SET-B

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Electrical Skills
Session: 2019-20 (Summer Semester)
B. Voc. Program, 1st Semester,
1st In-Sem. Examination

Course Code: ELE 1101 **Time: 1 Hour**
Course Name: Construction Electrician **Max. Marks: 20**

Instruction: Answer all questions from section A, each question carries one mark. Answer all questions from section B, each question carries two marks. Answer all questions from section C, each question carries three marks. Scientific calculator is allowed.

Section – A

05X01 = 05 Marks

Q.1. Which type of plug and sockets are used in India?
(a) Type M (b) Type I
(c) Type D (d) Type A

Q.2. Nowadays switch and sockets are made of which material?
(a) VIR (b) Bakelite
(c) PVC (d) Porcelain

Q.3. NEC stands for:
(a) National Energy Code (b) New Electricity Commission
(c) National Electrical Code (d) None of these

Q.4. All ceiling fans should be hung not less than _____ height above the floor.
(a) 2 m (b) 2.75 m
(c) 1.75 m (d) 2 m

Q.5. Edison screw type lamp-holders should be used when power of a lamp is:
(a) 150 W to 200 W (b) 50 W to 150 W
(c) 100 W to 200 W (d) 200 W to 300 W

Section – B

03X02 = 06 Marks

Q.1. What is the BIS recommended schedule of 6A and 16A socket outlets in a house?
Q.2. Differentiate between PVC coating wires and cables with its advantages.
Q.3. What is PVC casing capping wiring?

Section – C

03X03 = 09 Marks

Q.1. What is electrical switches? Explain all types of electrical switches with symbol.
Q.2. Write the Specifications of commercially available boards, round blocks for mounting Electrical accessories.
Q.3. Explain lamp holder with all types of bayonet cap lamp-holders.

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School of Electrical Skills
Session: 2019-20 (Summer Semester)
B. Voc. Program, First Semester,
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Course Code: ELE1101 **Time: 1 Hour**
Course Name: Construction Electrician **Max. Marks: 20**

Section – A

05X01 = 05 Marks

Ans.1. **(c) Type D**
Ans.2. **(b) Bakelite**
Ans.3. **(c) National Electrical Code**
Ans.4. **(b) 2.75 m**
Ans.5. **(d) 200 W to 300 W**

Section – B

03X02 = 06 Marks

Ans.1. A BIS recommended schedule of socket outlets is given below:

Location	6A outlets	16A outlets
Bedroom	2 to 3 Nos.	1 No.
Living room	2 to 3 Nos.	2 Nos.
Kitchen	1 No.	2 Nos.
Dining room	2 Nos.	1 No.
Garage	1 Nos.	1 No.
Refrigerator	-	1 No.
Air - conditioner	-	1 No.
Verandah	1 No.	1 No.

Ans.2. **Wires:** In house wiring, generally we use poly vinyl chloride wire. PVC coating on copper conductor wires.

Cables: A power cable is an assembly of two or more electrical conductors, usually held together with an overall sheath. The assembly is used for transmission of electrical power. Power cables may be installed as permanent wiring within buildings, buried in the ground. Flexible power cables are used for portable devices, mobile tools and machinery.

It has many advantages as follows.

(a) High dielectric strength

(b) High tensile strength

(c) More defense against moisture

(d) High life

Widely used Long Life Durable against water, heat, oil, UV light

Ans.3. **Casing Capping:** This is one of the simple forms of electric wiring systems. This is little bit old/conventional wiring system. Now days we very often use this **cashing capping electric wiring system.** As the name referred in this wiring, PVC insulated wires are placed in plastic cashing and covered with cap. The casing is of rectangular cross section as shown.

The color of cashing channel and cap are normally white or grey. The cashing channel and cap are normally made of either plastic or wood. The channels and caps are available in the market in standard length. The commonly available standard lengths are 1 meter, 10 feet and 6.5 feet etc.

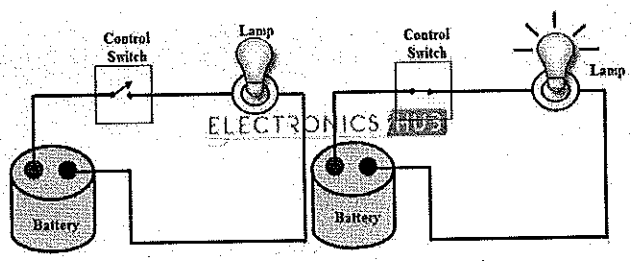
We can fit the channels in both vertical and horizontal alignment. In corners and junctions, we can use elbow joint and tee joints respectively.

Section – C

03X03 = 09 Marks

Ans.1. **Switches:** A switch is a device which is designed to interrupt the current flow in a circuit, in other words, it can make or break an electrical circuit. Every electrical and electronics application uses at least one switch to perform ON and OFF operation of the device.

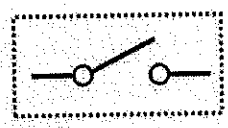
When the contacts of a switch are closed, the switch creates the closed path for current flow and hence load consumes the power from source. When the contacts of a switch are open, no power will be consumed by the load as shown in below figure.



