



ORGANIC MOLECULES

Check List

Make sure you

- Can name and draw structural formulae of organic molecules by following the IUPAC rules
- Are able to identify the effects that size, shape and functional groups have on the physical properties of organic molecules
- Can identify, name and recall the chemical reactions used to make polymers

Exam Questions

Question 1

(Adapted from DBE Nov 2013 Paper 2 Question 3)

The letters A to F in the table below represent six organic compounds.

A		B	
C	Polyethene	D	Pentyl propanoate
E		F	

- 1.1 Write down a letter that represents the following:
- | | | |
|-------|---|-----|
| 1.1.1 | Alkenes | (1) |
| 1.1.2 | A ketone | (1) |
| 1.1.3 | A compound with the general formula C_nH_{2n-2} | (1) |
| 1.1.4 | A polymer | (1) |
| 1.1.5 | A structural isomer of cyclohexene | (2) |





PHYSICAL SCIENCES
Grade 12

- 1.2 Write down the IUPAC name of compound:
- 1.2.1 A (2)
- 1.2.2 E (2)
- 1.2.3 F (2)
- 1.3 Compound D is prepared by reacting two organic compounds in the presence of an acid as catalyst. Write down the:
- 1.3.1 Homologous series to which compound D belongs (1)
- 1.3.2 Structural formula of compound D (2)
- 1.3.3 IUPAC name of the organic acid used to prepare compound D (1)
- 1.3.4 NAME or FORMULA of the catalyst used (1)
- 1.4 Compound C is used to make plastic bags.
- 1.4.1 Name the organic compound(s) used to produce compound C (1)
- 1.4.2 Draw structural formulae to illustrate how compound C is made (3)
- 1.4.3 Identify the type of chemical reaction taking place when compound C is made (1)
- 1.4.4 Name one other compound that is made in the same way as compound C (1)
- 1.4.5 Name two other uses for compound C (2)

Question 2

(Adapted from DBE Nov 2013 Paper 2 Question 4)

A laboratory technician is supplied with three unlabelled bottles containing an alcohol, an aldehyde and an alkane respectively of comparable molecular mass. She takes a sample from each bottle and labels them P, Q and R. In order to identify each sample, she determines the boiling point of each under the same conditions. The results are shown in the table below.

SAMPLE	BOILING POINT (°C)
P	76
Q	36
R	118

- 2.1 For this investigation, write down the:
- 2.1.1 Independent variable (1)
- 2.1.2 Dependent variable (1)
- 2.2 From the passage above, write down a phrase that shows that this investigation is a fair test. (1)
- 2.3 Which sample (P, Q or R) is the:
- 2.3.1 Alkane (1)
- 2.3.2 Alcohol (1)
- 2.3.3 Refer to boiling point and the type of intermolecular forces present between alcohol molecules to give a reason for the answer in QUESTION 2.3.2. (2)
- 2.4 The alkane is identified as pentane. Will the boiling point of hexane be HIGHER THAN or LOWER THAN that of pentane? Refer to MOLECULAR STRUCTURE, INTERMOLECULAR FORCES and ENERGY needed to explain the answer. (4)

