

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.

.....
.....
.....
.....
.....
.....

(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.

.....
.....
.....
.....
.....
.....

(2)



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

.....
(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.

.....
.....
(1)

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

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
(3)

(Total 9 marks)

Q5

