

5. (a) Mammalian gametes are formed by meiosis and have the ability to fuse to form a zygote. Explain why it is important that gametes are produced by meiosis.

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(2)

- (b) Explain how the genetic material from a mammalian sperm cell is able to enter an ovum to bring about the process of fertilisation.

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(2)



- (c) (i) Calculate the number of cells that will be present in the embryo after the first four mitotic divisions of the zygote.

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(1)

- (ii) Suggest why, during the first four mitotic divisions, the embryo does not increase in volume even though the total number of cells increases.

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(1)

- (iii) Outline the events that occur in mitosis from the start of prophase up to the end of metaphase.

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(3)

(Total 9 marks)

Q5

