1. Exercise 3.

$$\|e\|_s \le Ch^{\beta}\|u\|_{k+1}$$

$$\beta = \min(k+1-s, \; 2(k+1-m))$$

$m=1$ and $k=2$, $\quad \beta = \min(3-s, 4)$

$\therefore \; 0 \le s \le m \quad \rightarrow \quad 0 \le s \le 1 \quad \therefore \; 3-s < 4$

$\beta = 3-s$

for e in L_2, $\quad s=0 \quad \beta=3 \quad \|e\|_0 \le Ch^3\|u\|_3$

for e in H^1, $\quad s=1 \quad \beta=2 \quad \|e\|_1 \le Ch^2\|u\|_3$

Exercise 4.

$m=2, k=3 \quad, \beta = \min(4-s, 4)$

$0 \le s \le 2 \quad \therefore \; 4-s \le 4 \quad \therefore \; \beta = 4-s$

for e in L_2, $\quad s=0 \quad \beta=4 \quad \|e\|_0 \le Ch^4\|u\|_4$

for e in H^1, $\quad s=1 \quad \beta=3 \quad \|e\|_1 \le Ch^3\|u\|_4$

for e in H^2, $\quad s=2 \quad \beta=2 \quad \|e\|_2 \le Ch^2\|u\|_4$