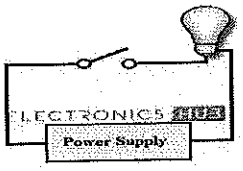
Based on the number of poles and throws, switches are classified into following types:

1. Single Pole Single Throw Switch (SPST): This is the basic ON and OFF switch consisting of one input contact and one output contact.

- It switches a single circuit and it can either make (ON) or break (OFF) the load.
- The contacts of SPST can be either normally open or normally closed configurations.

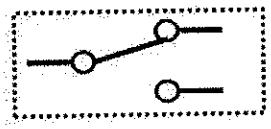


Symbol

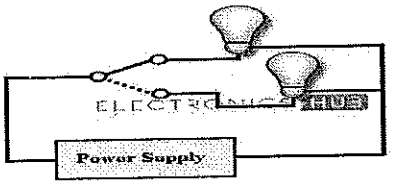


2. Single Pole Double Throw Switch (SPDT): This switch has three terminals, one is input contact and remaining two are output contacts.

- This means it consists one ON position and one OFF position at a time.
- In most of the circuits, these switches are used as changeover to connect the input between two choices of outputs.
- The contact which is connected to the input by default is referred as normally closed contact and contact which will be connected during ON operation is a normally open contact.



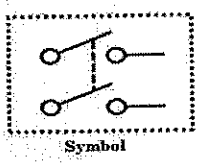
Symbol

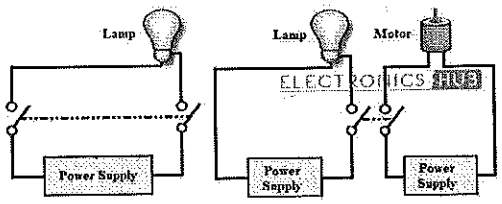


SPDT Switch Circuit

3. Double Pole Single Throw Switch (DPST): This switch consists of four terminals, two input contacts and two output contacts.

- It behaves like a two separate SPST configurations, operating at the same time.
- It has only one ON position, but it can actuate the two contacts simultaneously, such that each input contact will be connected to its corresponding output contact.
- In OFF position both switches are at open state.
- This type of switches is used for controlling two different circuits at a time.

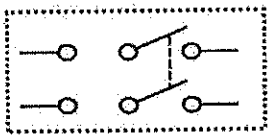




4. Double Pole Double Throw Switch (D

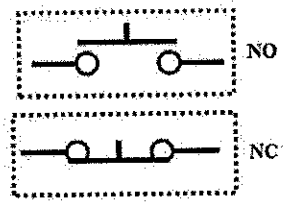
o ON positions.

- It has six terminals, two are input contacts and remaining four are the output contacts.
- It behaves like a two separate SPDT configuration, operating at the same time.
- Two input contacts are connected to the one set of output contacts in one position and in another position, input contacts are connected to the other set of output contacts.



5. Push Button Switch: It is a momentary contact switch that makes or breaks connection as long as pressure is applied (or when the button is pushed).

- Generally, this pressure is supplied by a button pressed by someone's finger.
- This button returns its normal position, once the pressure is removed.
- The internal spring mechanism operates these two states (pressed and released) of a push button.
- It consists of stationary and movable contacts, of which stationary contacts are connected in series with the circuit to be switched while movable contacts are attached with a push button.
- Push buttons are majorly classified into normally open, normally closed and double acting push buttons as shown in the above figure.



A2. **Specification of commercially available boards, round blocks for mounting Electrical accessories:**

- The boards which are used for wiring installation are available in different sizes, and made up of teak wood or PVC or metal. When selecting the boards, the following points are to be considered. Metallic switch boxes shall have the front cover with phenolic laminated sheets.
- **Size of the board:** The number and type of accessories to be mounted on the board decides the size of the board. After selecting the accessories to be mounted on the board, the layout may be formed on a cardboard template and then the size of the board should be determined.
- **System of wiring:** This decides whether boards should be placed on the surface of the wall or flush mounted. Accordingly, a single or hinged board could be selected. However, depending upon the system like batten or metal conduit or PVC conduit, boards made of wood, metal or PVC respectively could be selected.
- **Place of wiring:** This is another deciding factor to choose the material of the board. For indoors we may use boards of any material depending upon the system of wiring.

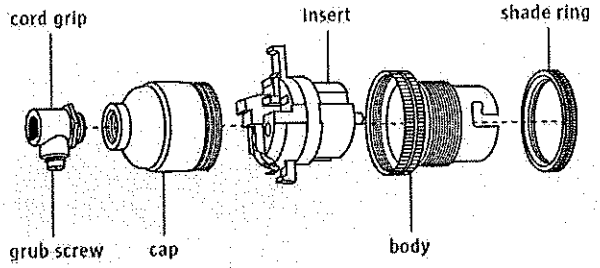
- **Specification for blocks and boards:** While specifying the boards for wiring installation, the following particulars shall be given.
- Material of the board: wood, PVC or metal.
- Size: length, breadth and height in mm.
- Thickness of the material in mm.
- Single or double. (If double, hinged or non-hinged type)
- Additional information like type of finish on wooden boards, colour of PVC or metal boards, surface or flush mounting etc.
- **T W round blocks:** For specifying round blocks, it's overall diameter and thickness have to be given. Round blocks are available as single and double (with base block). Nowadays, PVC blocks are also in use.

