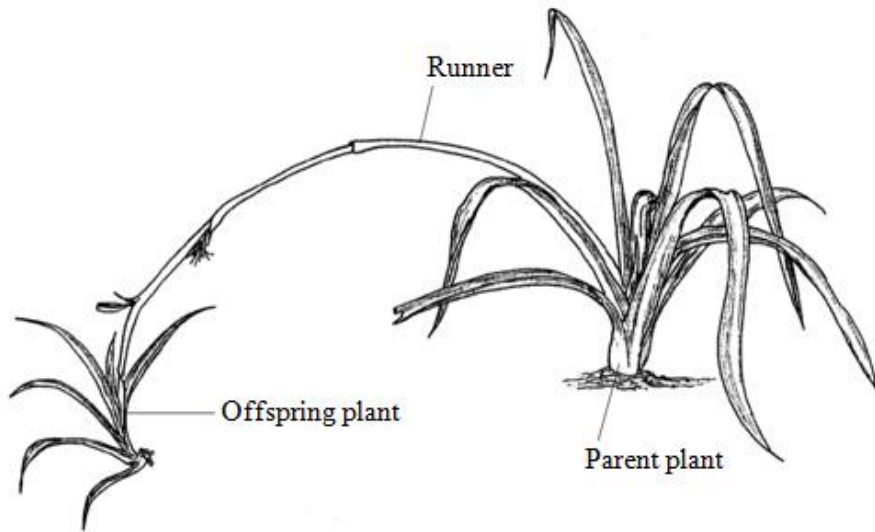


Reproduction 2

Q:1 The diagram shows a spider plant during one type of reproduction.



Complete the sentences using words from the box.

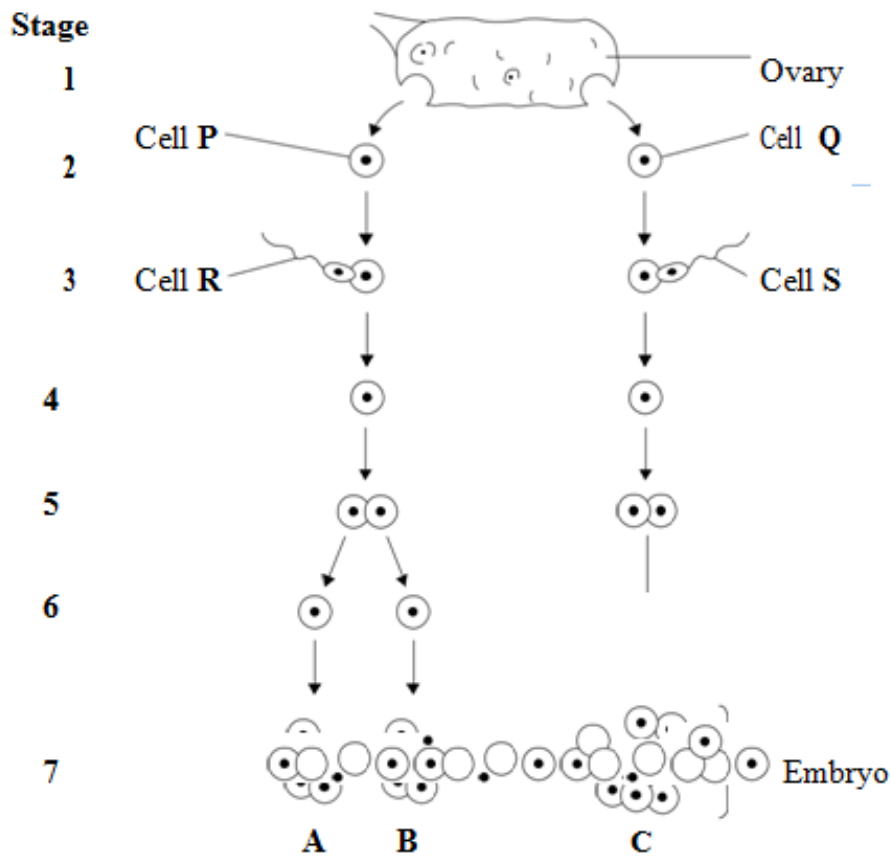
Asexual	characteristics	chromosomes	
gametes	genes	mitosis	sexual

- (a) The colour and shape of the leaves of a spider plant are known as _____ (1 mark)
- (b) The shape of the leaves is controlled by _____ (1 mark)
- (c) The thread-like structures inside the nucleus of the cells are called _____ (1 mark)
- (d) The spider plant produces new cells in the runner by a process called _____ (1 mark)
- (e) This type of reproduction is called _____ reproduction. (1 mark)

Q:2 A woman gives birth to triplets.

Two of the triplets are boys and the third is a girl.

The triplets developed from two egg cells released from the ovary at the same time. The diagram shows how triplets A, B and C developed.



(a) Which stages on the diagram show gametes? Draw a ring around your answer.

1 and 2 2 and 3 3 and 7 1 and 7

(1 mark)

(b) Embryo B is male.

Which of the following explains why embryo B is male?

Tick (☑) one box.

Cell P has an X chromosome; cell R has an X chromosome.

