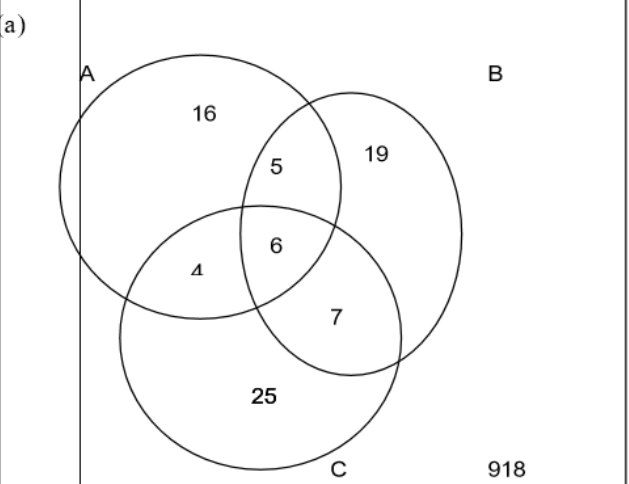


Venn Diagrams - Edexcel Past Exam Questions **MARK SCHEME**

Question 1 : Jan 05 Q5

Question Number	Scheme	Marks
(a)		<p>6 B1 subtract M1 4,5,7 A1 subtract A1 16,19,25 A1 918 B1</p> <p style="text-align: right;">(6)</p>
(b)	$P(\text{No defects}) = \frac{918}{1000} = 0.918$	<p style="text-align: right;">B1</p> <p style="text-align: right;">(1)</p>
(c)	$P(\text{No more than 1}) = \frac{918+16+19+25}{1000} \quad \text{OR} \quad 1 - \frac{5+6+4+7}{1000}$ $= 0.978$	<p style="text-align: right;">M1</p> <p style="text-align: right;">0.978 A1</p>
(d)	$P(\text{Both had type B}) = \frac{37}{1000} \times \frac{36}{999}$ $= \frac{37}{27750} \text{ or } 0.001\bar{3} \text{ or } 0.00133$	<p style="text-align: right;">theirs from B x M1</p> <p style="text-align: right;">cao A1</p> <p style="text-align: right;">(2)</p>

Question 2 : June 05 Q7

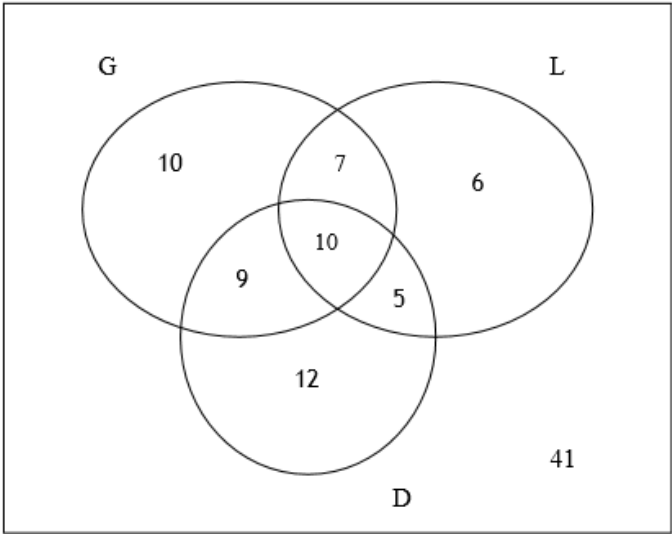
	Glasses	No Glasses	Totals		
Science	18	12	30		
Arts	27	23	50	50 may be seen in (a)	
Humanities	44	24	68	23 may be seen in (b)	B1 B1
Totals	89	59	148		

(a)	$P(\text{Arts}) = \frac{50}{148} = \frac{25}{74} = 0.338$	a number/148	M1 A1 (4)
(c)	$P(\text{Right Handed}) = \left(\frac{30}{148} \times 0.8\right) + \left(\frac{50}{148} \times 0.7\right) + \left(\frac{68}{148} \times 0.75\right)$ $= \frac{55}{74} = 0.743$	attempt add three prob A1 ✓ on their (a) awrt 0.743	M1 A1 ✓ A1 (3)

