Question 1

1(b)(i)	72 (2) If 2 marks not scored 1 mark for H = (4 × 1) =4 OR O = (2 × 16) = 32	**2**
1(b)(ii)	add aqueous bromine (1) decolourises / goes colourless (1)	**2**
1(b)(iii)	large molecule / long chain molecule (1) formed form many small molecules / formed from monomers (1)	**2**
1(b)(iv)	addition	**1**

Question 2

2(a)(iv)	C_2H_4	**1**

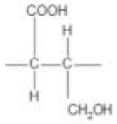
Question 3

3(e)(i)	addition (polymerisation)	**1**
3(e)(ii)	**M1** chain of six C atoms joined by single bonds in a chain **M2** three correctly placed C_2H_5 groups **M3** correct structure **AND** continuation bonds	**3**

Question 4

4(f)(i)	**M1** six C atoms joined by single bonds in a chain and with continuation bonds (1) **M2** 3 × CH_3 at two C intervals **and** whole structure correctly displayed (1)	**2**
4(f)(ii)	addition	**1**

Question 5

5(b)(i)	$C_4H_6O_3$	**1**
5(b)(ii)	**M1** alkene(1) **M2** alcohol(1) **M3** carboxylic acid(1)	**3**
5(b)(iii)	**M1** turns colourless(1) **M2** bubbles / fizzing / effervescence(1)	**2**
5(b)(iv)	**M1** only two carbon atoms joined by a single bond and two additional bonds on each(1)  **M2**  (1)	**2**
5(b)(v)	polyester	**1**

Question 6

6(e)	ethene	**1**

Question 7

7(b)(i)	diol	**1**
7(b)(ii)	condensation	**1**

Question 8

8(e)(i)	any correct displayed ester link between any two blocks showing all atoms and all bonds correct orientation of three displayed inter-block ester links with correct orientation continuation bonds on polyester	**3**
8(e)(ii)	condensation	**1**
8(e)(iii)	terylene	**1**