



School of Electrical Skills
Session: 2021-22 (Summer Semester)
B. Voc. Program, 1st Semester ~~BSST~~,
1st In-Sem. Examination

Course Code: ELE1121

Time: 1 Hour

Course Name: Repairing and servicing of Electrical Appliances(OE) 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/Normal calculator is allowed.

Section – A

05X01 = 05 Marks

- Current through any element can be measured:
(a) in series (b) in parallel (c) either series or parallel (d) None of these
- Energy is measured in:
(a) Coulomb (b) Ampere
(c) Kilo watt hour (d) None of these
- Unit of Charge is:
(a) Kwh (b) Coulomb (c) Watt-Second (d) All of these
- Slope of I-V curve gives:
(a) Resistance (b) Power
(c) Resistivity (d) None of these
- Value of voltage at short circuit side is:
(a) Infinity (b) Anything
(c) Zero (d) None of these

Section – B

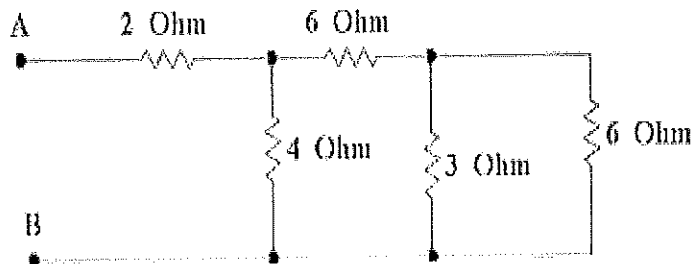
03X02 = 06 Marks

- If 150 volts applied across a resistor of R ohms, and current of 10 amps is flowing in the circuit then find the value of resistor connected in the circuit?
- Write short note on basic electrical quantities.
- State the Ohm's law and draw its graph.

