

CELLS

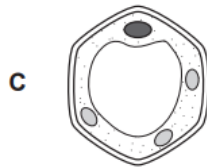
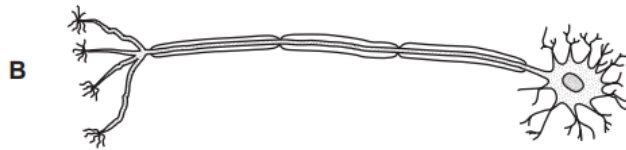
1 HOUR
50 marks

ANSWER ALL THE QUESTIONS

1]

1 Cells are formed by the division of existing cells. Four different cells are shown.

Which cell is produced by meiosis?



2]

When a cell divides, these events occur.

- 1 The DNA inside the cell is duplicated exactly.
- 2 Daughter cells are produced with the same chromosome number as the parent cell. Which type of division has occurred?

- A** meiosis producing genetically different cells
- B** meiosis producing genetically identical cells
- C** mitosis producing genetically different cells
- D** mitosis producing genetically identical cells

3]

What are correct descriptions of mitosis and meiosis?

	mitosis	meiosis
A	cells produced are genetically identical	repairs damaged cells
B	halves the chromosome number	cells produced are genetically identical
C	involved in asexual reproduction	halves the chromosome number
D	involved in sexual reproduction	doubles the chromosome number

4]

Which substance is coded for by a length of DNA?

- A** fat
- B** fatty acid
- C** glycerol
- D** lipase

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What results from meiosis of a diploid cell?

- A** genetically different diploid cells
- B** genetically different haploid cells
- C** genetically identical diploid cells
- D** genetically identical haploid cells

6]

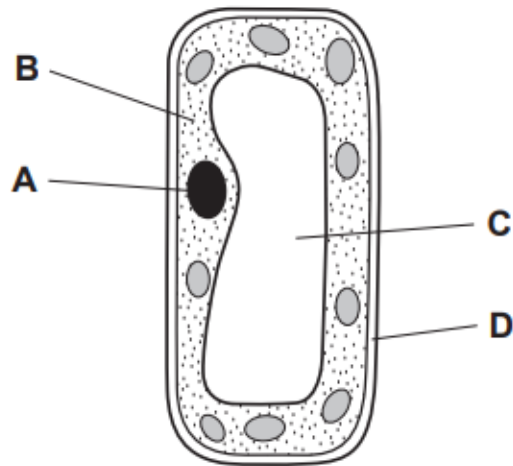
Which of these cells is haploid?

- A** liver cell
- B** red blood cell
- C** sperm cell
- D** zygote

7]

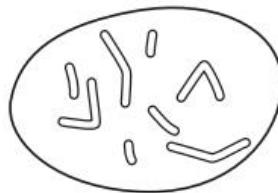
The diagram shows a plant cell.

Where is most of the DNA found?

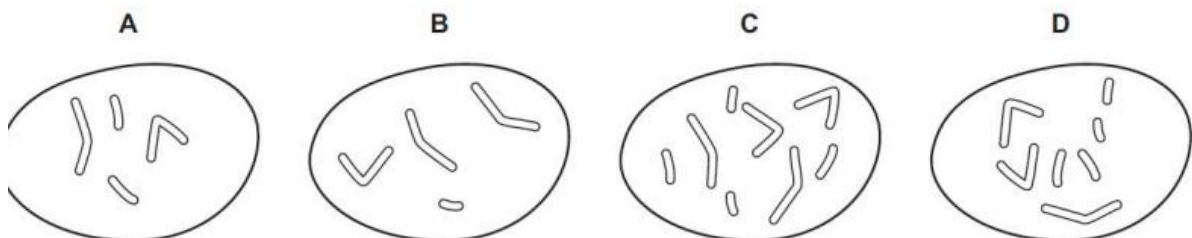


8]

The diagram shows the chromosomes in the nucleus of a cell that divides by mitosis.



Which diagram shows the chromosomes in the nucleus of one of the daughter cells produced?



10]

The nucleus in a body cell of a fly contains 12 chromosomes.

How many chromosomes are there in the nucleus of a sperm from this fly?

A 3

B 6

C 12

D 24

11]

What is true of the chromosomes present in the daughter nuclei after meiosis and after mitosis?

	meiosis	mitosis
A	identical	identical
B	identical	non-identical
C	non-identical	identical
D	non-identical	non-identical

The nucleus in each cell in the stem of a plant contains 32 chromosomes.

How many chromosomes are there in the nuclei of its pollen grains?

- A** 8 **B** 16 **C** 32 **D** 64

12]

In the life cycle of a mammal, what describes the eggs or sperms and the cells of the embryo?

	eggs or sperms	cells of the embryo
A	diploid	diploid
B	diploid	haploid
C	haploid	diploid
D	haploid	haploid

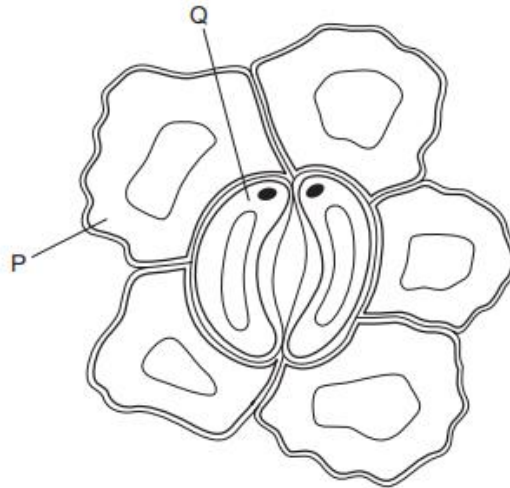
13]

Which movement of a substance in plants is an energy-consuming process?

