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.

$$1 \qquad \log n \qquad n \qquad n \log n \qquad n^2 \qquad 2^n$$

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

i– $\log_{16}(n^5) \in \Theta($ ___log n___ $)$

ii– $(n+1)(6n+5) \in \Theta($ ___n^2___ $)$

iii– $5n^6 + 1 \in \omega($ ___n^2___ $)$

iv– $\frac{(n+1)^2}{n+3} \in \Theta($ ___n___ $)$

MINIMAL SOLUTION

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