A3. **Lamp Holders:**
A lamp-holder is used to hold a lamp. Earlier, brass holders were most commonly used but nowadays these have been replaced by bakelite holders. These may contain solid or hollow spring contact terminals.
According to the Bureau of Indian Standard, 732, clause 5.8, all incandescent lamps, unless hung at a height of 2.5 m (8 ft.), shall be provided with standard bayonet holders for lamps

up to and including 200 watts. For lamp powers above 200 W and up to 300 watts Edison screw holders are to be used and for above 300 watts Goliath screw holders are to be used.

Bayonet Cap Lamp-holders:
In this type, the bulb is fitted into the slot, and is held in position by means of two pins in the lamp cap. It has solid or hollow spring contact terminals, and the supply mains through the switch are connected to these contacts. In B.C. types there are two grooves on the circular construction of all types of holders. The groove and the contact terminals are at right angle to each other. In this type of holders, the lamp is inserted, forced in, turned slightly and then left in position. These holders can be classified further as explained below.

1. Pendent lamp-holders:
This holder is used in places where the lamps are required in a hanging position. These holders are made of either brass or bakelite. An exploded view of this holder shows the parts of the holder. These holders are used along with ceiling roses for suspending the lamps from the ceiling.



2. Batten lamp-holders:
The straight batten holder is used in a flat surface on the round block, wooden board etc. These holders are made of either brass or bakelite.
3. Angle lamp-holders:
The angle bottom holder is to hold the lamp in particular angle. These are made of either brass or bakelite. These are used for advertising boards, window display, kitchen etc.
4. Bracket lamp-holders:
This holder is used with a bracket. These are made of brass and are used to give direct light to a particular place. Brass bracket holders need to be earthed as per BIS recommendations. These are fixed on the bracket by the internal threading of the cap.
5. Tube Light or Fluorescent Lamp-holders and Starter-holders:
Generally, the fluorescent lamp-holders are of a bi-pin type. There is a holder for the fluorescent lamp, a holder for the starter and a combined holder for the tube and starter.

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School of Electrical Skills
Session: 2019-20 (Summer Semester)
B. Voc. Program, 1st Semester,
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Course Code: ELE 1102 **Time: 1 Hour**
Course Name: Electrical Drawing **Max. Marks: 20**

Instruction: Answer all questions from section A, each question carries one mark. Answer all questions from section B, each question carries two marks. Answer all questions from section C, each question carries three marks. Scientific calculator is allowed.

Section – A

05X01 = 05 Marks

Q.1. Metric thread of 10mm diameter is represented by:

(a) 10M (b) M10 (c) M^10 (d) None of these

Q.2. The internal angle of regular pentagon is:

(a) 72^0 (b) 108^0 (c) 120^0 (d) 150^0

Q.3. The following line is used for visible outlines:

(a) Continuous thick (b) Continuous thin (c) Both of these (d) Any of these

Q.4. A line of 1 meter is shown by 1cm on a scale. Its Representative fraction (RF) is

(a) 1 (b) 100 (c) 1/100 (d) 1/50.

Q.5. The fraction of centimeter is:

(a) 10^{-2} (b) 10^{-3} (c) 10^{-6} (d) 10^{-9}

Section – B

03X02 = 06 Marks

Q.1. What are electrical drawing symbols of generator and heater? Discuss in detail.

Q.2. What are the purpose of lamp and fuse? Discuss with their electrical symbols?

Q.3. Why T-joint on stranded cable is used? Explain with diagram.

Section – C

03X03 = 09 Marks

Q.1. What are the different projections used in electrical drawing? Discuss any two.

Q.2. What are the different types of resistors used in electrical drawing? Explain each with neat sketch.

Q.3. What are the necessary conditions for dimensioning in electrical drawing?

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Course Code: ELE 1102
Course Name: Electrical Drawing

Time: 1 Hour
Max. Marks: 20

Section – A

05X01 = 05 Marks

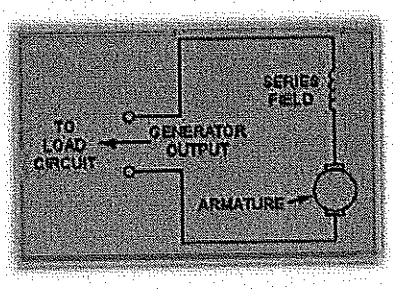
1. Ans. (b)
2. Ans. (b)
3. Ans. (a)
4. Ans. (c)
5. Ans. (a)

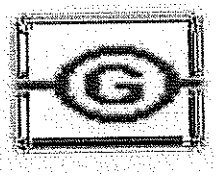
Section – B

03X02 = 06 Marks

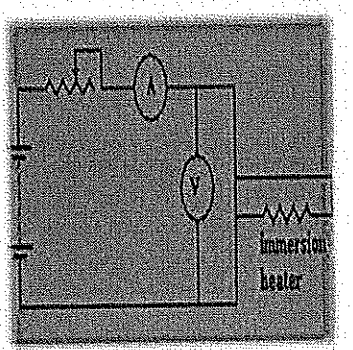
Ans. 1.

