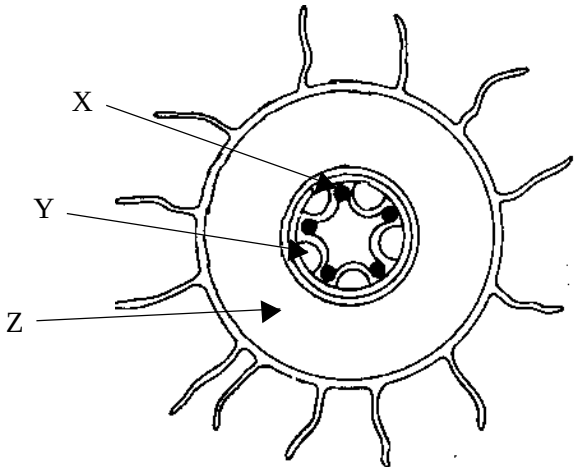
TISSUES

QUESTIONSHEET 1

The diagram shows a transverse section through the root of a buttercup, Ranunculus acris.



(a) (i) Identify tissues X, Y and Z.

X: ..... Y: ..... Z: ..... [3]

(ii) State the functions of tissues X and Y.

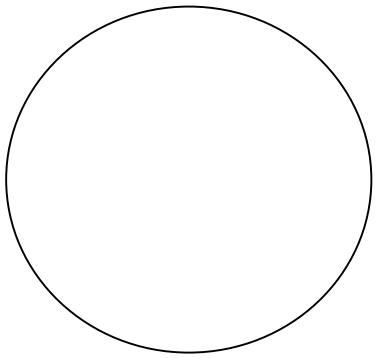
X: .....

.....

Y: .....

[3]

(b) By drawing in the circle provided show the distribution of tissues X and Y in the stem of the buttercup. Label the features which you draw.



[5]

(c) Explain how the distribution and structure of tissue X is suited to its functions:

(i) in the stem. .....

..... [2]

(ii) in the root. .....

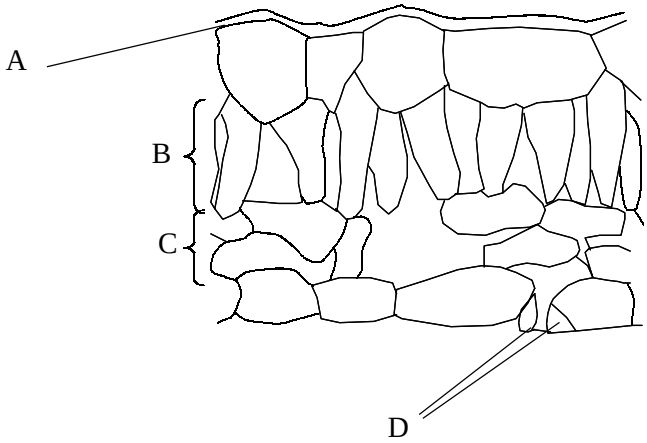
..... [2]

TOTAL / 15

TISSUES

QUESTIONSHEET 2

The diagram shows a vertical section through the leaf blade of a dicotyledonous plant.



(a) Name structures A, B, C and D.

A: ..... B: .....

C: ..... D: .....

[4]

(b) Describe how each of structures A, B, C and D are adapted to perform their functions.

A: .....

.....

..... [3]

B: .....

.....

..... [3]

C: .....

.....

..... [3]

D: .....

.....

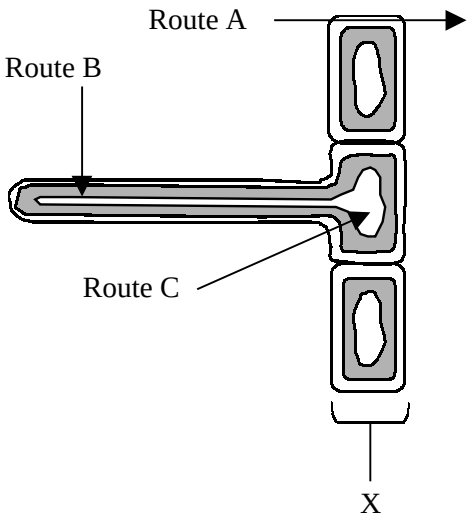
..... [3]

TOTAL / 16

TISSUES

QUESTIONSHEET 3

The diagram shows the structure of a root hair cell.



(a) (i) Identify tissue X.

..... [1]

(ii) Name two substances making up the cell walls of these cells.

1. ..... 2. ..... [2]

(b) (i) State two functions of these cells.

1. ..... 2. ..... [2]

(ii) Name routes A, B and C.

Route A: .....

Route B: .....

Route C: ..... [3]

(iii) State two ways in which root hair cells are adapted for their functions.

