

Sets – Paper 2 – Mark Scheme

Question 1

12		3	M1 15 only in small circle M1 10 only in the intersection A1 all correct including labels
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Question 2

7	$(A \cup B \cup C)'$ $(A \cup C)' \cap B$	1 1	or $A' \cap B' \cap C'$ or $A' \cap (B \cup C)'$ or $A' \cap C' \cap B$
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Question 3

7		2	B1 for one correct Venn diagram
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Question 4

22	<p>(a)</p> <p>(b) 11</p> <p>(c) 23</p>	4 1ft 1ft	B1 0 and 14 in correct place B1 2 in correct place B1 3 in correct place B1 12 in correct place B1ft 8 + their 3 B1ft 21 + their 2
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Question 5

2	10	2	M1 $33 - 25$ or $38 - 30$	M1 $30 - 15 - 5$ oe with no further working
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Question 6

4		1, 1	
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Question 7

11	13	2	M1 $21 + 15 - 23$ or M1 $15 - x + x + 21 - x + 1 = 24$ oe
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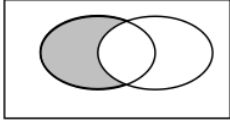
Question 8

2	correct regions shaded	1, 1	
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Question 9

15	(a) 4	1	
	(b) (i) $\frac{12}{36}$ oe 0.333	1	
	(ii) $\frac{11}{36}$, 0.306 or 0.3055 to 0.3056	1	
	(c) $\frac{8}{15}$ oe 0.533(3...)	1	

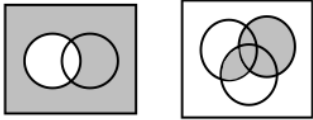
Question 10

3	(a) 	1	
	(b) 14	1	

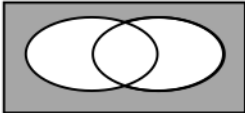
Question 11

17	(i) 7	1	
	(ii) 4	1	
	(b) $\frac{7}{13}$ oe	1ft	Ft their Venn diagram or their (a)(i)/13

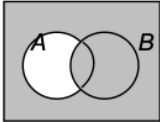
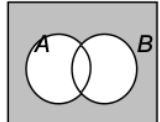
Question 12

9		2	B1 for one correct
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Question 13

12	(a) $\frac{3}{11}$	1	
	(b) 	1	

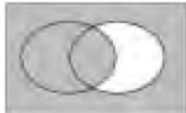
Question 14

1		1	
		1	

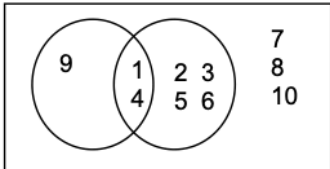
Question 15

15 (a)	4	2	M1 for attempt at sum of all numeric and x terms equated to 74
(b)	26	1FT	=18 + 2 × their (a)
(c)	8	1	

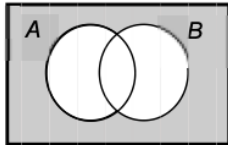
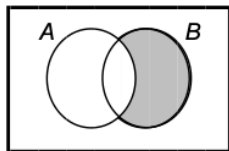
Question 16

22	(a) (i) $\frac{5}{50}$ oe	1	
	(ii) $\frac{11}{50}$ oe	1	
	(b) $\frac{11}{16}$ oe	1	
	(c) $\frac{380}{2450}$ oe	2	M1 for $\frac{20}{50} \times \frac{19}{49}$
	(d) 	1	

Question 17

17	(a) 	2	B1 for 2 of the 4 regions correct
	(b) 7 8 10	1FT	
	(c) 1	1FT	

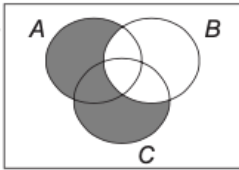
Question 18

4	ξ 	1	
	ξ 	1	

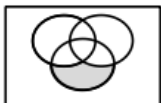
Question 19

15 (a)	19 2 1 8	2	B1 for any two correct
(b)	1 8 19 2	2FT	B2FT for a correct fit from (a) or B1FT for any two correct or for any correct two fit from (a)