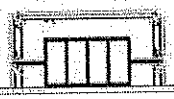
- An electric generator is a device that converts mechanical energy to electrical energy. A generator forces electric current to flow through an external circuit. The source of mechanical energy may be a reciprocating or turbine steam engine, water falling through turbine





- An electric heater is an electrical appliance that convert electrical energy into heat .The heating element inside every electric heater is simply an electrical resistor, and works on the principle of Joule heating.





Ans. 2.

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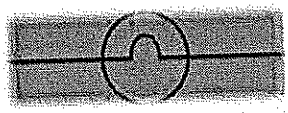
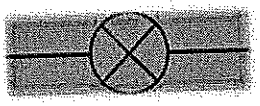
- (a).It is the lighting lamp transducer which converts electrical energy to light. This symbol is used for a lamp providing illumination.



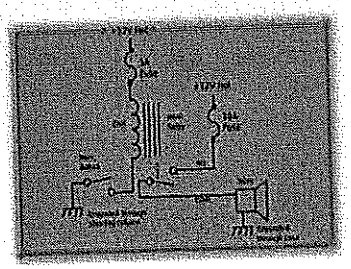
e.g. A car head lamp or torch bulb.

- b. It is the indicating transducer that converts electrical energy to light. This symbol is used for a lamp which is an indicator.



e.g. A warning light on cars dashboard

- A fuse is a special kind of resistor that acts as short circuit (0 resistances) unless the current exceeds the rated value. If the current exceeds a rated value the fuse blows and acts as an open circuit (an infinite resistance).



Ans. 3.

Tee joint on stranded cable

1. **Use 7/0.737 PVC single core cable**
2. **Strip off 8 cm insulation from through wire. Do not cut cable**
3. **Strip 8 cm of tee wire**
4. **Twist tee wire for 3 cm in direction of lay**
5. **Secure with two or three turns of 1/0.737 binding wire**
6. **Divide tee wire strands, three on one side of through wire and four on other side**
7. **Wrap three strands tightly round through wire to the right**
8. **Wrap four strands in opposite direction to the left**
9. **Tighten with pliers and solder the joint.**

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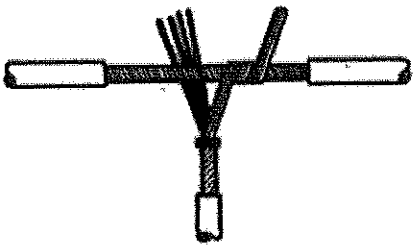


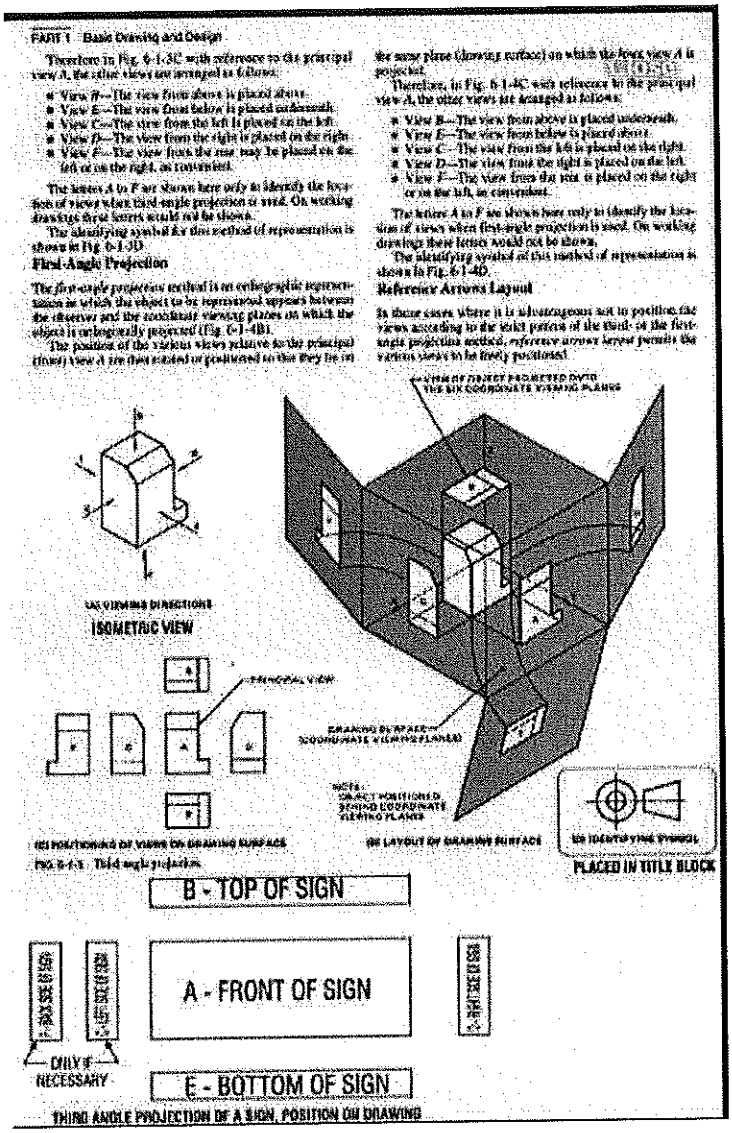
TEE JOINT ON STRANDED CABLE

(b)

Section – C

03X03 = 09 Marks

Ans. 1.



