Chemistry

Unit 1

Area of Study 3 Test Answers:

Introducing organic chemistry

Section 1: Multiple choice 23% (10 marks)

Question 1

B I, II and IV

Question 2

D 4

Question 3

D They can undergo the same chemical reactions.

Question 4

B propene

Question 5

D 2,2,3-trimethyl pentane

End of section 1

Section 2: Short answer 77% (34 marks)

\* indicates 1 mark

Question 6

|  |  |
| --- | --- |
| Name | Structural formula |
| 3,3-dimethyl hexane |  |
| 2,3-dimethyl but-1-ene |  |
| trans pent-2-ene | **Work:___PROJECTS:_WACE:_CHEMISTRY:CHEMISTRY 11:TR:01-MS_TO_RPE:HANDOVER:FROM ROB:jpg:PC11_WA_TR_1e_01_03_06bQ.jpg** |
| methyl benzene | Work:___PROJECTS:_WACE:_CHEMISTRY:CHEMISTRY 11:TR:01-MS_TO_RPE:HANDOVER:FROM ROB:jpg:PC11_WA_TR_1e_01_03_06bA.jpg |

(8 marks)

Question 7

|  |  |
| --- | --- |
| Description | Structural formula |
| an isomer of pent-1-ene that displays geometric isomerism | Work:___PROJECTS:_WACE:_CHEMISTRY:CHEMISTRY 11:TR:01-MS_TO_RPE:HANDOVER:FROM ROB:jpg:PC11_WA_TR_1e_01_03_07aA.jpg  or the trans isomer |
| a molecule with molecular formula C2H2Br2 that does not exhibit geometric isomerism |  |
| an aromatic compound with 8 carbon atoms | Work:___PROJECTS:_WACE:_CHEMISTRY:CHEMISTRY 11:TR:01-MS_TO_RPE:HANDOVER:FROM ROB:jpg:PC11_WA_TR_1e_01_03_07cA.jpg  or many other possibilities |
| the product of adding bromine water to but-2-ene |  |
| an organic product formed in the reaction between ethane and chlorine in the presence of UV light | or a more heavily substituted ethane |

(10 marks)

Question 8

Both diamond and graphite are covalent network substances\*.

In diamond, carbon atoms are covalently bonded to 4 other carbon atoms in a continuous tetrahedral structure\*.

In graphite, carbon atoms are covalently bonded to 3 other carbon atoms in a planar hexagonal structure\*.

There are no delocalised electrons in diamond, but there are delocalised electrons (1 per atom) between layers of atoms in graphite\*. These delocalised electrons are able to conduct charge through graphite.

|  |  |
| --- | --- |
| Diamond  must show each carbon bonded to four others\*  1 mark for labelling | Graphite  must show each carbon bonded to three others in planar structure and delocalised electrons between layers\*  1 mark for labelling |

(8 marks)

Question 9

a Ethane as a starting material

|  |
| --- |
|  |

(2 marks)

Ethene as a starting material

|  |
| --- |
|  |

(2 marks)

b Starting with ethane: substitution

Starting with ethene: addition (2 marks)

c An orange solution is decolourised (becomes colourless). (2 marks)

End of answers