Cell P has a Y chromosome; cell R has an X chromosome.

Cell P has an X chromosome; cell R has a Y chromosome.

(1 mark)

(c) The children that develop from embryos A and C will not be identical. Explain why.

You may use words from the box in your answer.

egg genes sperm

(2 marks)

(d) Single cells from an embryo at Stage 7 can be separated and grown in a special solution.

(d)(i) What term describes cells that are grown in this way? Draw a ring around your answer.

alleles screened cells stem cells

(1 mark)

(d)(ii) What happens when the cells are placed in the special solution?

Tick (☑) two boxes.

- The cells divide
- The cells fertilise
- The cells differentiate
- The cells separate

(2 marks)

(d)(iii) Give one use of cells grown in this way.

(1 mark)

(d)(iv) Some people might object to using cells from embryos in this way.

Give one reason why.

(1 mark)

Q:3 Humans reproduce sexually.

Draw a ring around the correct answer to complete each sentence.

(a)(i) At fertilisation

chromosomes
genes
sex cells

 join together.

(1 mark)

(a)(ii) At fertilisation a single cell forms, which has new pairs of

chromosomes.
nuclei.
sex cells.

(1 mark)

(b) Cystic fibrosis can be inherited by children whose parents do not have it.

(b) (i) A person who has cystic fibrosis has

two
three
four

copies of the cystic fibrosis allele

(1 mark)

(b)(ii) The cystic fibrosis allele is

large.
recessive.
strong.

(1 mark)

Q:4 A certain allele increases the chance of women developing one type of breast cancer.

A woman has this allele. She wants to be sure that she will not have daughters who also have the allele.

Doctors:

- collect several eggs from her ovaries
- fertilise the eggs with sperm, in dishes.

(a) The doctors expect half the embryos produced to be female.

Explain why.

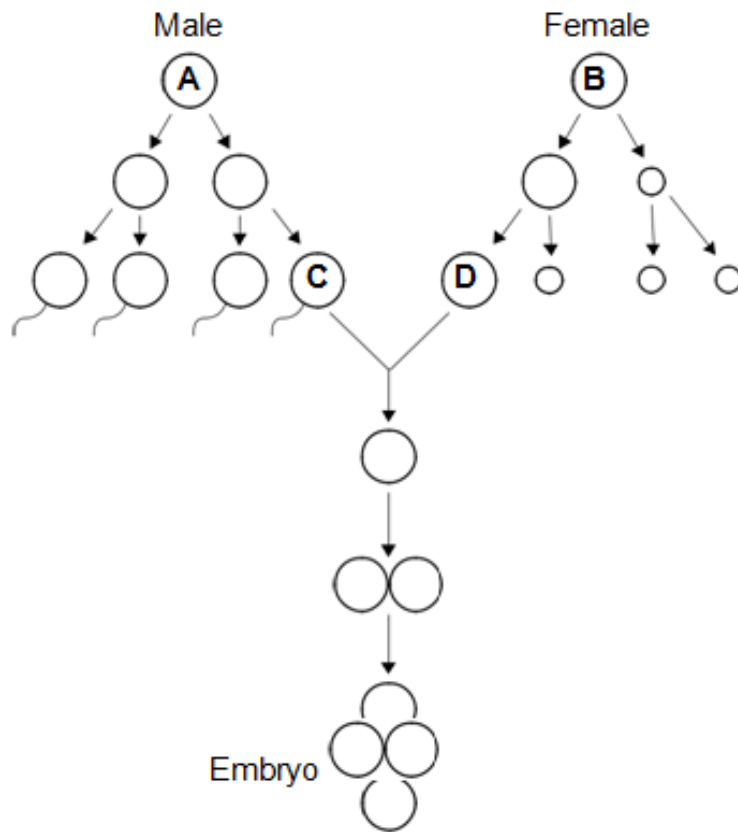
(2 marks)

(b) The embryos grow to around 100 cells.

Doctors:

- remove one cell from each embryo
- check the cell for the allele.

Q:5 The diagram shows some of the cell divisions that occur during human reproduction.



(a) (i) Name the type of cell division that produces cell D from cell B.

(1 mark)

(a) (ii) Which organ in the male body produces cell C from cell A?

(1 mark)

(b) (i) Cells A and B each contain 46 chromosomes.

How many chromosomes would there be in the nucleus of cell C?

(1 mark)

(b) (ii) Why is it important that cell C has this number of chromosomes?

(2 marks)

Q:6 When humans reproduce, chromosomes and genes are passed on to the next generation.

In each of the following questions, draw a ring around the correct answer to complete the sentence.

(a) A gene is a small section of

cellulose.
DNA.
protein.

(1 mark)

(b) The sex chromosomes in the human male are

X and X.
X and Y.
Y and Y.

(1 mark)

(c) (i) Most human body cells contain

23 chromosomes.
46 chromosomes.
92 chromosomes.

(1 mark)

(c) (ii) The number of chromosomes in a human gamete (sex cell)

is

the same number as
half the number
twice the number

in body cells.

(1 mark)

(d) Gametes are produced by

fertilisation.
meiosis.
mitosis.

(1 mark)

TOTAL MARKS=37