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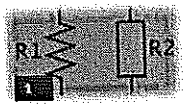
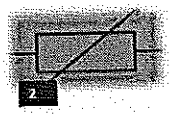
Ans. 2.

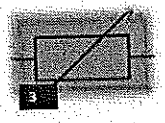
❖**Fixed Resistor:** This type of resistor resists the flow of current.



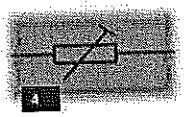
❖**Variable Resistor:** This type of resistor is used to control the current known as rheostat.



❖**Variable Resistor Potentiometer:** This type of resistor consist of 3 contacts. It is used to control the voltage.



❖**Variable resistor Preset:** Preset resistors are used in circuits when it is necessary to alter the resistance.



Ans. 3.

Drawing dimensions are added to a drawing to further document the model, without changing or controlling features or part size. You add drawing dimensions as annotations to drawing views or geometry in drawing sketches. Drawing dimensions are expressed as numeric constants.

(i) Dimension lines in a drawing should be placed as far as possible outside the outline of a view.
(ii) All dimensions should be placed above their respective dimension lines, and normal to the lines, such that these can be easily read from the bottom or right hand side of the drawing sheet.
(iii) Dimension lines should not cut each other. Smaller dimensions should be placed first, that is, the dimensions should be marked in the ascending order.

(iv) Dimension lines are never shown dotted.
(v) Dimensions must only be given once and not be repeated on other views.
(vi) Holes are dimensioned by stating their diameters.
There are usually three representations as follows:

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Electrical Skills
Session: 2019-20 (Summer Semester)
B. Voc. Program, 1st Semester,
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Course Code: ELE 1103 **Time: 1 Hour**
Course Name: Basic Electrical Engineering **Max. Marks: 20**

Instruction: Answer all questions from section A, each question carries one mark. Answer all questions from section B, each question carries two marks. Answer all questions from section C, each question carries three marks. Scientific calculator is allowed.

Section – A

05X01 = 05 Marks

Q.1. How many neutrons are there in a nucleus of an atomic number 11 and mass number 23?
(a) 34 (b) 12 (c) 23 (d) 11

Q.2. Kirchhoff's voltage law states that:
(a) Closed loop series path the algebraic sum of all the voltages around any closed loop in a circuit is equal to zero
(b) Closed loop series path the algebraic multiple of all the voltages around any closed loop in a circuit is equal to zero
(c) Both a and b
(d) None of the above

Q.3. Which of the following are the passive elements of energy?
(a) Voltage and Current (b) Inductor and Voltage
(c) Capacitor and Current (d) Resistance, Inductor and capacitor

Q.4. Which of the following are the elements of energy source?
(a) Voltage and Current (b) Work and Force
(c) Inductor and Conductor (d) None of these

Q.5. Joule is the unit of:
(a) Energy (b) Work (c) Speed (d) Force

Section – B

03X02 = 06 Marks

Q.1. Why a D.C. volt meter and D.C. Ammeter can read A.C. voltage or current?

Q.2. Why 220 V A.C. is more dangerous than 220 V D.C.?

Q.3. When a Geyser, first connected to 110 V D.C. then it takes 30 minutes to raise the temperature up to 70^0 C of 20 liters of water. If we connect the Geyser to the power supply of 110 V A.C. then how much time it will take to raise same temperature for same quantity of water?

Section – C

03X03 = 09 Marks

Q.1. If a lamp consumes 1000 joules of electrical energy in 10 seconds, then what is the wattage of the lamp?

Q.2. An electrical heater is having rating of 2 kW; how much energy it will consumed in the month of September if it is used two hours daily.

Q.3. Define Amplitude, Time period and frequency of an alternative sinusoidal voltage. What is the time period of one cycle in seconds for Indian power supply?

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Course Code: ELE 1103 **Time: 1 Hour**
Course Name: Basic Electrical Engineering **Max. Marks: 20**

Section – A

05X01 = 05 Marks

Q.1. How many neutrons are there in a nucleus of an atomic number 11 and mass number 23?
(a) 34 (b) 12 (c) 23 (d) 11
Ans. (b)

Q.2. Kirchhoff's voltage law states that:
(a) Closed loop series path the algebraic sum of all the voltages around any closed loop in a circuit is equal to zero
(b) Closed loop series path the algebraic multiple of all the voltages around any closed loop in a circuit is equal to zero
(c) Both a and b
(d) None of the above
Ans. (a)

Q.3. Which of the following are the passive elements of energy?
(a) Voltage and Current (b) Inductor and Voltage
(c) Capacitor and Current (d) Resistance, Inductor and capacitor
Ans. (d)

Q.4. Which of the following are the elements of energy source?
(a) Voltage and Current (b) Work and Force
(c) Inductor and Conductor (d) None of these
Ans. (a)

Q.5. Joule is the unit of:
(a) Force (b) Work (c) Speed (d) Energy
Ans. (d)

Section – B

03X02 = 06 Marks

Q.1. Why a D.C. volt meter and D.C. Ammeter can read A.C. voltage or current?
Ans. The average of ac over a cycle is zero. Therefore, dc volt meter and ammeter will read zero.

