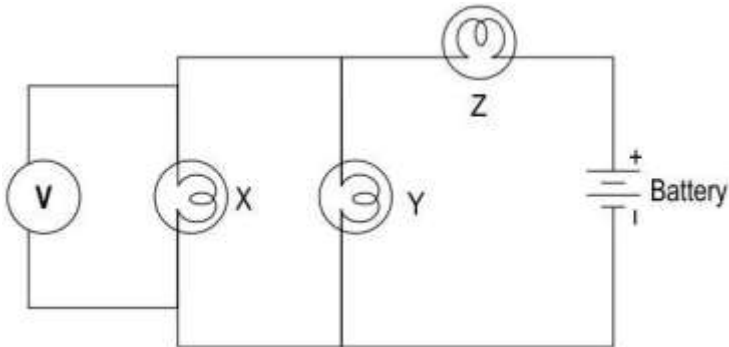
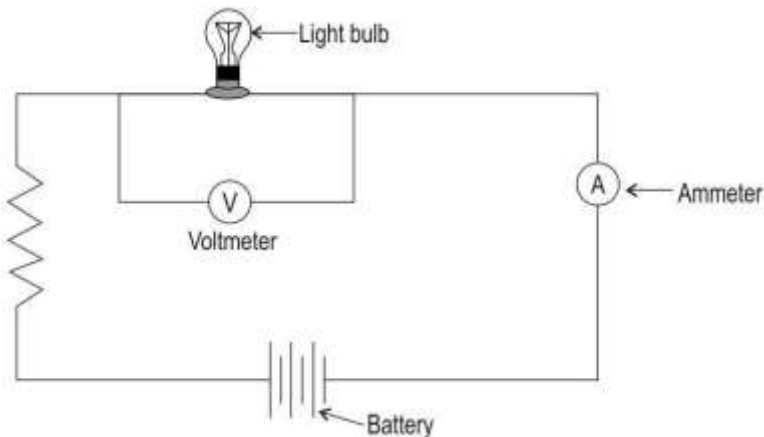
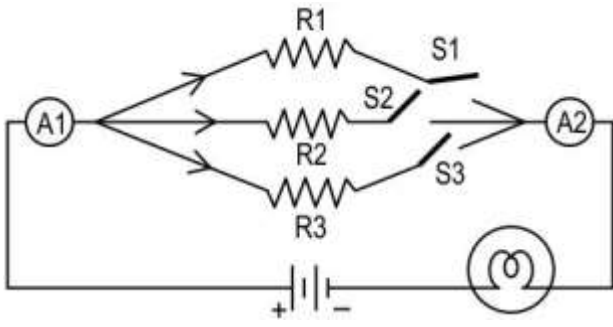
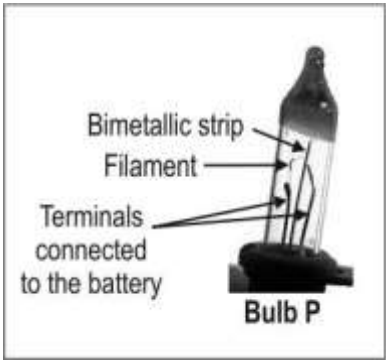
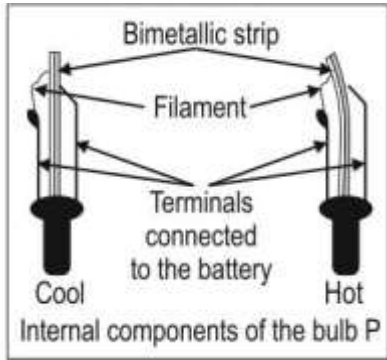


18. EFFECTS OF CURRENT

Q.No	Question	Marks
Multiple Choice Question		
Q.155	The electric circuit below consists of a voltmeter, a battery and three bulbs X, Y and Z.  The reading on the voltmeter represents the potential difference across which bulb(s)? A. Only X B. Both X and Y C. Both X and Z D. All X, Y and Z	1
Free response question/Subjective Question		
Q.156	Of all the components in the circuit shown below, the current flowing through the voltmeter is the least. Explain why. 	1