1. .....

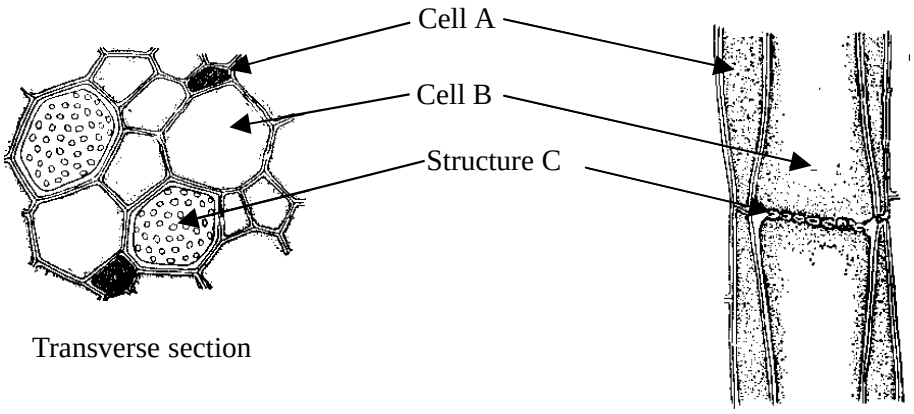
2. ..... [2]

TOTAL / 10

TISSUES

QUESTIONSHEET 4

The drawings show a plant tissue cut in transverse and longitudinal sections.



Transverse section

Longitudinal section

(a) (i) Identify this tissue.

..... [1]

(ii) Name cells A and B.

A: ..... B: ..... [2]

(iii) Name structure C.

..... [1]

(b) (i) What are the functions of this tissue?

.....

..... [2]

(ii) How is structure C suited to perform its functions?

.....

.....

..... [3]

(iii) What change occurs to structure C during winter (cold conditions)?

..... [1]

(c) State two ways in which cell A differs structurally from cell B.

1. .....

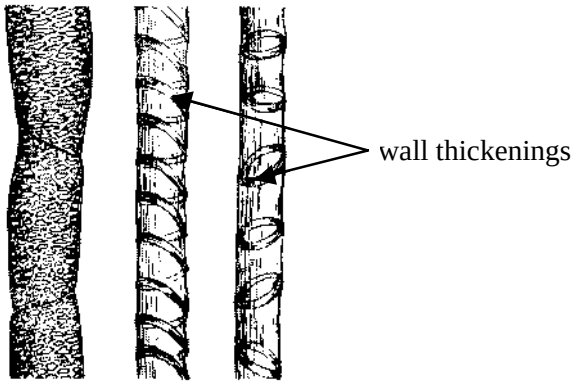
2. ..... [2]

TOTAL / 12

TISSUES

QUESTIONSHEET 5

The drawings show parts from a plant tissue seen in longitudinal view.



A B C

(a) (i) Name the tissue to which these parts belong.

..... [1]

(ii) What are the functions of this tissue?

.....

..... [2]

(iii) Name the substance used to thicken the walls.

..... [1]

(iv) What are the properties possessed by the substance you have named in (iii) that are useful to this tissue? Explain your answer.

.....

.....

.....

..... [3]

(b) Which of the parts A, B or C appear in young growing stems or roots? Explain your answer.

Which: ..... [1]

Explanation: .....

..... [2]

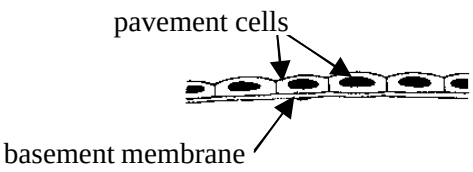
TOTAL / 10

TISSUES

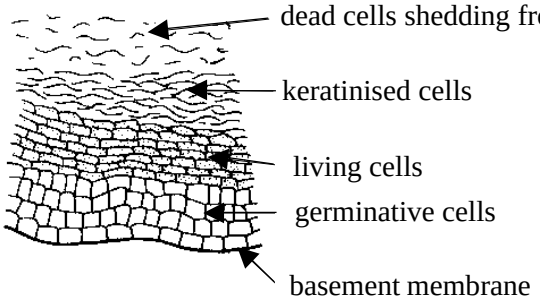
QUESTIONSHEET 6

Do not write in margin

The drawings show two examples of epithelia shown in vertical section.



Epithelium A



Epithelium B

(a) (i) Epithelium A is an example of a <u>simple</u> epithelium and epithelium B is a <u>compound</u> epithelium. What do the terms 'simple' and 'compound' mean when applied to epithelia?

.....

