Biological Sciences End of Topic Test Revision

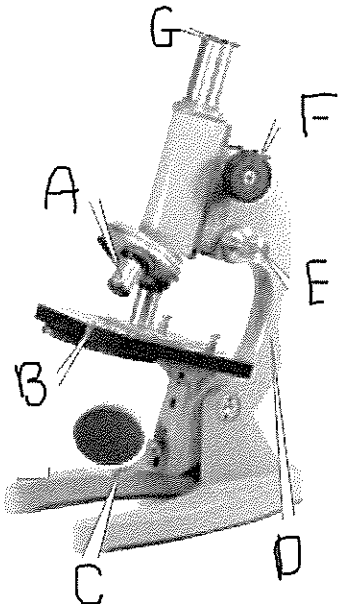
Microscopes

1. Describe how to calculate the magnification of a microscope.

2. Calculate the total magnification in the following examples.

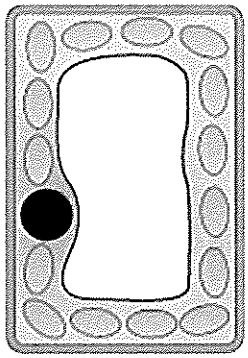
	Ocular lens	Objective lens
a	×4	×10
b	×10	×100
c	×4	×40

3. Provide the name and function of each of the parts of the microscope shown.



Letter	Part	Function
A		
B		
C		
D		
E		
F		
G		

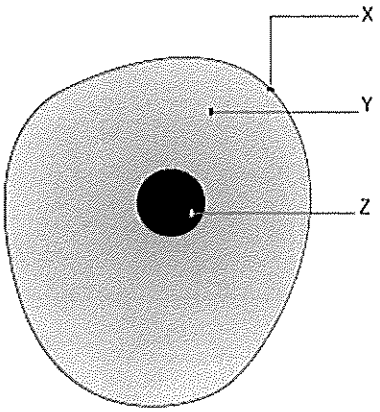
Cells



4. What type of cell is this likely to be?

5. List two reasons for your choice.

6. Correctly label the organelles X, Y and Z in the following cell diagram



7. State the function of the following cell organelles.

Organelle	**Function**
Nucleus	
Cell Membrane	
Cell Wall	
Chloroplast	
Vacuole	

8. Complete the table by stating if the organelle is present (Y) or not present (N)

Organelle	**Plant Cell**	**Animal Cell**	**Fungal Cell**
cytoplasm			
chloroplasts			
cell wall			
vacuole			
cell membrane			
nucleus			

9. Explain the difference between a prokaryotic and eukaryotic cell

10. Explain the difference between the terms unicellular and multicellular.

11. Define the term "specialised cell"

12. Recall the different type of animal cells by drawing lines to match the ones below with their specialised tasks.

Cell	Task
Fat cells	Cells that contract, causing bones to move
Cardiac muscle	Carry oxygen from the lungs to the cells
Red blood cells	Where the body stores energy
Skeletal muscle	Muscle that does not get tired and keeps the heart pumping

13. Provide four reasons why cells might undergo mitosis:

14. Mitosis is done by your body cells. What types of cells do not undergo mitosis?

15. Complete the following table about Mitosis.

For each mitotic cell division	Answer
Number of chromosomes in the human parent cell	
Number of divisions the cell undergoes in one mitotic division	
Number of daughter cells produced.	
Number of chromosomes in each human daughter cell	
Are the daughter cells genetically identical to the parent cell?	

