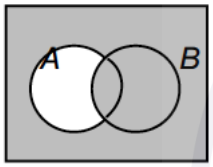
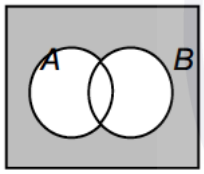
Extended Mathematics
Topic : Set
Year :May 2013 -May 2024
Paper -2
Answers

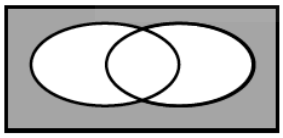
Question 1

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

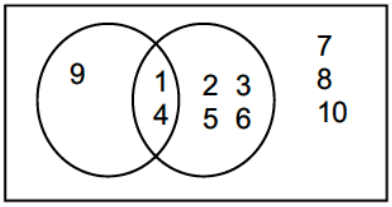
Question 2

	**1**	
	**1**	

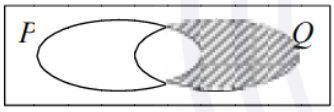
Question 3

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

Question 4

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

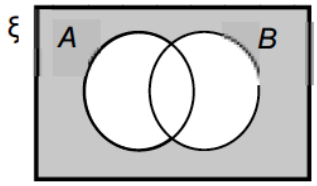
Question 5

(a)	i, j	**1**
	i, j, k, m, n	**1**
	2	**1**
(b)	$\frac{2}{3}$	**1**
(c)		**1**
(d)	$\subset$ or $\subseteq$	**1**

Question 6

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

Question 7



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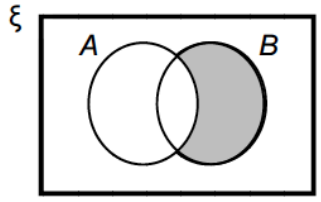
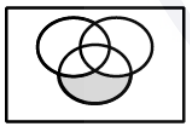


1

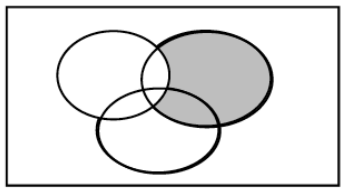
Question 8

(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** $\frac{25-their\ (a)(i)}{30}$ or $\frac{their\ 11}{30}$ from diagram
	(iii)	$\frac{11}{12}$ oe	**1FT**	**FT** their diagram e.g. $\frac{their\ 11}{12}$ or $\frac{25-their\ (a)(i)}{12}$
(b)			**1**	

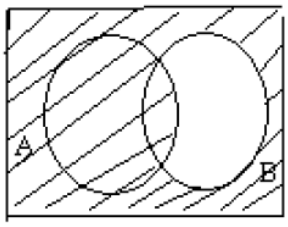
Question 9

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

Question 10

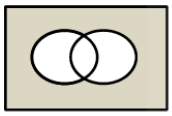
(a)	18	**1**	
(b)		**1**	

Question 11

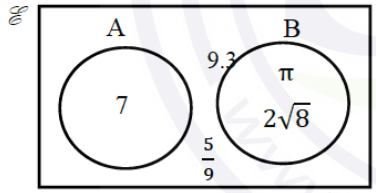
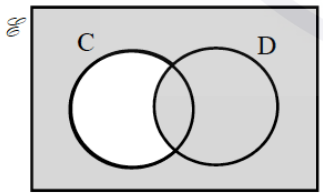
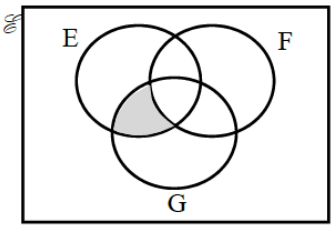


1

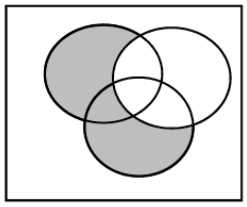
Question 12

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

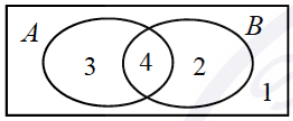
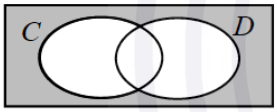
Question 14

(a)		**2**	**B1** for 3 elements in the correct place
(b)		**1**	
		**1**	

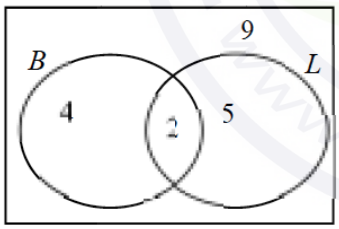
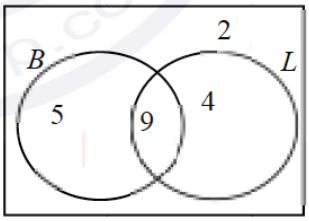
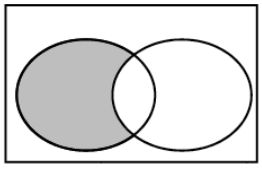
Question 15