..... [2]

(ii) Epithelia of type A are found lining the alveolar air sacs in the lung and lining the glomerular capillaries and renal capsules in the kidneys. Describe how the epithelium in these organs is suited to perform its functions efficiently.

alveolar epithelium: .....

.....

..... [2]

glomerular and capsular epithelium: .....

.....

.....

..... [2]

(b) The epidermis of the skin is made from epithelium of type B. Describe how:

(i) the epidermis maintains its thickness.

.....

..... [2]

(ii) the epidermis prevents water loss and entry of pathogenic organisms.

.....

.....

..... [3]

(iii) the epidermis responds to increased persistent friction.

.....

..... [3]

TOTAL / 14

TISSUES

QUESTIONSHEET 7

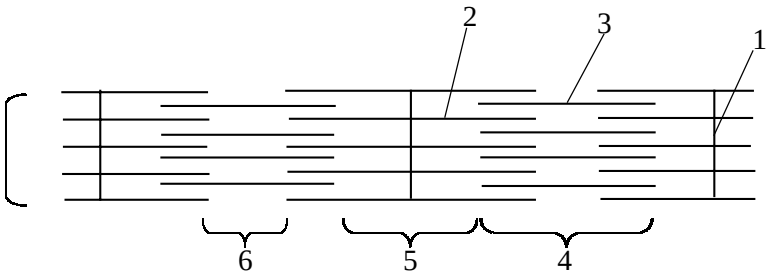
(a) The table below refers to skeletal muscle and to cardiac muscle. If the statement is correct place a tick (✓) in the appropriate box and if the statement is incorrect, place a cross (✗) in the box.

Statement	Skeletal muscle	Cardiac muscle
Nuclei are centrally placed in the fibres		
Fibres are branched		
Found in the diaphragm		
Cells attach to each other by intercalated discs		
Not easily fatigued		

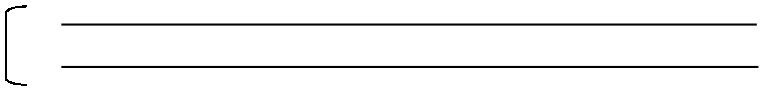
[5]

(b) The diagram below shows a longitudinal section through a striated muscle fibril as seen under the electron microscope.

Fibril under electron microscope



Same fibril under light microscope



(i) Draw in the details of the fibril (between the parallel lines) to show its appearance under the light microscope. [2]

(ii) Identify parts 1 to 6 shown in the diagram.

1. ..... 2. ..... 3. .....

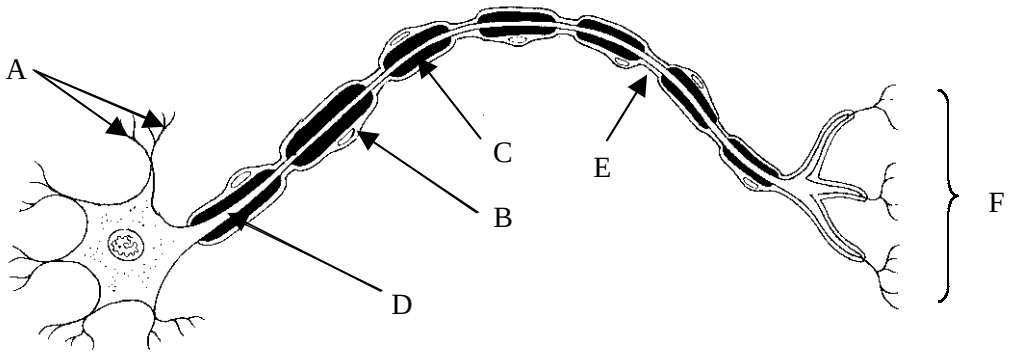
3. ..... 4. ..... 5. ..... [6]

TOTAL / 13

TISSUES

QUESTIONSHEET 8

The drawing shows a motor neurone from the voluntary nervous system.



(a) (i) Identify parts A to F seen in the drawing.

A: ..... B: ..... C: .....

D: ..... E: ..... F: ..... [6]

(ii) What do parts A and F synapse with?

A: ..... [1]

F: ..... [1]

(iii) State the main function of part:

B: ..... [1]

C: ..... [1]

(b) For each of the following, state **one** way in which they differ **structurally** from the neurone shown above:

(i) a sensory neurone.

..... [1]

(ii) a relay neurone from the grey matter.

..... [1]

(iii) an autonomic motor neurone.