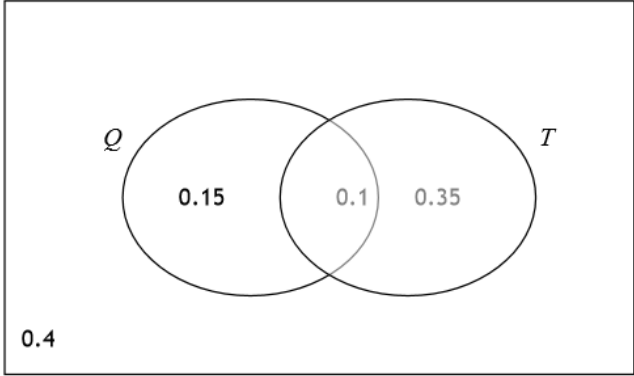
Question 3: Jan 06 Q6

(a)	<p style="text-align: right;">\mathcal{E}</p> <p style="text-align: center;">Venn Diagram 0.32, 0.11 & A, B 0.22, 0.35 & box</p>	M1 A1 A1 (3)
(b)	$P(A) = 0.32 + 0.22 = 0.54; P(B) = 0.33$	M1A1ft; A1ft (3)
(c)	For independence $P(A \cap B) = P(A)P(B)$ For these data $0.22 \neq 0.54 \times 0.33 = 0.1782$ \therefore NOT independent	M1A1ft A1ft (3)

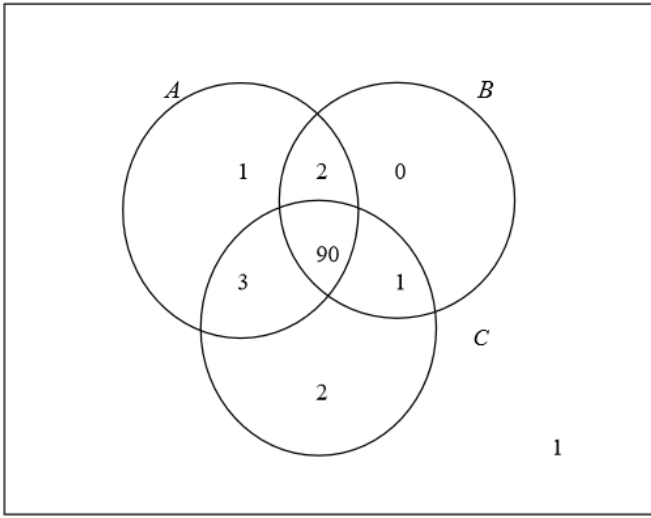
Question 4: June 06 Q6

<p>(a)</p>	 <p style="text-align: center;">3 closed curves that intersect Subtract at either stage 9,7,5 10,6,12 41 & box</p>	<p>MI MI AI AI AI (6)</p>
<p>(b)</p>	$P(\overline{G}, \overline{LH}, \overline{D}) = \frac{10}{100} = \frac{1}{10}$	<p>B1J (1)</p>
<p>(c)</p>	$P(\overline{G}, \overline{LH}, \overline{D}) = \frac{41}{100}$	<p>B1J (1)</p>
<p>(d)</p>	$P(\text{Only two attributes}) = \frac{9+7+5}{100} = \frac{21}{100}$	<p>MIAIJ (2)</p>

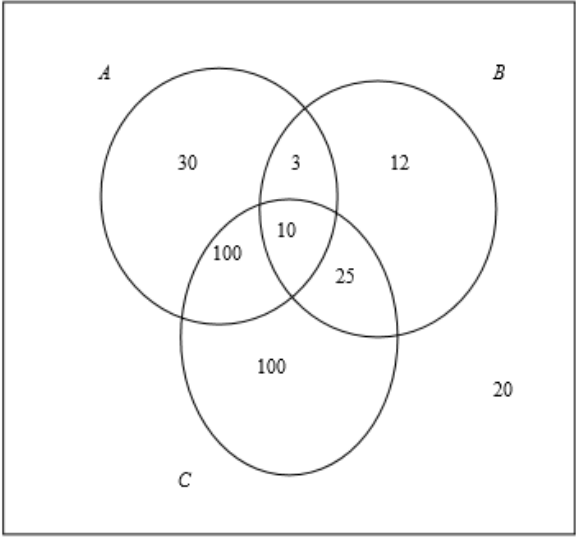
Question 5: June 07 Q4

(a)	$P(Q \cup T) = 0.6$ $P(Q) + P(T) - P(Q \cap T) = 0.6$ $P(Q \cap T) = 0.1$	B1 M1 A1 (3)
(b)	 <p style="text-align: right;">Venn 0.15, 0.35 0.4 and box</p>	M1 A1 B1 (3)

