Experimental Techniques – 2019 Nov

1. 0620/11,12,13,21,22,23/O/N/19/No.2

A student is asked to measure the time taken for 0.4 g of magnesium carbonate to react completely with 25.0 cm^3 of dilute hydrochloric acid.

Which pieces of apparatus does the student need?

A balance, stop-clock, pipette

B balance, stop-clock, thermometer

C balance, pipette, thermometer

D stop-clock, pipette, thermometer

2. 0620/11/O/N/19/No.3

A fractionating column is used to separate the hydrocarbon fractions in petroleum by fractional distillation.

Which row describes the properties of the fractions that condense at the top of the fractionating column?

	size of molecule	boiling point
A	large	high
B	large	low
C	small	high
D	small	low

3. 0620/11/O/N/19/No.4

Some information about solid silver chloride and solid sodium chloride is shown.

- Silver chloride and sodium chloride do not dissolve in kerosene.
- Silver chloride is insoluble in water but sodium chloride is soluble in water.
- The boiling point of silver chloride is 1547 °C and the boiling point of sodium chloride is 1413 °C.

Which processes are used to separate a mixture of solid silver chloride and solid sodium chloride?

A Add kerosene, stir and then filter.

B Add water, stir and then filter.

C Add water, stir and then leave to crystallise.

D Add water, stir and then perform fractional distillation.

4. 0620/12/O/N/19/No.3

Petroleum is a mixture.

Which method is used to separate petroleum?

A chromatography

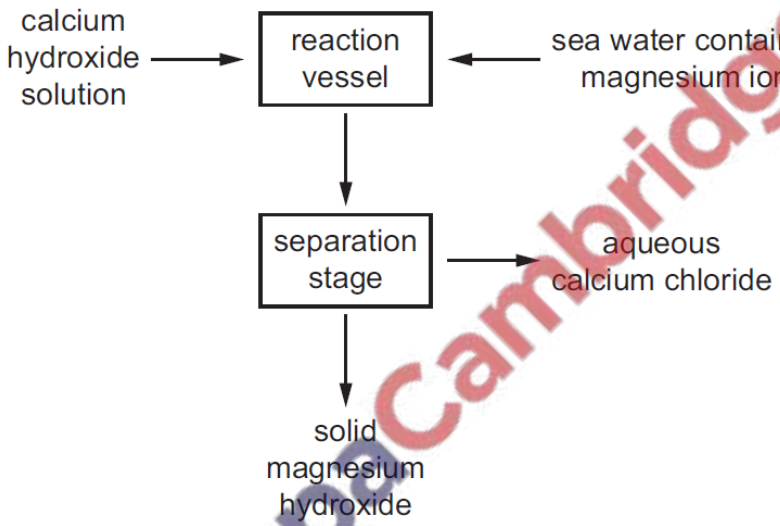
B cracking

C filtration

D fractional distillation

5. 0620/12/O/N/19/No.4

Magnesium hydroxide can be obtained from sea water as shown.



Which process is used in the separation stage to separate solid magnesium hydroxide from the mixture?

A crystallisation

B filtration

C distillation

D chromatography

6. 0620/13/O/N/19/No.3

Which method is used to separate a mixture of the following liquids?

liquid	boiling point / °C
methanol	64.5
ethanol	78.5
propan-1-ol	97.2
butan-1-ol	117.0

A crystallisation

B evaporation

C filtration

D fractional distillation

7. 0620/13/O/N/19/No.4

A sample of wax is heated. It begins to melt at 45 °C and finishes melting at 49 °C.

A sample of liquid is heated. It begins to boil at 141 °C and remains at 141 °C while it boils.

Which conclusion can be made from these results?

A Both substances are impure.

B Both substances are pure.

C The wax is not a pure substance and the liquid is a pure substance.