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

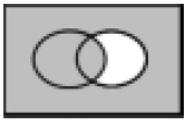
Question 16

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

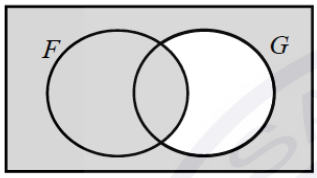
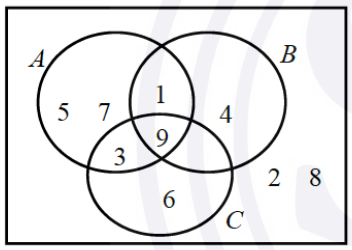
Question 17

(a)	**(i)**		**2**	**B1** for 2 correct of 4, 2, 5, 9 in the correct places or **SC1** for 
	(ii)	9	**1FT**	**FT** *their* 9
(b)			**1**	

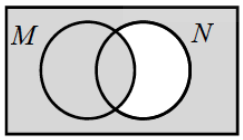
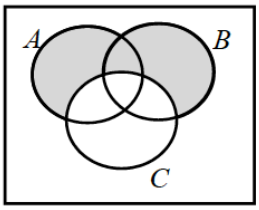
Question 18

(a)(i)	24	**1**	
(a)(ii)	5	**1**	
(a)(iii)	$\frac{7}{12}$	**1**	
(b)		**1**	

Question 19

(a)		**1**	
(b)(i)		**2**	**B1** for four out of the eight regions correct
(b)(ii)	Any even square number that is also a multiple of 3	**1**	

Question 20

(a)	Fewer than 6 elements from {1, 2, 3, 4, 5, 6} or ∅	**1**	
(b)		**1**	
		**1**	

Question 21

(a)(i)	$\in$	**1**	
(a)(ii)	$X \cap Y$ oe	**1**	
(a)(iii)	$\varnothing$	**1**	
(b)	u, v, w	**1**	
(c)	5	**1**	

Question 22

8	**2**	**M1** for Venn diagram with 1 correct region or for a correct method e.g. $5+13-x+x+10-x=20$ oe or better

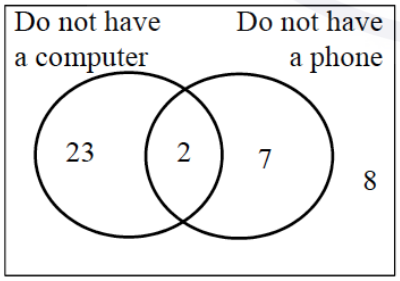
Question 23

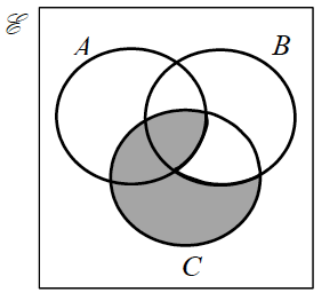
(a)	5	**3**	**M2** for $20-x+x+8-x=23$ or better or **B1** for identifying the correct region $A \cup B$
(b)	$\frac{7}{30}$ oe	**2**	**B1** for $\frac{7}{c}$ or $\frac{k}{30}$

Question 24

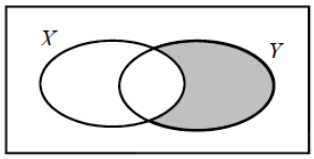
(a)	$C \cap D = \{10\}$	**1**	
(b)	7	**1**	

Question 25

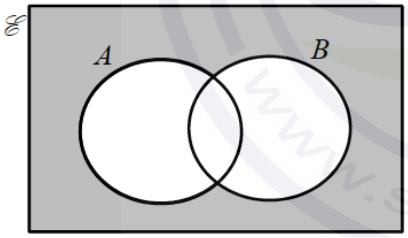
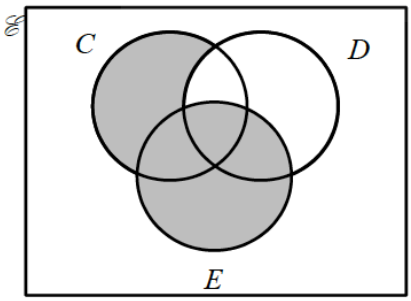
(a)(i)	$\frac{8}{15}$ oe	**1**	
(a)(ii)		**2**	**B1** for 2 or 3 correct out of 4 regions

