CONSTRUCTION TECHNOLOGY

**Chapter 27: Electrical Energy**

1. An electrical machine is a device that converts _____ to _____ or vice versa.

2. A power station converts _____ into electrical energy.

3. List three sources of mechanical energy:

_____

_____

_____

4. Explain the following terms in relation to electricity:

generation:

_____

_____

transmission:

_____

_____

distribution:

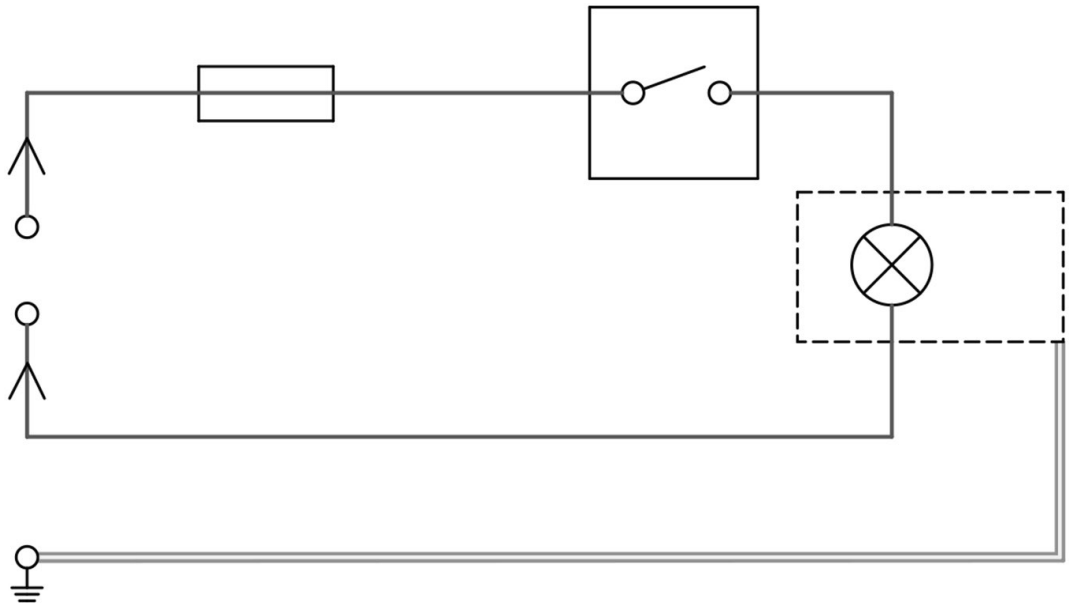
_____

_____

5. Generate a neat annotated sketch showing how electricity is brought into the home (intake):

6. Outline the performance requirements for an electricity distribution system in the home:

7. Label and colour the diagram shown.



8. Explain the main difference between a radial circuit and a ring main circuit.

9. What are the guidelines to prevent overloading in a typical ring main (socket) circuit?

_____

_____

_____

_____

10. Generate a neat annotated sketch of a typical ring main circuit for sockets:

11. Generate a neat annotated sketch of a typical two way switched lighting circuit:

12. Outline three safety strategies for a domestic electrical system:

13. Explain where each of the following safety devices is used:

cartridge fuse:

miniature circuit breaker:

residual current device:

14. Outline three benefits of micro-generation.

15. Explain briefly how solar PV systems work.

16. The correct tilt angle for the installation of a solar panel is determined by the _____ of the site; the correct azimuth angle is between _____.

17. Explain, using notes and a neat annotated sketch, the optimal installation location for a wind turbine.

18. Explain, using a neat annotated sketch, the how a domestic wind turbine is connected to the grid.

19. Explain, in your own words, how a combined heat and power unit works.

20. Outline the benefits to the consumer of smart metering.

21. How does a smart meter improve on a traditional meter.