Q.2. Why 220 V A.C. is more dangerous than 220 V D.C.?
Ans. 220 V ac has a peak voltage of 311 V while 220 V dc has the maximum value only 220 V so ac of the same voltage is more dangerous than dc.

Q.3. When a Geyser, first connected to 110 V D.C. then it takes 30 minutes to raise the temperature up to 70^0 C of 20 liters of water. If we connect the Geyser to the power supply of 110 V A.C. then how much time it will take to raise same temperature for same quantity of water?
Ans. It will take the same time as 30 minutes because 110 V dc and 110 V ac (RMS) has the same heating effect.

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Section – C

03X03 = 09 Marks

Q.1. If a lamp consumes 1000 joules of electrical energy in 10 seconds, then what is the wattage of the lamp?

Ans. Power = energy / time
= 1000 joules/10 seconds
= 100 watts

The wattage of the lamp will be 100 watts.

Q.2. An electrical heater is having rating of 2 kW; how much energy it will consumed in the month of September if it is used two hours daily.

Ans. Total hours of running for 30 days will be 60 hours. Therefore, the consumption energy will be 2x60 hours = 120 kWH.

Q.3. Define Amplitude, Time period and frequency of an alternative sinusoidal voltage. What is the time period of one cycle in seconds for Indian power supply?

Ans. Amplitude: the maximum value attended by an alternating current in either direction is called its magnitude of peak value.
Time Period: Time taken to complete one cycle is called time period. It is denoted by T.
Frequency: the number of cycles completed per second by an alternating current is called its frequency and it is denoted by f.
The time period of one cycle in seconds for Indian power supply is .02 seconds.

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Electrical Skills

Session: 2019-20 (Summer Semester)

B. Voc. Program, 1st Semester,

1st In-Sem. Examination

Course Code: ELE1104 **Time: 1 Hour**

Course Name: Maintenance Technician Electrical **Max. Marks: 20**

Instruction: Answer all questions from section A, each question carries one mark. Answer all questions from section B, each question carries two marks. Answer all questions from section C, each question carries three marks. Scientific calculator is allowed.

Section – A

05x01 = 05 Marks

Q.1. Digital multi-meter measures_____ quantity.
(a) Mechanical (b) Optical (c) Electrical (d) Analog

Q.2. The output of the to the megger is:
(a) D.C. (b) A.C. (c) both a and b (d) None of these

Q.3. A soldering iron 'bit' is made of:
(a) Brass (b) Tin (c) Copper (d) Steel

Q.4. The specialized tool required for removing the insulation of wire is:
(a) Combination Plier (b) Knife (c) Wire Stripper (d) all of these

Q.5. The purpose of using flux in soldering is to:
(a) Increase fluidity of solder metal (b) Wash away surplus solder
(c) Feel up gaps left in a bad join (d) Prevent oxides forming

Section – B

03x02 = 06 Marks

Q.1. What is megger? Write down the advantages and disadvantages of analog megger.
Q.2. Write down the names of 5 electrician hand tools which are used for house wiring.
Q.3. Explain the block diagram of multi meter.

Section – C

03x03 = 09 Marks

Q.1. Define multi-meter. Write down the advantages of multi meter.
Q.2. Explain the parts of manual type (Hand Operated) megger.
Q.3. What is soldering? Explain the soldering procedure with appropriate diagram.

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Section – A

05x01 = 05 Marks

1. (c)
2. (d)
3. (c)
4. (c)
5. (d)

Section – B

03x02 = 06 Marks

Ans. 1.

Megger: The device enable us to measure electrical leakage in wire, results are very reliable as we shall be passing electric current through device while we are testing. The equipment basically uses for verifying the electrical insulation level of any device such as motors, cables, generators, windings, etc. This is a very popular test being carried out since very long back. Not necessary it shows us exact area of electrical puncture but shows the amount of leakage current and level of moisture within electrical equipment/winding/system.

Advantages of megger:

1. Still keeps important in such high-tech world as it's an oldest method for IR value determination.
2. No external source required to operate.
3. Cheaper available in market.

Disadvantages of megger:

1. At least 2 person required to operate i.e. one for rotation of crank other to connect megger with electrical system to be tested.
2. Accuracy is not up to the level as it's varies with rotation of crank.
3. Require very stable placement for operation which is a little hard to find at working sites.
4. Provides an analog display result.
5. Require very high care and safety during use of the same.

Ans. 2.

1 **Combination plier**: It is used for cutting, twisting, pulling, holding and gripping small jobs in wiring assembly and repairing work.

2 **Nose plier:** It is used for holding flat objects and small objects where fingers cannot reach.

3 **Side cutting plier:** It is used for cutting and aluminum wires of smaller diameter.

4 **Wire stripper:** It is used for removing the insulation of wires.:

5 **Cable stripper:** It is used for removing the second insulation of the cable.:

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Ans. 3.

Buffer Amplifier: A buffer amplifier (sometimes simply called a buffer) is one that provides electrical impedance transformation from one circuit to another, with the aim of preventing the signal source from being affected by whatever currents (or voltages, for a current buffer) that the load may be produced with. The signal is 'buffered from' load currents.

Current to voltage converter: A current to voltage converter will produce a voltage proportional to the given current. This circuit is required if your measuring instrument is capable only of measuring voltages and you need to measure the current output.

