



## QUESTION WORKBOOK

# Gametes and fertilisation: from two cells to a blastocyst

Cell cycles, reproduction and development · Unit B06

Edexcel A Topic 3

8 questions · 25 marks

NAVY SCREEN EDITION

**SECTION A** · Short, 1 to 2 marks

- A1** State where in the human reproductive system fertilisation takes place, and where implantation takes place. [2]

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**SECTION B** · Standard, 3 to 5 marks

- B1** Describe the events that take place from the moment a sperm reaches the zona pellucida to the moment the two nuclei fuse. [4]

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- B2** Compare the production of sperm in the testis with the production of eggs in the ovary. [4]

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**B3** Explain how the cortical reaction prevents more than one sperm from fertilising an egg. [3]

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**B4** Explain why an embryo formed when two sperm fuse with the same egg does not develop. [3]

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**B5** The mid-piece of a sperm cell contains many mitochondria. Suggest why a sperm cell that must travel a greater distance to reach an egg would be expected to contain more of them. [3]

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**B6** Outline what happens to a human zygote between fertilisation and implantation. [3]

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- B7** A human egg is a sphere of diameter  $110\ \mu\text{m}$ . Calculate its volume, using  $V = \frac{4}{3}\pi r^3$ . Give your answer in  $\mu\text{m}^3$  to two significant figures. [3]