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

ii– $n^{1.65} \in \omega($ ___n___ $)$

iii– $4^{n/2} \in \Theta($ ___2^n___ $)$

iv– $(n+1)\log_6(5n) \in \Theta($ ___$n \log n$___ $)$

MINIMAL SOLUTION

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