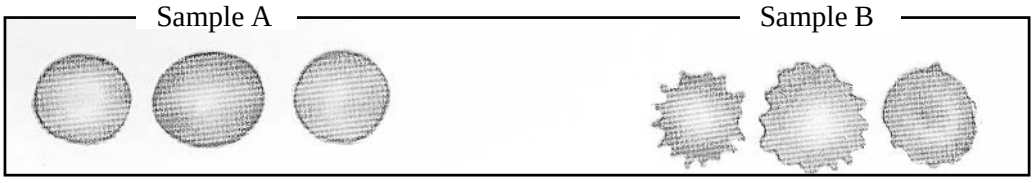
..... [1]

TOTAL / 13

TISSUES

QUESTIONSHEET 9

The drawing shows red blood cells. Sample A is from a normal blood smear but sample B is from a suspension of cells in saline which was almost, but not quite, isotonic to the cells.



(a) (i) State **three** ways in which red blood cells are suited to their function of oxygen and carbon dioxide transport.

.....

.....

..... [3]

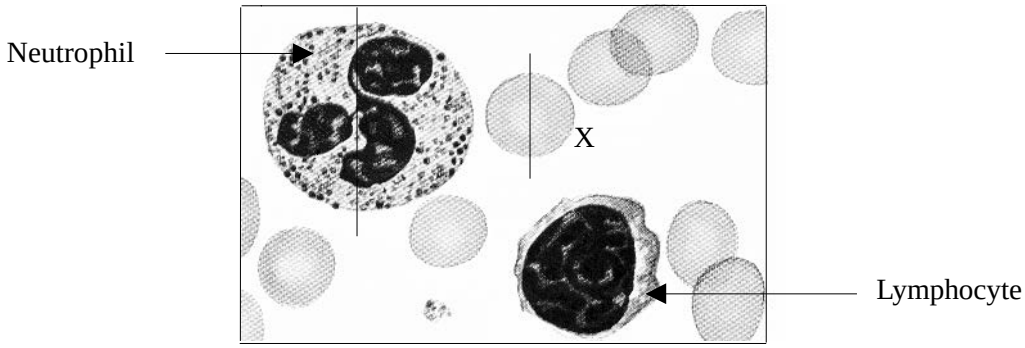
(ii) Explain the appearance of the cells in sample B.

.....

.....

..... [3]

(b) The cells shown below are from a normal blood smear.



(i) Describe **three** differences (other than size) between the neutrophil and the lymphocyte which can be seen in the picture above.

1. .....

.....

2. .....

.....

3. .....

..... [6]

(ii) If the red blood cell X has a diameter of 7.1μm along the vertical line, calculate the diameter of the neutrophil along the vertical line. Show your working.

Answer: ..... [3]

TOTAL / 15

TISSUES

QUESTIONSHEET 10

Read through the following account about plant tissues and then complete the account by filling in the spaces with the most appropriate word or words.

Vascular bundles in the stems of plants contain two types of transporting tissues. ..... transports water and salts and has walls thickened with the substance ..... . The conducting cells in this tissue may be either ..... which are open ended or ..... which have intact ends. In young stems the pattern of thickening is ..... which enables stem elongation to occur. As well as transporting water and salts this tissue also has a ..... function and in older stems forms wood. The other conducting tissue present is ..... and consists of two types of cell, the conducting ..... and the non-conducting ..... .This tissue conducts ..... from the leaves to the other regions of the plant. In the winter (cold conditions), the ..... between the cells may become blocked by the laying down of ..... . Another tissue which may be in the vascular bundle, which has a supporting function, is ..... . This tissue is dead and has long tapering cells with walls thickened with ..... .

TOTAL / 14

TISSUES

QUESTIONSHEET 11

(a) The epidermis of a plant leaf and the epidermis of mammalian skin have very different structures but have some functions in common.

(i) Describe three structural differences between the upper epidermis of a leaf and mammalian epidermis.

1. .....

.....

2. .....

.....

3. .....

..... [3]

(ii) State two functions common to leaf epidermis and mammalian epidermis.

1. .....

2. ..... [2]

(b) Epithelial tissues in the mammalian body may have several structural modifications. Explain the importances of the following modifications:

(i) mucous goblet cells in the epithelium lining the inside of the stomach.

.....

..... [2]

(ii) microvilli (striate border) bearing cells in the epithelium lining the duodenum.

.....

..... [2]

(iii) mucous goblet cells and cilia in the epithelia lining the trachea and larger bronchi.

.....

.....

..... [3]

TOTAL / 12

TISSUES

QUESTIONSHEET 12

The following table refers to features of various plant and animal cells or tissues. Complete the table by writing appropriate information in the boxes.

Tissue/cell	Living or dead	Wall materials if plant	Cell shape	Main function
Xylem vessel				
Parenchyma				
Epidermis of plant				
Sieve tube				
Sclerenchyma (fibres)				
Collenchyma				
Red blood cell				
Lymphocyte				
Neutrophil				
Smooth muscle cell				
Mucous goblet cell				

TOTAL / 11