Mark scheme

Upper and lower bounds

Mathematics 0580 · Questions from Paper 1, Paper 2 and Paper 4

Total marks

29

MARKS FOR EACH QUESTION

1	2	3	4	5	6	7	8	9	10	Total
2	3	2	3	3	3	3	3	3	4	**29**

Question 1 **[2]**

1		454.5 455.5	**1, 1**	**SC1** for both correct but reversed

Question 2 **[3]**

2(a)	345 355	**2**	**B1** for one correct and in the correct position If 0 scored, **SC1** for both correct but reversed
2(b)	Any correct response e.g. *A* could be 345	**1**	Dependent on 345 given as a limit in part **(a)**

Question 3 **[2]**

3	4 nfww	**2**	**M1** for 39 + 0.5 or 36 – 0.5 or better seen 39 – 0.5 or 36 + 0.5

Question 4 **[3]**

4(a)	50 cao nfww	**2**	**B1** 12.5 seen or **M1** for 12 + 0.5 or better
4(b)	12.3	**1**	

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Question 5 **[3]**

5	**(a)** 85.8 **(b)** 456.8625 cao	**2** **1**	**M1** for 23.25 and 19.65 seen

Question 6 **[3]**

6	27.15 cao	**3**	**M2** for (9.4 + 0.05) × 2 + 8.2 + 0.05 or better or **M1** for 8.2 + 0.05 or 9.4 + 0.05 or better seen OR **SC2** for answer 25.95 or **SC1** for answer 26.85

Question 7 **[3]**

7	p = 71.4025 cao q = 73.1025 cao	**3**	**B1** for 8.45 and 8.55 seen **M1** for *their* LB^2 [π] or *their* UB^2 [π] If 0 scored, **SC1** for one correct.

Question 8 **[3]**

8	68 nfww	**3**	**M2** for $\frac{600-5}{8h40 \text{ to} 8h50}$ or $\frac{590 \textit{ to } 600}{8h40 + 5[m]}$ oe or **M1** for $600-5$ oe or 8h 40 + 5[m] oe or 520 + 5 oe[m] seen

Question 9 **[3]**

9	4.4 nfww	**3**	**M2** for $\frac{50 \text{ to } 60}{13-0.5}$ or $\frac{50+5}{12 \text{ to } 13}$ oe or **M1** for 50 + 5, 50 – 5, 13 + 0.5 or 13 – 0.5 seen

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Question 10 **[4]**

10(a)	14.15 cao	**1**	
10(b)	7.296 cao nfww	**3**	**M2** for $\frac{14.2 \text{ to } 14.3}{(1.3-0.05)^3}$ or $\frac{14.3-0.05}{(1.2 \text{ to } 1.3)^3}$ or **M1** for 14.25 or 1.35 or 1.25 seen

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