Question 1. [6 MARKS] ASYMPTOTICS

Part (a) [2 MARKS]

Fill in each blank below with **exactly one** of the following expressions, to make each statement true.

1 $\quad$ $\log n$ $\quad$ n $\quad$ $n \log n$ $\quad$ n^2 $\quad$ 2^n

Each expression may be used for any number of answers. No justification required.

i– $165 + \log_2 n \in \Theta(\underline{\quad \log n \quad})$

ii– $\dfrac{n^2+1}{3n+4} \in \Theta(\underline{\quad n \quad})$

iii– $2^{2+\log_2 n} \in \Theta(\underline{\quad n \quad})$

iv– $n^2 \log_2(n) \in \omega(\underline{\quad n \log n \quad})$

MINIMAL SOLUTION

NOTE. For ω, *any* other answer "lower" in the hierarchy is acceptable, e.g., $\omega(\log n)$ is also correct.