1M

37	<p>Which among the following statement is true related to fuse?</p> <p>a. Greater the current smaller is the time taken by the fuse to blow out.</p> <p>b. Greater the current greater is the time taken by the fuse to blow out.</p> <p>c. The current is directly proportion to the blow out time of fuse.</p> <p>d. Is dependent on the temperature and atmospheric conditions.</p> <p>Answer: a) Greater the current smaller is the time taken by the fuse to blow out.</p> <p>Explanation: The <i>time</i> required to <i>blow out</i> is <i>fuse</i> depends on value of fault <i>current</i>, the <i>greater</i> the <i>current</i>, the <i>smaller</i> the <i>time</i> taken by the <i>fuse</i> to <i>blow out</i>.</p>	1M
38	<p>For a current upto 10A which material is used as the fusing element?</p> <p>a. Copper</p> <p>b. Silver</p> <p>c. Alloy of lead and tin</p> <p>d. Zinc</p> <p>Answer: c) Alloy of lead and tin</p> <p>Explanation: The fusing element for 10A current is <i>Lead and tin</i> because it attracts more current.</p>	1M
39	<p>What is fusing factor?</p> <p>a. The ratio of current rating of the fuse to the minimum fusing current.</p> <p>b. The ratio of minimum fusing current to the current rating of the fuse.</p> <p>c. The ratio of maximum fusing current to the current rating</p>	1M

	<p>of the fuse.</p> <p>d. The ratio of minimum fusing current to the voltage rating of the fuse</p> <p>Answer: b) The ratio of minimum fusing current to the current rating of the fuse.</p> <p>Explanation: The fusing factor of a fuse is a measure of how quickly a fuse will melt or "blow" when subjected to an overcurrent condition. The fusing factor is <i>the ratio of the minimum fusing current and the current rating of the fuse</i></p>	
40	<p>What should be the value of fusing factor?</p> <p>a. Equal to zero</p> <p>b. Equal to one</p> <p>c. Less than one</p> <p>d. More than one</p> <p>Answer: d) more than one</p> <p>Explanation: Fusing factor = minimum fusing current / current rating of fusing element. Its value is always more than 1 one.</p>	1M
41	<p>Which is a type of solid state switch?</p> <p>a) NPN Diode</p> <p>b) Bipolar junction transistor</p> <p>c) DPDT(Double pole double throw) Switch</p> <p>d) Push button Switch</p> <p>Answer: b) Bipolar junction transistor</p> <p>Explanation: Bipolar junction transistor is a type of solid state switch. These switches have no moving parts and no physical contacts which is why they are called so. They are also called as electronic switch.</p>	1M

42	<p>Earth resistance is dependent on</p> <p>a) Depth of earth electrode in earth b) Size of earth electrode and earth wire c) Temperature of soil surrounding the earth electrode d) All of the above</p> <p>Answer:d) All of the above</p>	1M
43	<p>In case of HRC fuse a current carrying element is surrounding by _____ to quench the arc.</p> <p>a) Oil b) Water c) Quartz powder d) Sf6 gas</p> <p>Answer: c)Quartz powder</p>	1M
44	<p>The combination of fuse and switch is called as _____</p> <p>a) SFU b) FSU c) Both a and b d) None of these</p> <p>Answer: c) Both a and b</p>	1M
45	<p>In SFU the fuses are _____</p> <p>a) Stationary b) Moving c) Adjustable</p> <p>Answer: a) Stationary</p>	1M
46	<p>It is not necessary to change a _____ after tripping</p> <p>a) Fuse b) MCB c) None of the above</p> <p>Answer :b) MCB</p>	1M

47	<p>A current flowing from live point of ac supply to earth is called as _____ current.</p> <p>a) Load b) Source c) Leakage</p> <p>Answer :c) leakage</p>	1M
48	<p>_____ is used for preventing electric shocks.</p> <p>a) MCB b) MCCB c) ELCB</p> <p>Answer : c) ELCB</p>	1M
49	<p>MCB provides protection against _____</p> <p>a) Short circuit b) Overload c) Earth fault d) All of the above</p> <p>Answer : d) All of the above</p>	1M
50	<p>The length of earthing electrode is about</p> <p>a) 0.5 meter b) 1.0 meter c) 2.5 meter d) 5 meter</p> <p>Answer : 2.5 meter</p>	1M

Thank You

<https://shikshamentor.com/basic-electrical-electronics-engg-for-msbte-k-scheme/>

Visit

<https://shikshamentor.com/>