Question 6: Jan 08 Q5

(a)	<p>Diagram may be drawn with $B \subset (A \cup C)$ or with the 0 for $B \cap (A \cup C)'$ simply left blank</p>  <p>Accept decimals or probs. in Venn diagram</p>	<p>3cc 90,3,2,1 1,(0),2 1 outside Box</p> M1 A1 M1A1 A1 B1 (6)
(b)	$P(\text{none}) = 0.01$	B1ft (1)
(c)	$P(A \text{ but not } B) = 0.04$	M1 A1ft (2)
(d)	$P(\text{any wine but } C) = 0.03$	M1A1ft (2)
(e)	$P(\text{exactly two}) = 0.06$	M1A1ft (2)

Question 7: June 08 Q5

Question Number	Scheme	Marks
(a)	 <p style="margin-left: 400px;">3 closed intersecting curves with labels 100 100,30 12,10,3,25 Box</p>	<p>M1 A1 A1 B1</p> <p style="text-align: right;">[4]</p>
(b)	$P(\text{Substance C}) = \frac{100+100+10+25}{300} = \frac{235}{300} = \frac{47}{60} \text{ or exact equivalent}$	<p>M1A1ft [2]</p>
(c)	$P(\text{All 3} A) = \frac{10}{30+3+10+100} = \frac{10}{143} \text{ or exact equivalent}$	<p>M1A1ft [2]</p>
(d)	$P(\text{Universal donor}) = \frac{20}{300} = \frac{1}{15} \text{ or exact equivalent}$	<p>M1A1 cao [2]</p>
		<p>Total 10</p>

Question 8: Jan 10 Q4

Question Number	Scheme	Marks
(a)	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 10px; margin-right: 20px;"> </div> <div> <p>3 closed curves and 4 in centre Evidence of subtraction</p> <p>31,36,24 41,17,11</p> <p>Labels on loops, 16 and box</p> </div> </div>	<p>M1 M1 A1 A1 B1</p> <p style="text-align: right;">(5)</p>
(b)	$P(\text{None of the 3 options}) = \frac{16}{180} = \frac{4}{45}$	<p>B1ft (1)</p>
(c)	$P(\text{Networking only}) = \frac{17}{180}$	<p>B1ft (1)</p>
(d)	$P(\text{All 3 options/technician}) = \frac{4}{40} = \frac{1}{10}$	<p>M1 A1 (2) Total [9]</p>

Question 9: June 10 Q4

Question Number	Scheme	Marks
(a)	$\frac{2+3}{\text{their total}} = \frac{5}{\text{their total}} = \frac{1}{6} \quad (** \text{ given answer} **)$	<p>M1 A1cso (2)</p>
(b)	$\frac{4+2+5+3}{\text{total}}, \quad = \frac{14}{30} \text{ or } \frac{7}{15} \text{ or } 0.4\dot{6}$	<p>M1 A1 (2)</p>
(c)	$P(A \cap C) = 0$	<p>B1 (1)</p>
(d)	$P(B) = \frac{10}{30} = \frac{1}{3}, \quad P(C) = \frac{9}{30} = \frac{3}{10}, \quad P(B \cap C) = \frac{3}{30} = \frac{1}{10} \quad \text{or } P(B C) = \frac{3}{9}$ $P(B) \times P(C) = \frac{1}{3} \times \frac{3}{10} = \frac{1}{10} = P(B \cap C) \quad \text{or } P(B C) = \frac{3}{9} = \frac{1}{3} = P(B)$ <p>So yes they are statistically independent</p>	<p>M1 M1 A1cso (3)</p>