Energy Transfer by heating

1. What does "emit" mean?
2. What determines whether a body will emit or absorb IR radiation?
3. Give an advantage and a disadvantage of the Greenhouse effect.
4. Why doesn't conducted or convected heat come from the Sun?
5. What factors affect the rate at which IR heat can be emitted or absorbed?
6. What are the three states of matter and the names of the processes which cause changes from one form into another?
7. Describe what determines a good and bad conductor.
8. Give FOUR examples of where convection currents occur.
9. What factors determine the rates of evaporation and condensation?
10. Describe how and explain why a desert fox survives in the desert.
11. Explain why it is necessary for storage heaters have a high specific heat capacity.
12. Give 5 ways in which heat can be lost from the home.

Using Energy

1. Write down 8 different types of energy.
2. Draw an energy transfer diagram for a petrol engine.
3. What is meant by "Conservation of Energy"?
4. What is the difference between useful and wasted energy?
5. What is the unit of energy?
6. What happens to wasted energy after a transfer?
7. What are the usual causes of wasted energy?
8. Write out the equation for efficiency.

Electrical Energy

1. Why is electrical energy so useful?
2. Name 5 appliances that transfer electrical energy into something useful and draw their Sankey diagrams.
3. What is the equation for power?
4. What is meant by power and what are the two distinctive units for power?
5. Why Kilowatt-hours used as units of electrical energy rather than Joules?
6. What is the equation for working out the cost of an electrical bill knowing the number of Units used and the cost per unit?
7. What is meant by "cost-effectiveness" and therefore "Payback" time?
8. Give 5 ways of reducing heat lost in the home.

Electromagnetic Waves

1. Define what an EM wave is.
2. What are the 7 parts of the EM spectrum giving their positions in the overall EM spectrum and their differences in wavelength and frequency.
3. Give uses for Visible light, Infrared, microwaves and radio waves.
4. Give the dangers associated with gamma, x-rays and ultraviolet waves.
5. What is meant by Redshift?
6. What does a larger redshift tell you about a galaxy compared to a small redshift?
7. What is the theory of the start of the Universe?
8. What other evidence is there to support the beginning of the Universe?

Waves

1. What is the definition of a wave?
2. What is the difference between a longitudinal and transverse wave?
3. What is a rarefaction?
4. Draw a wave and label the amplitude and wavelength.
5. What is the wave equation?
6. Define amplitude and wavelength.
7. What is the law of reflection?
8. Draw a ray diagram for the Image formation by a plane mirror.
9. What is the difference between a virtual and real image?
10. Draw a diagram for a refracted ray of light passing through a block.
11. Define refraction and describe what happens to the waves speed, frequency and wavelength as it passes from one medium to another.
12. What is diffraction and what determines how much the wave will change?
13. What is an echo and how can you determine the distance of something knowing about echoes?
14. Why can you hear sounds around corners?
15. Draw 4 annotated wave traces with varying pitch and amplitude.

Generating Energy

1. What is the main thing needed to turn in order for a generator to make electricity?
2. Give 5 ways of turning a generator.
3. What energy resource(s) don't use the device in question 1 to generate electricity?
4. What is the difference between non-renewable and renewable resources?
5. Describe the process of nuclear power giving the advantages and disadvantages.
6. Why do we still use non-renewable energy resources?
7. Describe the process of Carbon Capture and Storage.
8. Where in everyday life are solar cells used?
9. What's the purpose of the National Grid and how to transformers play their part in it?
10. What the advantages and disadvantages of having pylons and wire underground?

Which energy resources are key to the future in order to meet both varied and base-load demand? Why?