(b)		**1**	

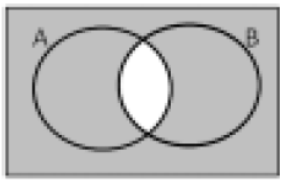
Question 26

(a)		**1**	
(b)(i)	$\frac{9}{16}$ oe	**2**	**B1** for $\frac{9}{k}$ or $\frac{k}{16}$ provided fraction is less than 1
(b)(ii)	46	**1**	

Question 27

(a)(i)	4	**1**	
(a)(ii)	At least one and fewer than four numbers from {2, 3, 4, 5}	**1**	
(b)	 	**2**	**B1** for each

Question 28

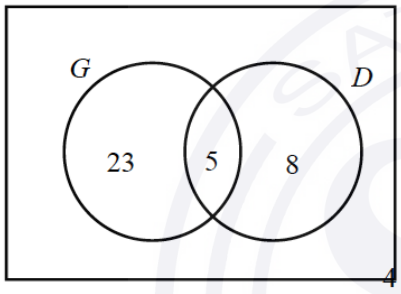
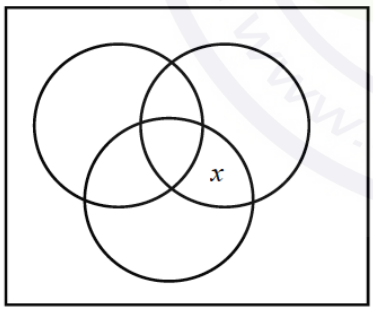


1

Question 29

2, 5 3 $A.....B'$ $\subset$	**4**	**B1** for each

Question 30

(a)(i)		**2**	**B1** for two correct
(a)(ii)	$G \cup D'$ oe	**1**	
(b)	15	**1**	
(c)		**1**	Shade whole rectangle except for region containing x

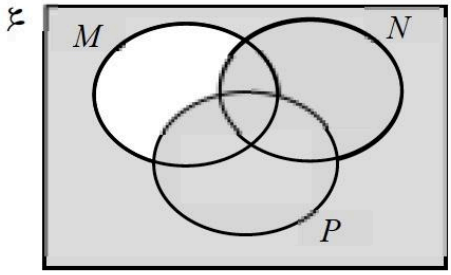
Question 31

Intersection shaded	**1**	

Question 32

$A' \cap B$	**1**	

Question 33

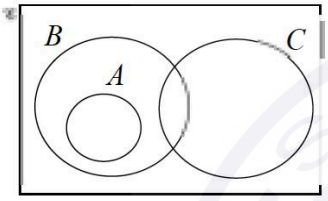


1

Question 34

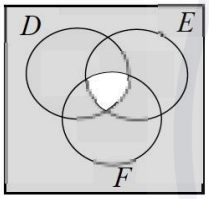
(a)(i) Even square numbers oe **1**

(a)(ii)



1

(b)

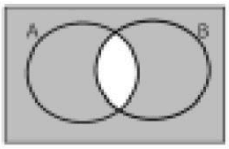


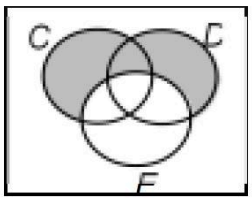
1

Question 35

(a)	*b*, *c*, *d*, *e*, *f*, *g*	**1**
(b)	4	**1**
(c)	3	**1**

Question 36





2 **B1** for each

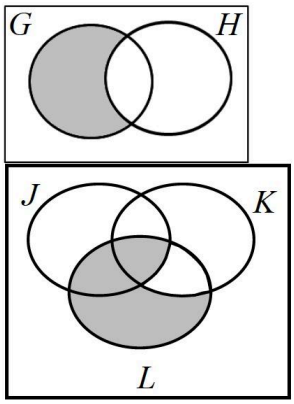
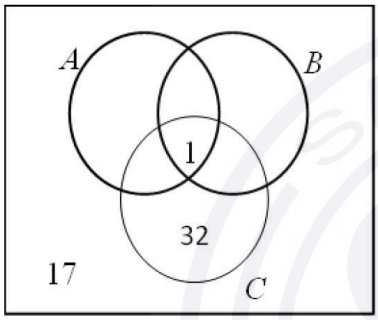
Question 37

