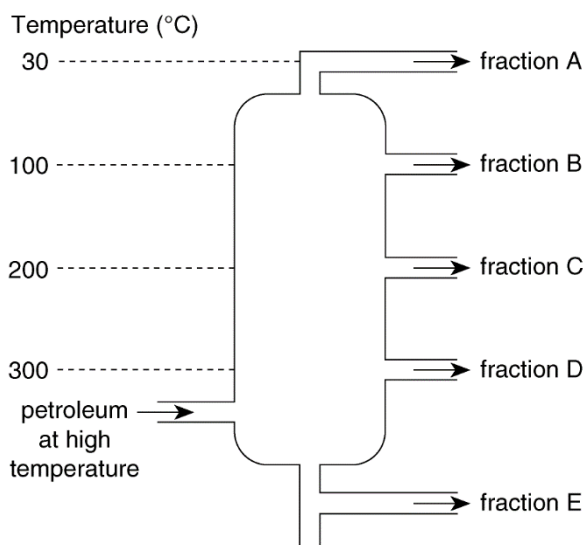


Quiz (Fossil Fuels)

The following diagram shows the simplified structure of a tower in an oil refinery.



- (a) How was petroleum formed in nature?
- (b) Petroleum is composed mainly of hydrocarbons. Explain the meaning of the term 'hydrocarbon'.
- (c) (i) Name the process that takes place in the tower.
(ii) Why can petroleum be separated into different fractions by this process?
(iii) Does this process involve a physical or chemical change? Explain your answer.
- (d) (i) Explain why fraction A has a lower boiling point range than fraction D.
(ii) State TWO other differences between the properties of fraction A and those of fraction D.
- (e) (i) Suggest what fractions A and B might be.
(ii) Fractions C and D are used as fuel for jets and lorries respectively. Suggest what fractions C and D might be.
(iii) Fraction E is bitumen. Suggest ONE use of bitumen.
- (f) Draw a labelled diagram to show how the above process can be carried out in the laboratory.

Suggested Answer

- (a) Petroleum was formed from dead remains of marine plants and animals that lived millions of years ago.
High temperature, high pressure and bacterial action gradually changed the remains into petroleum.
- (b) Hydrocarbons are compounds that contain only atoms of carbon and hydrogen.
- (c) (i) Fractional distillation of petroleum
(ii) The hydrocarbons in petroleum have different boiling points.
(iii) It involves a physical change. It is because no new substance is formed in the process.
- (d) (i) The hydrocarbon molecules in fraction A are smaller / contain less carbon atoms than the molecules in fraction D.
Van der Waals' forces between the molecules in fraction A are weaker.
(ii) Any two of the following:
viscosity / flammability / colour / sootiness of flame / ease of evaporation
- (e) (i) A: refinery gas
B: petrol / naphtha
(ii) C: kerosene
D: diesel oil
(iii) It is used in road surfacing.
- (f)