Calibrated Attenuator: An attenuator is an electronic device that reduces the power of a signal without appreciably distorting its waveform.

Constant Current source: A constant current source is a power source which provides a constant current to a load, even despite changes and variance in load resistance.

Rectifier Circuit: Rectification is the conversion of alternating current (AC) to direct current (DC).

Analog-to-digital conversion: This an electronic process in which a continuously variable (analog) signal is changed, without altering its essential content, into a multi-level (digital) signal

Digital Display: A display that gives the information in the form of characters (numbers or letters)

Section – C

03x03 = 09 Marks

Ans. 1.

A multimeter is an electronic device used to measure voltage, amps and resistance across circuits. By attaching two leads to different parts of an electrical system, professionals can use multimeter to detect levels of voltage and resistance, or changes in electrical currents.

Advantages of digital multimeter

1. They are more accurate than analog multimeter.
2. The reading speed is increased as it is easier to read
3. Unlike analog multimeter, zero adjustment is not required.
4. Accuracy is increased due to digital readout.
5. Portable size makes it easy to carry anywhere.

Ans. 2.

Analog display:- Analog display provided on front face of tester for IR value recording.

Hand Crank:- Hand crank used to rotate helps to achieve desired RPM required generate voltage which runs through electrical system.

Wire Leads:- Used same as in electronic tester i.e. For connecting tester with electrical system.

Ans.3.

Soldering joints are weakest joints in comparison of brazing and welding. It cannot bear the load. It is generally use to make electrical contacts. Temperature requirement is up to 450 degrees Centigrade in Soldering joints. No change in mechanical properties after joining. Cost involved is very low. Preheating of work pieces before soldering is good for making good quality joint.

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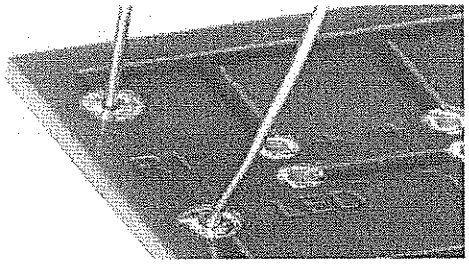
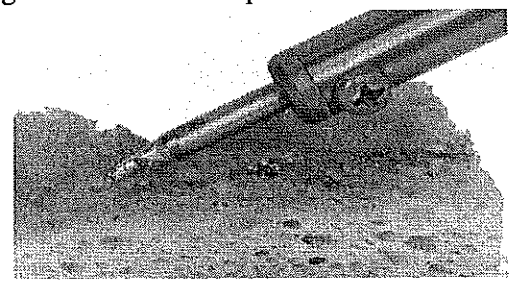
Process of soldering

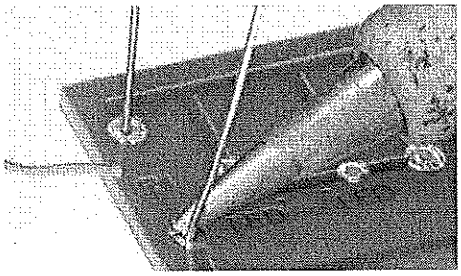
1. Place the component into the board.
2. Bend the legs of component.



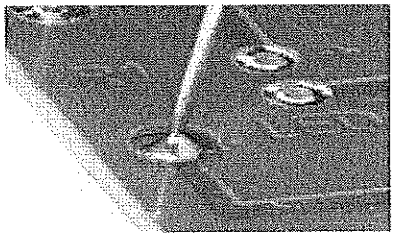
3. Make sure the soldering iron has warmed up. There should be a soldering iron cleaner.



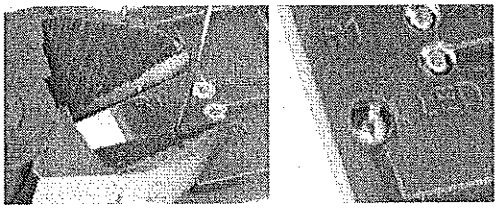
4. Pick up the Soldering Iron in one hand, and the solder in the other hand.



5. Feed a small amount of solder into the joint. The solder should melt on the pad and flow around the component leg.
6. Remove the solder, then remove the soldering iron.



7. Leave the joint to cool for a few seconds, then using a cutters trim the excess component lead



Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Electrical Skills
Session: 2019-20 (Summer Semester)
B. Voc. Program, 1st Semester,
1st In-Sem. Examination

Course Code: ELE 1105 **Time: 1 Hour**
Course Name: Electrical Safety **Max. Marks: 20**

Instruction: Answer all questions from section A, each question carries one mark. Answer all questions from section B, each question carries two marks. Answer all questions from section C, each question carries three marks. Scientific calculator is allowed.

Section – A

05X01 = 05 Marks

Q.1. CO_2 fire extinguishers are used to extinguish the fire of:

(a) Class A (b) Class B (c) Class C (d) Class D

Q.2. A person qualified to perform electrical work must possess: -

(a) Skills/techniques to distinguish live parts from other parts of electrical equipment.
(b) Skills and techniques to determine the nominal voltage of exposed live parts.
(c) Knowledge on the use of PPE, insulating and shielding materials, and insulated tools.
(d) All of the above.

