QUESTION NUMBER

7.(a)

$\log_2 5 + \log_2 \frac{1}{40}$

$= \log_2 \left(\frac{5}{40}\right)$

$= \log_2 \frac{1}{8}$

$= -3.$

$\frac{1}{8} = 8^{-1} = (2^3)^{-1}$

$= 2^{-3}$

7.(b)

$\log_8 a < 0$

$0 < a < 1$

$\log_8 8 = 1$

$\log_8 1 = 0$

$\log_8 0$ is undefined

Question			Generic scheme	Illustrative scheme	Max mark
7.	(a)		$\bullet^1$ use laws of logs $\bullet^2$ evaluate log	$\bullet^1$ $\log_2 \frac{5}{40}$ $\bullet^2$ -3	**2**
Notes:					
1. Do not penalise the omission of the base of the logarithm at $\bullet^1$. 2. Correct answer with no working, award 0/2.					
Commonly Observed Responses:					
Candidate A – introducing a variable $\log_2\left(5\times\frac{1}{40}\right)$ $\bullet^1$ ✓ $\log_2 \frac{1}{8}$ $2^x = \frac{1}{8}$ $x=-3$ $\bullet^2$ ✓					
	(b)		$\bullet^3$ state range	$\bullet^3$ $0 < a < 1$	**1**
Notes:					
3. At $\bullet^3$ accept "$a > 0$ and $a < 1$" or "$a > 0$, $a < 1$ ".					
Commonly Observed Responses:					