Question Number	Answer	Additional guidance	Mark
6(b)(iii)	An explanation that makes reference to four of the following points: • doubling the acrosin activity of the sperm cell increases the percentage of egg cells fertilised by 68% / non-linear increase • (because) higher acrosin activity means the sperm cells can digest through all of the {outer layer / zona pellucida} (of more egg cells) (1) • (allowing) sperm (cells) to {bind to (egg cell) membrane / enter egg (cell)} (1) • (so that) sperm nucleus can fuse with egg (cell) nucleus / fusion (of nuclei) can occur (1) • (low acrosin activity) could result in death of sperm cells before fertilisation could occur (1)	ACCEPT greater increase (in percentage of egg cells fertilised) between 2.5 and 3(a.u.) ACCEPT 100% fertilisation at 5(a.u.) compared to 32% at 2.5(a.u.) ACCEPT digesting the outer layer {faster /more efficiently} / more digestion occurs Accept converse ACCEPT sperm can reach egg (cell) nucleus ACCEPT sperm can fuse with egg (cell) ACCEPT converse	**(4)**

Question Number	Answer	Additional guidance	Mark
6(c)(i)	• image size divided by magnification	ACCEPT 4.5±1 ÷200 ignore unmanipulated equation	**(1)**

Question Number	Answer	Additional guidance	Mark
6(c)(ii)	An answer that makes reference to three of the following points: • (when a sperm entered egg cell) cortical granules have fused to cell surface membrane / cortical {reaction/enzymes} resulted in hardening of zona pellucida (1) • as zona pellucida (of some egg cells) are damaged there are areas where it is not {present / hardened} (1) • resulting in polyspermy / {an extra / two} sperm have entered (the egg cell) (1)	ACCEPT some zona pellucida is not hardened reject 3 sperm have entered egg cell	**(3)**