

POLYMERS 5

MARK SCHEME

Q1.

| Question | Answer | Extra information | Marks |
|-------------|---|--|-------|
| (i) | any one from: <ul style="list-style-type: none"> • bond / join (together) • double bond opens | ignore polymerisation / heat | 1 |
| (ii) | any one from: <ul style="list-style-type: none"> • heat / energy • cost of fuels / the crude oil • construction of the factory / plant • wages / salaries | ignore many processes / distillation / cracking / polymerisation | 1 |
| Total marks | | | 2 |

Q2.

| Question | Answer | Extra information | Marks |
|----------|--|---|-------|
| (a) | single bonds between C – H, C – Cl and C – C | do not accept symbols outside the bracket | 1 |
| (b)(i) | so that the amount of plasticiser / (sample of) PVC is the independent / only variable that affects the bending / flexibility of the samples | allow because different sizes would give different results accept because size is a control variable ignore references to reliability / precision etc | 1 |
| (ii) | to improve the reliability (of the investigation) | accept to calculate a mean accept to check for anomalous results or to check the range of results ignore accuracy / precision etc | 1 |
| (iii) | 23 | correct answer with or without working = 2 marks if answer is incorrect allow $\frac{22 + 23 + 24}{3}$ or 21 for 1 mark | 2 |
| (iv) | (PVC) sample had been stretched / used / tested in first three tests | accept higher temperature allow worn or become weaker ignore (human) error ignore more flexible / softer ignore intermolecular forces | 1 |

| | | | |
|-------------|--|--|---|
| Total marks | | | 6 |
|-------------|--|--|---|

Q3.

| Question | Answer | Extra information | Marks |
|-------------|--|--|-------|
| | many monomers or many butene molecules | | 1 |
| | form chains or very large molecules | | 1 |
| | | if no other mark awarded allow double bond breaks / opens up or double bond forms a single bond for 1 mark | |
| Total marks | | | 2 |

Q4.

| Question | Answer | Extra information | Marks |
|-------------|--|---------------------|-------|
| | a single bond between carbon atoms | | 1 |
| | other four bonds linking hydrogen atoms and C ₃ H ₇ group plus two trailing/connecting bonds | | 1 |
| | n at the bottom right hand corner of the bracket | | 1 |
| | | would score 3 marks | |
| Total marks | | | 3 |

Q5.

| Question | Answer | Extra information | Marks |
|-------------|--|--|-------|
| | many (ethenes / monomers) bond / join together | | 1 |
| | | allow ethenes / monomers bond / join together to form very large molecules for 2 marks | 1 |
| Total marks | | | 2 |