Levels of Organisation

16. List these words (tissue, system, cell, organ) in order from simplest structure to most complex.

17. Using your knowledge of the levels of organisation, explain why the heart is considered an organ.

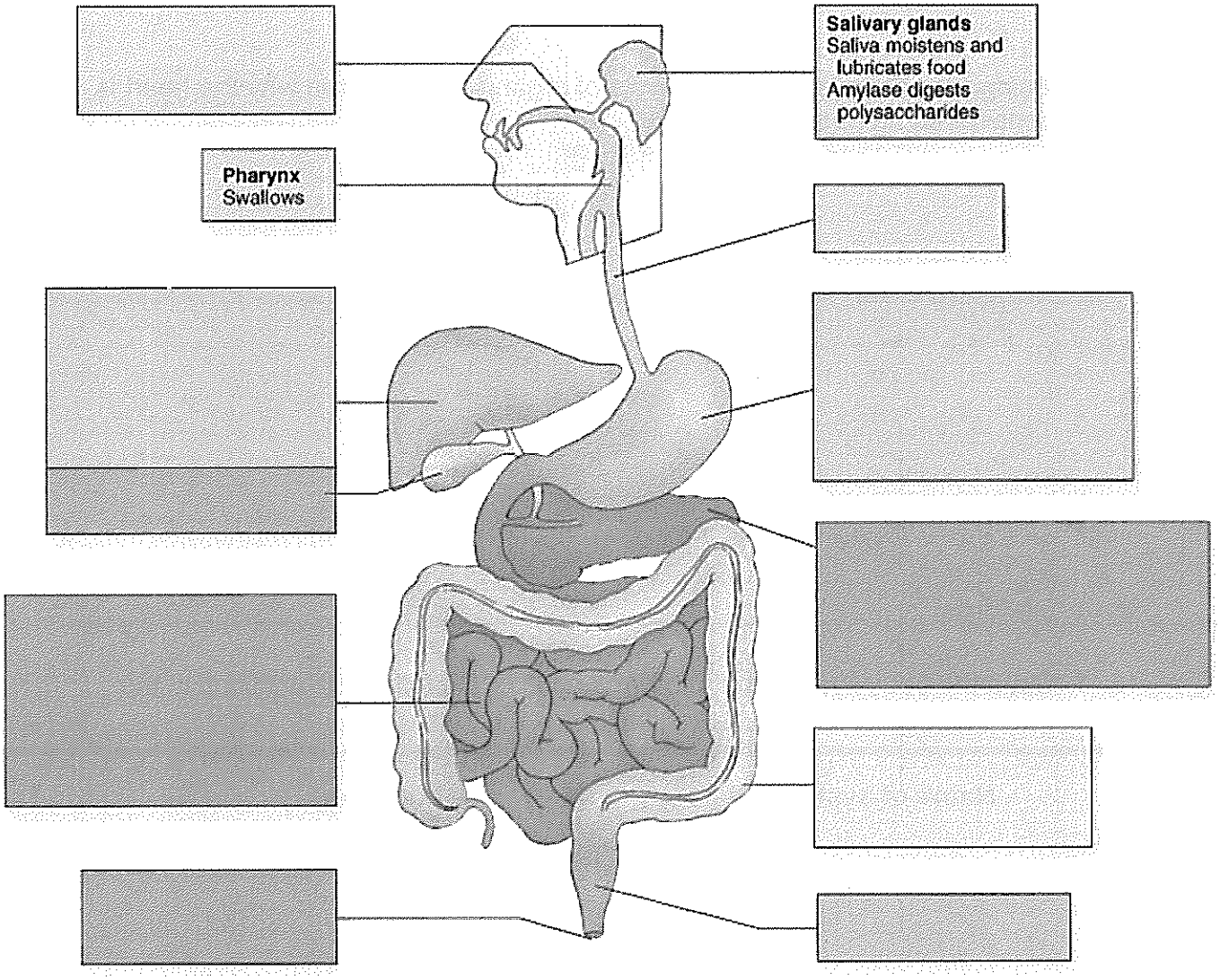
Body Systems

18. State the body system that performs each of the following functions in the human body.

Name of system	Functions
	Gets oxygen from the air into the body
	Allows the body to move
	Removes carbon dioxide from the body
	Removes wastes from the body
	Sends electrical messages around the body
	Produces gametes by meiosis for reproduction

