Biological Science Year 8

Mid Topic Test

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Total: 68 marks

Part A: Multiple-Choice (10 marks)

1. A specimen prepared for a normal classroom light microscope needs to be very thin so;
2. the cover slip sits nicely on top of it.
3. light will pass through it.
4. electrons can pass through it.
5. it fits in the field of view.
6. A micrometre is:
7. one-thousandth of a millimetre.
8. one-thousandth of a centimetre.
9. one-thousandth of a metre.
10. one-hundredth of a millimetre.
11. Which of the following is true:
12. only animal cells contain cytoplasm.
13. only animal cells contain vacuoles.
14. only plant cells have a cell membrane.
15. both plant and animal cells contain a nucleus.
16. Nerve cells:
17. carry information from your brain to other parts of your body.
18. come in three types, voluntary, involuntary and cardiac.
19. carry oxygen and fight infection.
20. produce heat for the body and store energy.
21. The four types of tissue in the human body are:
22. bone, nerve, epithelium and connective.
23. nerve, blood, epithelium and connective.
24. blood, nerve, muscle and skin.
25. connective, epithelium, muscle and nerve.
26. Stem cells are:
27. cells that are found in plant stems.
28. cells that have a special job to do.
29. cells that become different types of cells under specific conditions.
30. cells that work in pairs to open and close the stomata.
31. Which of the following is true about the liver?
32. it is the body’s largest organ.
33. it performs more than 500 different chemical processes.
34. it produces bile.
35. all of the above.
36. Gas exchange in the lungs occurs at the:
37. trachea.
38. alveoli.
39. bronchiole.
40. villi.
41. Food in the stomach undergoes:
42. both chemical and mechanical digestion.
43. mechanical digestion only.
44. chemical digestion only.
45. no form of digestion.
46. In a complex organism the correct order from most to least is:
47. cells, tissue, systems, organs.
48. cells, organs, tissue, systems.
49. cells, tissue, organs, systems.
50. organs, cells, tissue, systems.

END OF PART A

**Part B: Short Answer** (58 marks)

1. **Match** the following terms with their correct meaning. **Note: not all words will be used.**

Magnification, microscopic, micrometre, centimetre, animal cell, plant cell, mitochondria, nucleus, chloroplasts, photosynthesis, Hooke, Leeuwenhoek, unicellular, multicellular, nerve cell, muscle cell, blood cell, guard cell, conducting cells, tissue, organ, system, epithelium, mitosis, digestion, respiration, mechanical digestion, chemical digestion, trachea, oesophagus, breathing.

a) Cell division that produces two new identical cells \_\_\_\_\_ **mitosis**

b) Too small to see with the naked eye \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **microscopic**

c) A group of cells that perform the same function in the body \_\_\_ **tissue**

d) The process of getting air into the lungs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **breathing**

e) The first person to observe a cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Hooke**

f) Made of many cells \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **multicellular**

g) A cell with no cell wall or chloroplasts \_\_\_\_\_\_\_\_\_ **animal cell**

h) The control centre of a cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **nucleus**

i) Used to measure microscopic objects \_\_\_\_\_\_\_\_\_\_\_\_\_ **micrometre**

j) The tube that carries air from the nose and mouth to the lungs \_\_\_\_ **trachea**

(10 marks)

2. **Draw** and **label** an animal cell and a plant cell:

(5 marks)

3. a) **Describe** how mechanical and chemical digestion are different:

\_\_\_\_\_\_\_\_ **Mechanical digestion involves the tongue, teeth and muscles breaking food into smaller pieces. Chemical digestion involves chemicals acting on the food to break it into smaller chemical substances. (1 mark each for something similar)**  (2 marks)

b) **Explain** why *not* all cells in a body are the same:

\_\_\_\_\_\_\_\_**The cells in your body do very different jobs and therefore need to be different**

**to function properly.**

(2 marks)

4. a) **List** three specialised animal cells \_\_\_ **muscle, nerve, blood, fat,**

(3 marks)

1. **Name** three types of microscopes \_\_\_\_\_ **light, electron, stereo, monocular, binocular**

(3 marks)

1. **List** two organs in the digestive system \_\_\_ **liver, stomach, pancreas, intestine (s & l)**

(2 marks)

5. **Justify** the following statement: *Respiration and breathing are not the same thing.*

\_\_\_ **Respiration is the process of releasing energy from cells. Breathing is the process of**

**getting air in and out of the lungs.**

(2 marks)

6. **Explain** how villi help with the process of absorption in the intestine: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_ **They increase the surface area of the intestine. They are very thin to allow**

**absorption.**

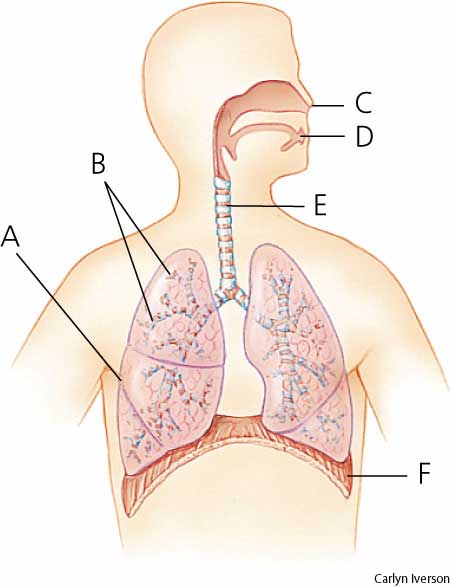
(2 marks)

7. **Classify** the following as mechanical or chemical digestion:

1. teeth chewing food \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **mechanical**
2. saliva in the mouth \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **chemical**
3. stomach wall churning food \_\_\_\_\_\_\_\_\_\_\_\_ **mechanical**
4. pancreatic juice working on carbohydrate \_ **chemical**

(4 marks)

8. **Identify** the parts of the respiratory system:



**Nasal Cavity**

**C**

**Mouth**

**Alveoli**

**Trachea**

**Lungs**

**Diaphragm**

(6 marks)

9. The following table shows the composition of air when it is inhaled and exhaled.

|  |  |  |
| --- | --- | --- |
| **Gas** | **Percentage (%)** | |
| **Inhaled Air** | **Exhaled Air** |
| **Nitrogen** | 78 | 78 |
| **Oxygen** | 21 | 17 |
| **Other gases** | 1 | 1 |
| **Carbon Dioxide** | 0.04 | 4 |

a) Graph the results above as a double column graph. (5 marks)

b) Which gas has the highest percentage when inhaled? \_\_\_\_\_\_ **Nitrogen**

(1 mark)

c) If you breathed in and out using the same air. **Estimate** how many times you could

breath in before all the oxygen was gone

\_\_\_\_\_\_\_\_\_\_\_\_\_ **Any answer from 4 – 6 times**

(1 mark)

d) **Compare** the percentage of nitrogen inhaled with the percentage of oxygen inhaled.

\_\_\_\_\_\_\_\_\_ **Nitrogen 78%, Oxygen 21%. Nitrogen nearly 4 times higher.**

(1 mark)

e) **Calculate** how much the percentage of carbon dioxide increases.

\_\_\_\_\_\_\_\_ by **3.96 or 100 times**

(1 mark)

f) **Explain** why the percentage of nitrogen does not change.

**The human body does not use the nitrogen in the air so it is removed again.**

(2 mark)

10. **Calculate** the following:

|  |  |  |
| --- | --- | --- |
| