29. An introduction to A Level organic chemistry

29.4 Isomerism- optical

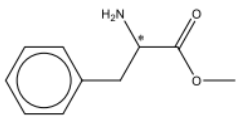
Paper 4

Marking Scheme

Q1.

(a)(i)	two	**1**

Q2.

(a)(i)		**1**
(a)(ii)	plane of polarised **light** will be **rotated** (in both isomers) [1] by same angle / **equal** amounts in **opposite directions** [1]	**2**

Q3.

(a)	biological activity	[1]	**1**
(b)	rotates plane polarised light 5.0° in anticlockwise direction	[1]	**1**
(c)	enantiomers	[1]	**1**
(d)	racemic	[1]	**1**
(e)	use of chiral catalyst	[1]	**1**

Q4.

(a)(i)	5 / five	**1**
(a)(ii)	**M1** benefit: higher biological efficiency / activity (of the drug) **OR** less side effects **OR** smaller dose required (as drug more potent) **M2** disadvantage: the need to separate (a racemic mixture into a single stereoisomer) **OR lower yield** (of biologically active molecule/product) **OR** need a chiral catalyst / enzyme (in the synthesis so expensive)	**2**

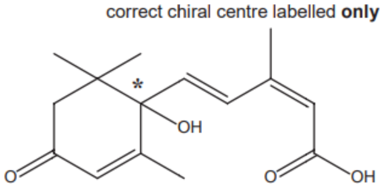
Q5.

(a)	a mixture containing equal amounts of each optical isomer	**1**

Q6.

(c)(i)	six / 6	**1**
(c)(ii)	$C_{21}H_{34}O_5$	**1**
(c)(iii)	a substance that is able to <u>rotate</u> the plane of polarised light in opposite directions	**1**

Q7.

(a)	correct chiral centre labelled **only**  $C_{15}H_{22}O_4$	**1**

Q8.

(b)	yes, as it has a chiral C atom	**1**