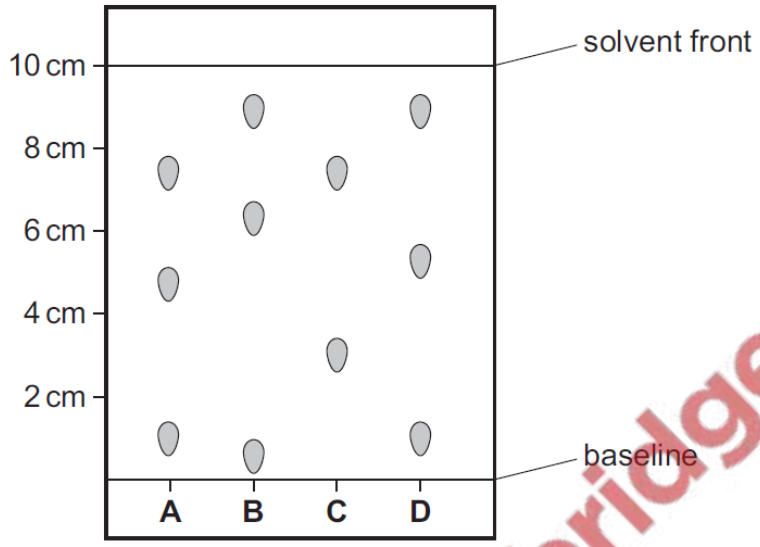
D The wax is a pure substance and the liquid is not a pure substance.

8. 0620/21/O/N/19/No.3

Four different food colourings are analysed using chromatography.

The results are shown on the chromatogram. The diagram is not drawn to scale.

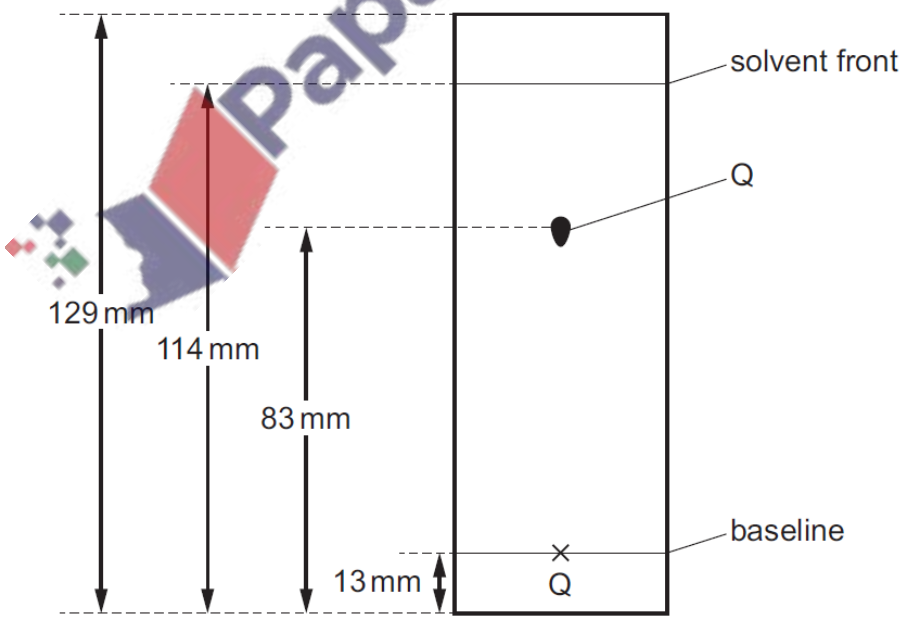
Which food colouring contains a component with an R_f value of 0.3?



9. 0620/22/O/N/19/No.3

Substance Q was investigated using chromatography.

The chromatogram is shown. The diagram is not drawn to scale.



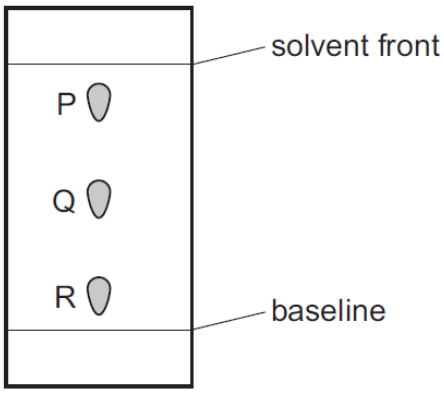
What is the R_f value of Q?

A 0.60 **B** 0.64 **C** 0.69 **D** 0.72

10. 0620/23/O/N/19/No.3

A substance is separated using chromatography.

The chromatogram is shown.



Which statement is **not** correct?

A P has a higher R_f value than Q.

B P, Q and R are all soluble in the solvent.

C R is the most soluble substance.

D The R_f value of P is less than 1.