Q.157	The circuit shown below has a bulb, three resistors R1, R2 and R3, and three switches S1, S2 and S3. There are also two ammeter A1 and A2 in the circuit.  How will the reading on ammeter A2 compare with the reading on ammeter A1 when (i) All the three switches are closed? (ii) One switch is closed?	1
Q.158	Before cleaning the light bulb in his room, Gautam turned off the light by turning the switch off. Yet, he received an electric shock while cleaning the bulb. Explain why the bulb connection was live though the switch was off.	1
Q.159	The picture shown below is of a special bulb P which is used in some circuits of series lights. Its filament is joined to the two terminals through a bimetallic strip, as shown. When the filament gets heated and glows, it also heats up the bimetallic strip which bends when heated.   Besides its function as a light bulb, which other component of a normal electric circuit is this bulb likely to function as? Justify your answer.	3
Q.160	The picture below shows two diagrams of the wiring of an electric clothes iron. The thermostat is a device that can be set at a particular temperature, and controls the heating temperature of the iron by automatically shutting off and on. The indicator light is connected differently in the two diagrams.	4

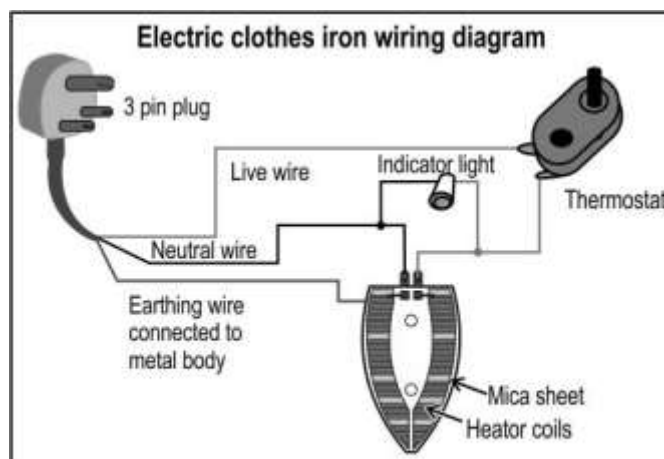


Figure 1

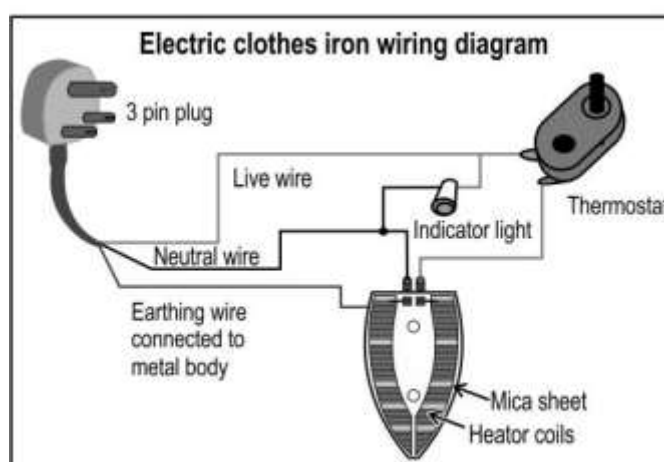


Figure 2

- (a) Explain how the difference in the connections affects the functioning of the indicator light.
- (b) Does this difference change the heating of the iron? Justify your answer.
- (c) State the function of the earthing wire.

Answer Key and Marking Scheme

Q.No	Answers	Marks
Q.155	B. Both X and Y	1
Q.156	Of all the components, the voltmeter has the highest resistance.	1
Q.157	The reading on ammeter A2 will be the same as the reading on ammeter A1. The reading on ammeter A2 will be equal to the reading on ammeter A1. 0.5 mark for each correct answer.	1
Q.158	The switch was connected in the neutral wire instead of the live wire.	1
Q.159	The bulb acts as a switch, shutting the lights off and on. [1 mark] - On heating, the bimetallic strip expands and bends away from the terminal thus breaking contact with the terminal connected to the battery and thus breaking the circuit. [1 mark] - On cooling, the bimetallic strip contracts and becomes straight again thus making contact once again with the terminal connected to the battery and switching on the lights. [1 mark]	3
Q.160	(a) 1 mark each for the following: - In figure 1, the indicator light will go off and on as the thermostat controlling the heating of the coils cuts off and on. - In figure 2, the indicator light will go off only when the main switch is put off. (b) The difference in the connections will not change the heating of the iron as the thermostat will be controlling the heating of the coils by cutting off and on, though the light remains on continuously. (c) The earthing wire protects against electric shocks.	4