

## Syllabus content for the unit ENERGY TODAY AND TOMORROW

This unit deals with the generation and distribution of electric power on a large. It also considers the environmental effects of electricity generation and the range of alternative sources of Which are (or may become) available. Bullet points denote higher level.

### VARIETY OF FUELS

Know that sunlight is the ultimate source of energy for the formation of all biomass

Know that useful energy may be transferred from the combustion or fermentation of biomass

Know that biogas is mostly methane

Be able to evaluate information about the cost, availability and environmental impact of the following when used as large scale energy resources: coal; oil; natural gas; hydroelectric power; geothermal energy; nuclear fission; wind; wave; tidal or solar energy.

### WASTE

Know that burning fossil fuels releases sulphur dioxide which reacts with air and water to form sulphuric acid

Know some major environmental effects caused by acid rain

### ENERGY EFFICIENCY

- Understand the meaning of energy efficiency and the need for economical use of energy resources

### POWER GENERATION

Understand the difference between direct current (d.c) and alternating current (a.c)

Know that a voltage is induced when the magnetic field through a coil changes

Know how the voltage is affected by increasing the strength of the magnetic field, the number of turns on the coil and the rate of changing the magnetic field

Know that polarity can be reversed by changing the direction of the field or the movement

Know how simple a.c. generators work

Know how electrical energy is transmitted to consumers through a grid which allows demand to be shared

- Understand that a given amount of energy can be transmitted with less power loss if a higher voltage is used

Know the sequence of energy transfers which occurs in a transformer

- Know that transformers only work with a.c. supplies
- Know and be able to use the relationship between input and output voltages and the number of turns on the primary and secondary coils of a transformers
- Understand why the core of a transformer is made of soft iron