January 2019
WST01 STATISTICS 1
Mark Scheme

Question Number	Scheme	Marks
1.(a)	B and C or "band" and "choir" but NOT P(B) and P(C)	B1 (1)
(b)	[L and C independent implies] $\text{P}(L \cap C) = \text{P}(L) \times \text{P}(C) = 0.4 \times 0.3$	M1
	$p = \underline{\mathbf{0.12}}$	A1 (2)
(c)	$q = 0.4 - 0.13 -$ their $p = \underline{\mathbf{0.15}}$	B1ft
	$r = 0.3 -$ their $p = \underline{\mathbf{0.18}}$	B1ft
	$s = 1 - (0.4 + 0.3 -$ their $p)$ or $1 - (0.4 +$ their $r) = \underline{\mathbf{0.42}}$	B1ft (3)
(d)	$\text{P}(L \mid B \cup C)$ or $\dfrac{\text{P}(L \cap [B \cup C])}{\text{P}(B \cup C)} = ; \dfrac{0.13 + "0.12"}{0.13 + 0.3}$	M1; A1ft
	$= \underline{\dfrac{25}{43}}$	A1 (3)
		[9 marks]

Notes

(a) B1 for B and C indicated. Allow other non-trivial pairs e.g. B and $L \cap C$ but not L and L'

Correct answers only to parts (b), (c) or (d) score all the relevant marks.

(b) M1 for clear attempt to use the rule for independence. Rule stated and one correct sub.
A1 for 0.12 (either labelled p or part (b) or correctly placed on Venn diagram)

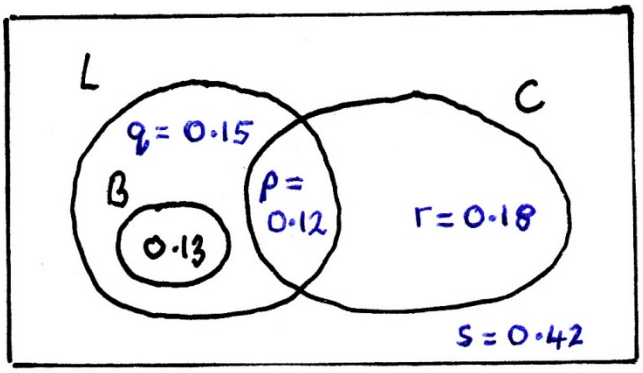
(c) 1st B1ft for 0.15 or a correct q allowing ft of their p
2nd B1ft for 0.18 or a correct r allowing ft of their p
3rd B1ft for 0.42 or a correct s allowing ft of their p or r

The ft requires all values concerned to be probabilities. (Labelled or on Venn diagram)

(d) M1 for a correct probability expression (letters and symbols) and any ratio of probabilities (num < denom). May be implied by a correct (or correct ft) probability ratio.
1st A1ft for a correct (or correct ft) probability ratio (num < denom)

2nd A1 for $\dfrac{25}{43}$ or exact equivalent

NB completed Venn diagram. (If answers conflict the script takes preference over diagram)

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Accept probabilities in any exact form
e.g. $\frac{3}{20}$ for 0.15
or $\frac{3}{25}$ for 0.12 etc