Section – C

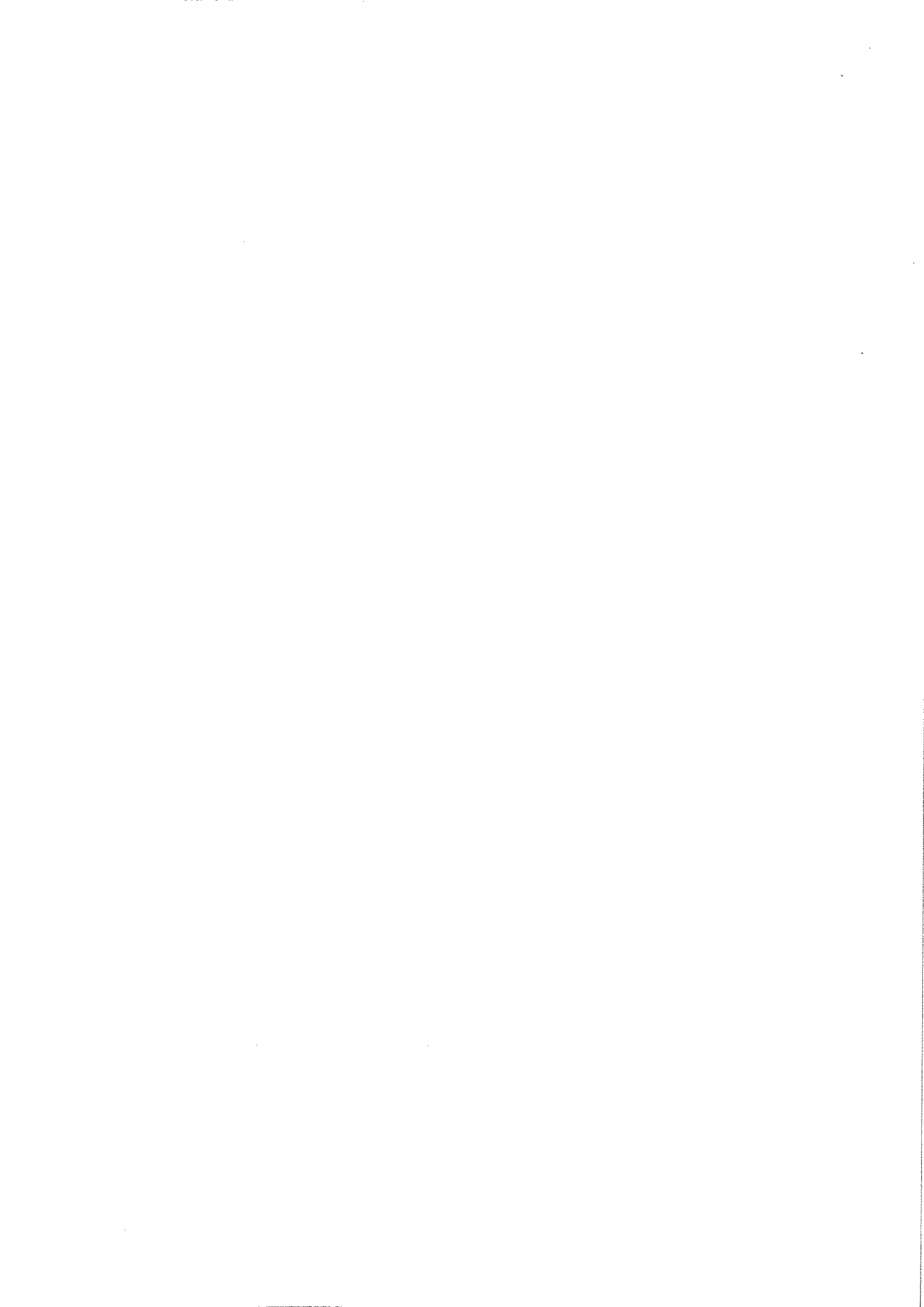
03X03 = 09 Marks

- Write the name of at least 10 tools that are used for the electrical wiring system and their uses.
- Find the equivalent resistance across A-B terminals:



- State the law of conservation of energy and also define conditions when current will flow in a circuit.

Pranab





Answer Key

Course Code: ELE1121, Course Name: Repairing and servicing of Electrical Appliances

School of Electrical Skills, Open elective, 1st In-Sem. Examination

B. Voc. Program, Summer Semester (2021-22)

Section - A

A.1 a

A.2 c

A.3 b

A.4 a

A.5 c

Section-B

Ans.1 Given,

Voltage = 150 volts; Current = 10 amp.

From ohm's law,

$$V = I \cdot R$$

$$R = V/I = 150/10 = 15 \text{ ohms}$$

Ans.2

Basic Electrical quantities
There are basically 5 quantities.

- ① Charge ② Current ③ Voltage ④ Power ⑤ Energy

① Charge → it is the most fundamental quantity due to which electricity comes into existence.
(Q) Unit of charge is → Coulomb

② Current → Rate of flow of charge is current.
(I) Unit → Ampere

$$I = \frac{Q}{t}$$

③ Voltage → It is the work to be done to bring a charge from infinity to the particular point.
(V) $V = \frac{W}{Q}$; unit → volts

④ Power → Capacity to do work.
(P) $P = \frac{W}{t}$ Unit → watt

$$\Rightarrow \boxed{P = V \times I}$$

⑤ Energy → Ratio of power to the time, Product of power & time
 $\boxed{E = P \times t}$
Unit → kWh & 1 kWh = 1 unit of electricity consumed



Answer Key

Code: ELE1121, Course Name: Repairing and servicing of Electrical Appliances

School of Electrical Skills, Open elective, 1st In-Sem. Examination

B. Voc. Program, Summer Semester (2021-22)

Ans.3

Ohm's Law:

Wherever a voltage source is applied across a conductor, current will start flowing through it because of potential difference from higher potential to lower potential.

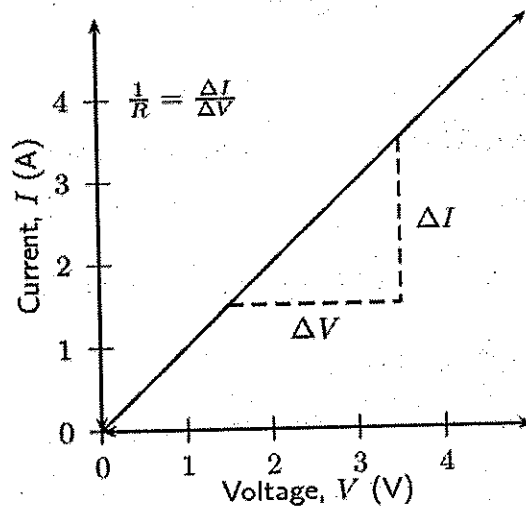
Ohm's Law states that the current flowing through a conductor is directly proportional to the potential difference (voltage) applied across its ends, provided that temperature and other physical conditions remain unchanged.

$$V \propto I$$

$$V = I * R$$

Where R= proportionality constant, known as Resistance

- Ohm's law is not applicable for unilateral electrical elements like diodes and transistors as they allow the current to flow through in one direction only.
- For non-linear elements also, ohm's law is not applicable.