Digestive System

19. Label the main parts of the digestive system on the diagram below and state the main function of each part.



20. Describe the key differences between mechanical and chemical digestion.

21. Name the enzyme used for digestion of the following nutrients

    a. Starch and carbohydrates

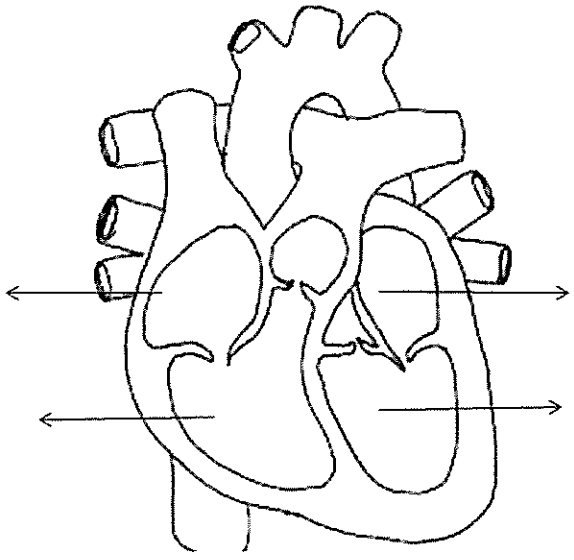
    b. Protein

    c. Fat

22. Compare and contrast the digestive systems of carnivores and herbivores. Consider the time spent eating, food eaten, teeth and intestines when constructing your answer.

Cardiovascular System

23. On the diagram below label the four chambers of the heart.



24. Draw in the flow of blood through the heart using arrows to show direction. Use a blue pen for deoxygenated and red pen for oxygenated blood.

25. Complete the following table:

Part	Definition
	Carries blood to the heart
	Where the transfer of oxygen and carbon dioxide takes place
	Collection chamber for deoxygenated blood
	Pumps oxygenated blood to the body
	Tiny blood carrying vessels
	Carries blood from the heart

26. Which chamber of the heart has the greatest muscle thickness? Explain why.

27. State **two** differences between veins and arteries.

28. Complete the table below for the following components of blood

Name of component				
Diagram				Fluid component
Function				

Reproductive systems

29. What is the difference between sexual and asexual reproduction? Highlight the advantages and disadvantages of each.

30. Complete the table below by identifying the following statements as being *true* for internal fertilisation (**I**) or external fertilisation (**E**)

Statement	True for Internal (I) or External (E) fertilization?
• joining of gametes takes place inside the body of the female	
• not very efficient	
• most fish and amphibians use this type of fertilisation	
• large numbers of eggs and sperm are released	

31. Frogs use external fertilisation and lizards use internal fertilisation. Explain the difference.

32. Fish have external development and a cat has internal development. What does this mean?

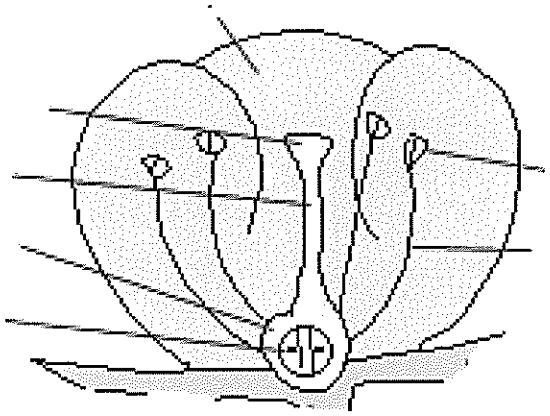
33. What is meant by the term "parental care"? Give two examples of it.

34. Give definitions for the following terms:

Term	Definition
Copulation	
Fertilisation	
Gamete	
Growth	

35. Complete the following close and label the reproductive parts on the diagram below.

- The female pistil is made of the _____, _____, and _____.
- The stigma is the sticky knob at the top of the _____.
- The style leads to the _____ that contains the female egg cells called _____.
- The male stamen is made up of the _____ and _____.
- The anther produces _____ (male reproductive cells).



36. Explain, in relation to pollination, why bees are so important to flowers.