- A** absorption of carbon dioxide by a palisade cell
- B** loss of water into the air spaces of a leaf
- C** nitrate uptake by root hair cells
- D** transport of water up through the xylem

14]

The diagram shows cells in the epidermis of a leaf.



To complete the diagram, which structural features should be added to the cells P and Q?

	P		Q		
	chloroplasts	nucleus	chloroplasts	nucleus	
A	✓	✓	x	x	key ✓ = yes x = no
B	✓	x	✓	✓	
C	x	✓	✓	x	
D	x	x	x	✓	

15]

Which part of a plant cell controls the movement of substances into and out of the cell?

- A** cell membrane
- B** cell wall
- C** cytoplasm
- D** vacuole

[total 15]

PART- 2

1]

(a) The production of human gametes involves the type of nuclear division known as meiosis.

State **two** reasons why meiosis is suitable for gamete production.

1

.....

2

..... [2]

B]

i The statements **E** to **L** relate to the process of cell division.

- E** is used in the repair of damaged tissues
- F** results in the production of diploid cells
- G** results in the production of gametes
- H** results in the chromosome number being halved
- J** gives rise to genetically identical cells
- K** takes place in both animals and plants
- L** is used in the process of asexual reproduction

Complete the table by writing each statement letter in the correct box to show whether the statement relates to mitosis only, meiosis only, or to both.

The first letter has been written in the correct box for you.

[6]

mitosis only	meiosis only	both mitosis and meiosis
E		

C]

Sexual reproduction requires meiosis to occur.

(i) Define the term *meiosis*.

.....

.....

.....[2]

[2]

- (a) Fig. 4.1 shows a section through the anther of a lily flower. The cells in the centre are dividing by meiosis.

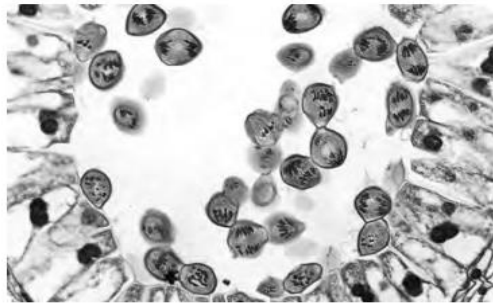


Fig. 4.1

- (i) Name the product of meiosis that is formed in anthers.

.....[1]

- (ii) Explain the importance of meiosis in sexual reproduction.

.....
.....
.....
.....
.....[2]

- b] Figure 1 shows a pea plant with flowers.



Figure 1

- (i) Name the type of reproduction involving flowers.

[[2]

[3]

The diagrams show two types of cell specialised to carry out particular functions.

Name each type of cell shown and state the relationship between cell structure and cell function.

(a) cell from a plant



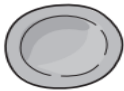
name of cell type

relationship between structure and function

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

[4]

(b) cell from human blood



name of cell type

RELATIONSHIP BETWEEN STRUCTURE AND FUNCTION

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

[4]

(c) Fig. 1.2 is a diagram of an animal cell.

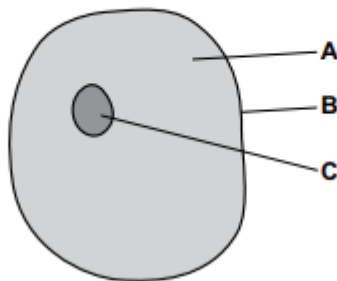


Fig. 1.2

[2]

(i) Identify the parts labelled A, B and C in Fig. 1.2.

A

B

C

4]

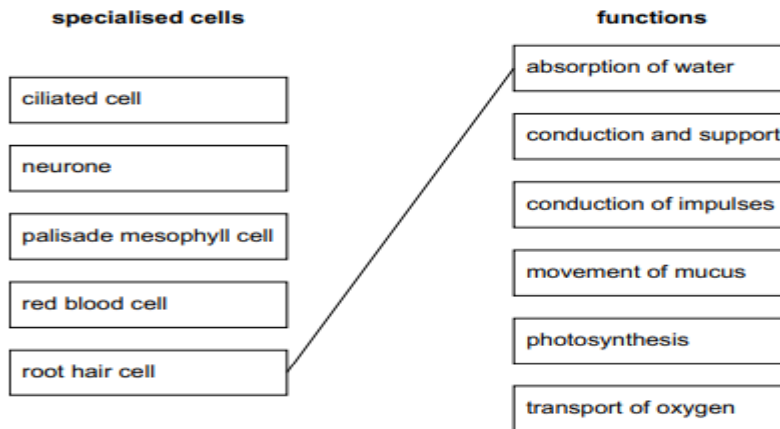
Some cells are specialised to perform a particular function.

The boxes on the left show the names of some specialised cells.

The functions of some specialised cells are in the boxes on the right.

Draw **four** lines to link each specialised cell with its function.

One line has been drawn for you. Draw four additional lines.



[4]

(b) Water is required for the process of photosynthesis.

(i) Describe where **and** how water enters a plant.

.....

.....

.....

.....

.....

.....

..... [3]

(ii) Describe **one** function of water in a plant other than for photosynthesis.

..... [1]

(iii) State the name of the tissue in a plant that transports water.

..... [1]

(iv) State the name of the part of a leaf through which most water vapour is lost from the plant.

..... [1]

[total 35]