Section-C

Ans.1

1. **Combination Plier 165 mm:** This allows the tool to grip to be much tighter than using just your hand. Combination pliers are called such because they can perform a combination of jobs. They are most typically used for gripping, compressing, bending, twisting, extracting and cutting various materials. The material used for pliers is steel and for its handle is thermoplastic.
2. **Long Nose Plier 165 mm / 6.1/ 2":** Round nose pliers are a specialized plier characterized by their rounded, tapering jaws and most commonly used for creating loops in pieces of wire by electricians and jewellers. Round nose pliers also have insulated handles for safe electrical



Answer Key

Course Code: ELE1121, Course Name: **Repairing and servicing of Electrical Appliances**

School of Electrical Skills, Open elective, 1st In-Sem. Examination

B. Voc. Program, Summer Semester (2021-22)

work comfortable grips on the handles. The material used for pliers is steel and for its handle is thermoplastic.

3. **Side Cutting Plier/Diagonal Nippers 165 mm / 6.1 / 2"**: Many applications including electrical, communications and construction work. It is use to grip, splice or cut wires, and strip insulation. The material used for pliers is steel and for its handle is bi-material thermoplastic/polypropylene.
4. **Insulated Cable Cropper 210 mm**: It is use to cut wires and cables up to 25 mm diameter. It is manufactured from drop forged high carbon steel with induction hardened blades. It is fully insulated for safe electrical applications up to 1000V.
5. **Insulated Screw Driver Set 7 Pce**: A screwdriver is a tool used for screwing (installing) and unscrewing (removing) screws. A screwdriver has a handle and a shaft, ending in a tip the user puts into the screw head before turning the handle. It is 'Volt-tested' to ensure safety on or near electrical equipment up to 1000V AC or 1500V DC. Blade Material is Chrome Vanadium with insulated blades and magnetic tips.
6. **Neon Tester 190 mm, 125/250 V**: It is used to check the phase in a live wire. Mainly used with single phase power supply. With heavy duty one-piece moulded insulation sheaths covering both blade and transparent plastic handle for extra protection and safety.
7. **Trimming knife 155 mm**: It is used for skinning the insulation of cables and cleaning the wire surface. Slim line die cast body with contoured grip which provides a greater degree of control and comfort. High carbon steel blades. Up to five spare blades can be stored in the handle.
8. **Tube Cutter 3-30 mm x 150 mm**: It is used to cut the only PVC conduit pipes. With high strength cast bodies and single cutting wheels with two rollers. Suitable for stainless steel, brass and copper tubes. All fitted with deburring blades.
9. **Magnetic Spirit Level 9" / 225 mm**: It is used to designed to indicate whether a surface is level on the horizontal or vertical planes with magnetic base. Manufactured from impact resistant ABS plastic. Three vials horizontal, vertical and 45°.
10. **Measuring Tape 10 mtr**: It is used to measure length of any objects in mm, cm, and inch scale. (Range is 0-10 meter).



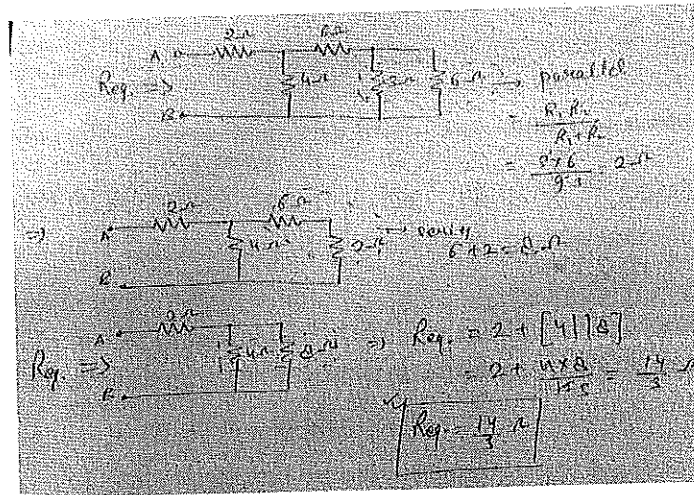
Answer Key

Course Code: ELE1121, Course Name: Repairing and servicing of Electrical Appliances

School of Electrical Skills, Open elective, 1st In-Sem. Examination

B. Voc. Program, Summer Semester (2021-22)

Ans.2



Ans.3

★ Law of Conservation of Energy :-

The law of Conservation of energy states that energy can neither be created nor destroyed - only converted from one form of energy to another.

★ Conditions to flow of current :-

3 conditions are important & are as follows :-

- There should be atleast one independent source in the circuit.
- There should be atleast one closed path in the circuit.
- Return path to the current is must.