

Sets & Venn Diagrams

Mark Scheme 5

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|------------|--|
| Level | IGCSE |
| Subject | Maths (0580) |
| Exam Board | Cambridge International Examinations (CIE) |
| Paper Type | Extended |
| Topic | Number |
| Sub-Topic | Sets & Venn Diagrams |
| Booklet | Mark Scheme 5 |

Time Allowed: 60 minutes

Score: /50

Percentage: /100

Grade Boundaries:

| A* | A | B | C | D | E | U |
|------|-----|-----|-----|-----|-----|------|
| >85% | 75% | 60% | 45% | 35% | 25% | <25% |



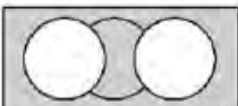
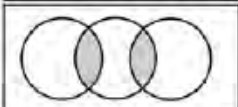
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|---------|---|---|--|
| 1 (a) | (p =) 5 cao, (q =) 12 cao (r =) 1 ft | B1 B1 B1ft | Accept in correct order if no labels ft for $r = 18$ – their p – their q provided r not negative |
| (b) (i) | 17 ca | B1 | |
| (ii) | 12 ca | B1 | |
| (c) (i) | 26 ca | B1 | |
| (ii) | 57 f | B1ft | ft 45 + their q |
| (d) (i) | $\frac{8}{100}$ oe isw | B1 | |
| (ii) | $\frac{45}{100}$ oe isw | B1 | |
| (e) | Any fraction with denominator 74 seen $\frac{37}{74} \times \frac{36}{73}$ $\frac{18}{73}$ oe isw | B1 M1 A1 | ft their fraction i.e. one taken off each part $\frac{k}{l} \times \frac{k-1}{l-1}$ N. $\frac{1}{2} \times \frac{36}{73}$ gets B1M1 $\frac{1332}{5402}$ www3 (if decimal then 0.247 or better) Do not accept ratio or in words |

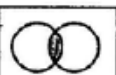
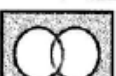

[12]

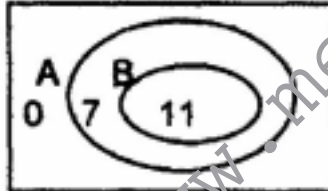
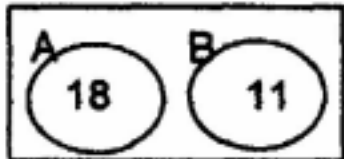
| | | | |
|-------|--|----|--|
| 2 (a) | | 2 | B1 P and S not intersecting. Two sets must be labelled Three intersecting circles will have $P \cap S$ empty. |
| (b) 4 | | 1√ | from the number of elements in the shaded area |

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|---|---------------------------------------|-------------|---|
| 3 | (a) \emptyset (b) ξ (c) A | 1 1 1 | No brackets allowed. Not ϵ or e No brackets allowed |
|---|---------------------------------------|-------------|---|



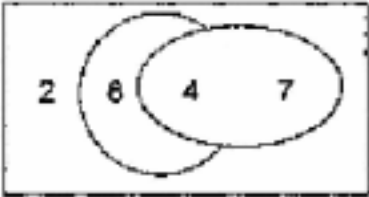
| | | | |
|---|---|---|--|
| 4 |  | 1 | |
| |  | 1 | |

| | | | |
|---|---|---|--|
| 5 | (a)  | 1 | Intersection shaded |
| | (b)  | 1 | |
| | (c)  | 1 | Ensure that the intersection is NOT shaded |

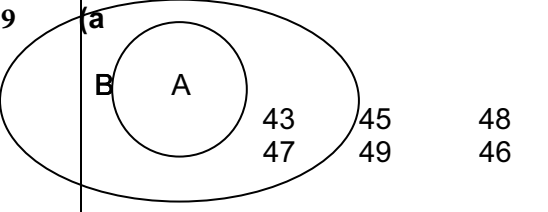
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| 6 | (a) |  | 2 | B numbers B1 labels |
| | (b) |  | 2 | B numbers B1 labels Allow 0 in an intersection of A and B |




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| 7 | (a)(i) | 12 | B1 | Accept probabilities as fractions/decimals/% | | | |
| | (ii) | 3 | B1 | | | | |
| | (iii) | 21 | B1 | | | | |
| | (iv) | 2 | B1 | | | | |
| | (v) | $\frac{14}{24}$ o. | B1 | | | | |
| | (vi) | $\frac{12}{19}$ o. | B1 | | | | |
| | (b)(i) | $\frac{12}{22} \times \frac{11}{21}$ | M1 | | | | |
| | | $\frac{132}{462}$ o.e. (0.2) | A1 | | | 2/7 in simplest form | www2 |
| | (ii) | $\frac{10}{22} \times \frac{12}{21}$ | M1 | | | | |
| | | their $\frac{10}{22} \times \frac{12}{21} \times 2$ o. | M1 | | | | |
| | $\frac{240}{462}$ o.e.(0.5) | A1 | 40/77 in simplest form | www3 | | | |
| | | | | | [11] | | |

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| 8 |  | 3 | B1 for 8 in correct place B1 for 2 in correct place B1 for 4 and 7 in correct place SC2 2 4 8 7 or 2 6 6 7 |
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| 9 | <p>a</p>  <p>(b) 2</p> | 2* | <p>B1 One region correct The numbers must be completely inside the correct region</p> <p>1√ Count the numbers in the region between A and B Not 45, 49</p> |
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| 10 | integer $\sqrt{(112/7)}$ rational nos. 2.6 4/17 irrational no. $\sqrt{12}$ | 1 1 1 1 | accept $\sqrt{16}$ or 4 accept 0.235 accept 3.46 | 4 |
|----|---|------------------|--|---|

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| 11 |  | 2 | <p>B1 for A,B disjoint B1 for A,B subsets of K</p> |
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