Q.3. During the first-aid of minor burns can be treated: -

(a) By dressing the burns (b) by pouring the cold water on the burns
(c) Both a and b (d) None of these

Q.4. Which IS is applicable for the portable CO_2 Extinguishers for their performance and construction specifications?

(a) IS 9001 (b) IS 15683 (c) IS 2878 (d) None of these

Q.5. Where to locate CO_2 Extinguishers?

(a) Near to the source of the fire risk (b) at the reception
(c) In the office of Principal (d) In the garden

Section – B

03X02 = 06 Marks

Q.1. When to use class A type fire extinguisher?

Q.2. How to define fire?

Q.3. What happens when a person gets electrical shock?

Section – C

03X03 = 09 Marks

Q.1. What precautions to be taken for avoiding any electrical fire?
Q.2. How to extinct the fire?
Q.3. What is the treatment of electrical burns?

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Electrical Skills
Session: 2019-20 (Summer Semester)
B. Voc. Program, 1st Semester,
1st In-Sem. Examination

Course Code: ELE 1105 **Time: 1 Hour**
Course Name: Electrical Safety **Max. Marks: 20**

Section – A

05X01 = 05 Marks

Q.1. CO_2 fire extinguishers are used to extinguish the fire of:

(a) Class A (b) Class B (c) Class C (d) Class D

Ans. (c)

Q.2. A person qualified to perform electrical work must possess: -

(a) Skills/techniques to distinguish live parts from other parts of electrical equipment.
(b) Skills and techniques to determine the nominal voltage of exposed live parts.
(c) Knowledge on the use of PPE, insulating and shielding materials, and insulated tools.
(d) All of the above.

Ans. (d)

Q.3. During the first-aid of minor burns can be treated: -

(a) By dressing the burns (b) by pouring the cold water on the burns
(c) Both a and b (d) None of these

Ans. (c)

Q.4. Which IS is applicable for the portable CO_2 Extinguishers for their performance and construction specifications?

(a) IS 9001 (b) IS 15683 (c) IS 2878 (d) None of these

Ans. (c)

Q.5. Where to locate CO_2 Extinguishers?

(a) Near to the source of the fire risk (b) at the reception
(c) In the office of Principal (d) In the garden

Ans. (a)

Section – B

03X02 = 06 Marks

Q.1. When to use class A type fire extinguisher?

Ans. When there is a fire in ordinary solid materials such as wood, coal, paper, rags, rubbish and packing material.

Q.2. How to define fire?

Ans. Active rapid burring and oxidation process accompanied by heat, light, poisons gas and CO_2 due to combustion.

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Q.3. What happens when a person gets electrical shock?

Ans. An electric shock occurs when a person comes into contact with an electrical energy source. Electrical energy flows through a portion of the body causing a shock. Exposure to electrical energy may result in no injury at all or may result in devastating damage or death.

Section – C

03X03 = 09 Marks

Q.1. **What precautions to be taken for avoiding any electrical fire?**

Ans. Any fire causes immense loss of property and life. Hence, due care should be taken to minimize the risk of fire so that fire does not start. Same is true in case of electrical fire.

If due care is taken while selecting equipment and installation methods, the possibility of electrical fire can be reduced to a very large extent.

Proper Material

Selection of Good Quality and proper material is essential as cheap and low quality material may not have good electrical & mechanical properties.

These can lead to faults. Also, new fire retardant, fire retardant low smoke or Halogen free fire resistant cables, wires are available. These can be used in high density areas. These materials emit lower smoke and also resist the propagation of fire.

Proper Installation Method

All openings in walls, beams, slabs used for carrying electrical systems/ cables/ wires etc. form one area to another must be sealed by fire retardant/ fire resistant material.

This can stop propagation of fire from one area to another. Vertical shafts in buildings must also be sealed at every level.

This stops the smoke from moving up as smoke is a major reason for fatalities in any fire.

Electrical Protection

Restrict electrical faults in the form of over load, short circuit protection, gas operated relays, over voltage protection, proper earthing and surge arrestors, earth leakage relays.

Necessary protections as demanded by IS standards need to be employed at every level right from substation.

Proper selection of switch gear, EF and OC relays, relay settings, proper rating in terms of current carrying capacities & breaking capacities of MCCB's & MCB's exact OC relay ranges for motor feeders, Earth leakage detection devises where ever required should be employed.

All these protections either preempt the tripping before actual disastrous faults or restrict the electrical faults there by restricting damage to equipment and avoid fire.

Elaborate Pre-Commissioning testes of Pre-commissioning testing of entire electrical installation including continuity, insulation resistance.

Insulation strength, physical and functional checks, earthing resistance need to be done properly and as recommended.

Faulty material and installation can be detected prior to commissioning in most cases if proper testing is done. This avoids accidents both electrical & fire.

Q.2. **How to extinct the fire?**

Ans. By the removal of (i) combustible materials (ii) air (iii) heat and (iv) breaking chain reactions

Q.3. **What is the treatment of electrical burns?**

Ans. The following treatment should be given without hindrance to the artificial respiration:

(a) Remove clothing locally to enable the burn to be treated but not break blisters.
(b) Saturate burns with warm solution of the mixed bicarbonate soda with warm water.
(c) Cover with sterile gauze bandage.
(d) Warm, weak sweet tea may be given to the patient if he is able to swallow.