40 **1**

Question 38

(a)	$(M \cup G) \cap P'$	**1**	
(b)	22	**1**	

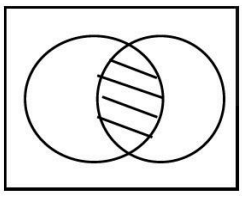
Question 39

(a)		**2**	**B1** for each
(b)		**2**	**B1** for 2 correct

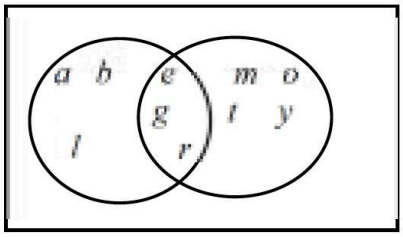
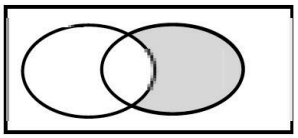
Question 40

(a)	*a*, *b*, *c*, *d*	**1**
(b)	6	**1**

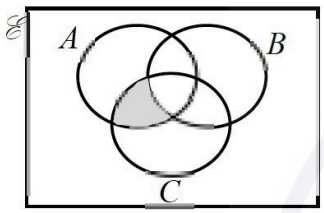
Question 41

Correct shading 	**1**

Question 42

	**2**	**B1** for 1 region correct
	**1**	

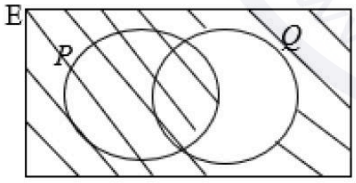
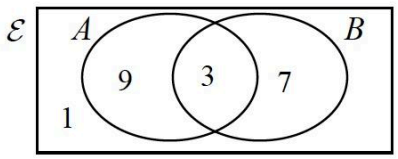
Question 43

	**1**	

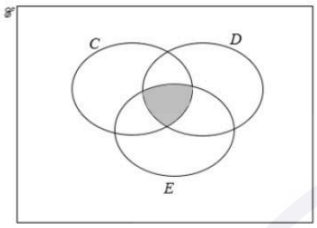
Question 45

(a)	4 cao	**1**	
(b)	10, 20	**1**	
(c)	An odd number or decimal in the range $1 \leqslant x \leqslant 20$	**1**	

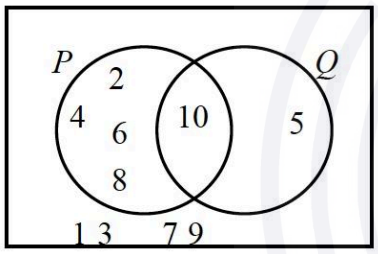
Question 46

(a)		**1**	
(b)		**2**	**B1** for two correct or for n(A) =12 **and** n(B) = 10 **and** n($A \cap B$) ≠ 0

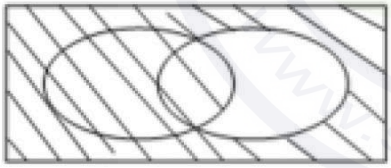
Question 47

(a)	9	**3**	**B2** for $x = 4$ or **B1** for answer 4 (without $x = 4$ in working) OR **M1** for $5x + x + 5 + 12 - x + 15 = 52$ oe or better **B1FT** for identifying the correct region $A \cap B$
(b)		**1**	

Question 48

	**2**	**B1** for two sections correct out of four

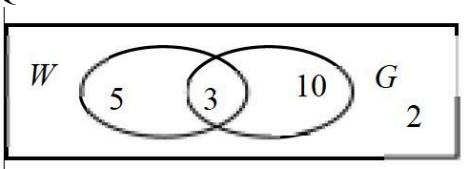
Question 49

(a)		**1**	
(b)	$R \cap (P \cup Q)'$ or $R \cap P' \cap Q'$ oe	**1**	

Question 50

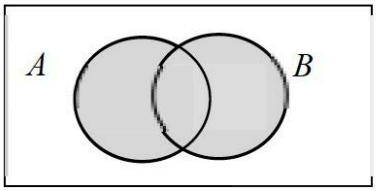
(a)	15	**1**	
(b)	$\frac{1}{2}$ oe nfww	**2**	**M1** for $\frac{2+3}{2+1+3+4}$ oe or $1-\frac{4+1}{2+1+3+4}$ oe with either the numerator or denominator correct

Question 51



2	**B1** for 2 sections out of 4 correct

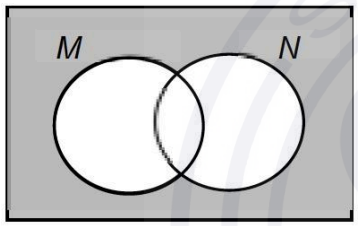
Question 52



1	

Question 53

(a)



1	

(b) 17 — **1**