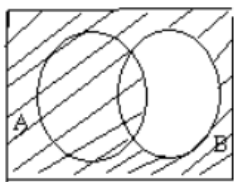
Question 20

20	(a) (i)	4	1	
	(ii)	{3, 9}	1	
	(iii)	fewer than 6 numbers from {1, 3, 5, 7, 9, 11} or \emptyset	1	
	(b)	ξ 	1	

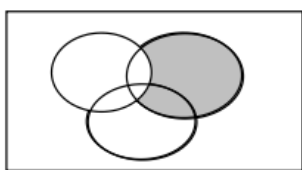
Question 21

16	(a) (i)	14	2	M1 for any two of 1, 11, 14, 4 correctly placed on Venn diagram or for $1 + 25 - x + x + 18 - x = 30$ oe
	(ii)	$\frac{11}{30}$ oe	1FT	FT $\frac{25 - \text{their (a)(i)}}{30}$ or $\frac{\text{their } 11}{30}$ from diagram
	(iii)	$\frac{11}{12}$ oe	1FT	FT their diagram e.g. $\frac{\text{their } 11}{12}$ or $\frac{25 - \text{their (a)(i)}}{12}$
	(b)		1	

Question 22

2		1	
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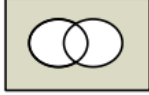
Question 23

6	(a)	18	1	
	(b)		1	

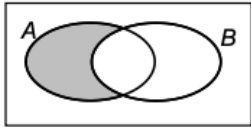
Question 24

12 (a)	10	1	
(b)	$P \cup Q'$ oe	1	

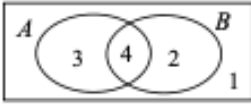

Question 25

22 (a)	3	1	
(b)	$\frac{19}{27}$ oe	1	
(c)	$\frac{7}{10}$ oe	1	
(d)		1	

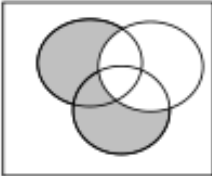
Question 26

14 (a) (i)	8	1	
(ii)	9, 15	1	
(b)		1	

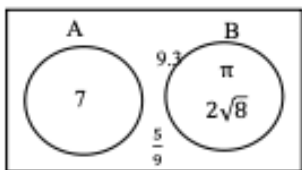
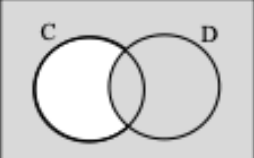
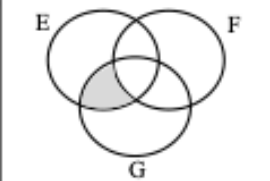
Question 27

22 (a) (i)		2	B1 for $n(A \cap B) = 4$
(ii)	$\frac{2}{10}$ oe	1FT	allow correct answer or FT $\frac{\text{their } 2}{10}$
(b)		1	

Question 28

15 (a) (i)	9	1	
(ii)	12	1	
(b)	$\frac{5}{14}$	1	
(c)		1	

Question 29

<p>20 (a)</p>	<p>\mathcal{U}</p> 	<p>2</p>	<p>B1 for 3 elements in the correct place</p>
<p>(b)</p>	<p>\mathcal{U}</p> 	<p>1</p>	
	<p>\mathcal{U}</p> 	<p>1</p>	

Question 30

<p>23(a)</p>	<p>5</p>	<p>3</p>	<p>M2 for $20 - x + x + 8 - x = 23$ or better or B1 for identifying the correct region $A \cup B$</p>
<p>23(b)</p>	<p>$\frac{7}{30}$ oe</p>	<p>2</p>	<p>B1 for $\frac{7}{c}$ or $\frac{k}{30}$</p>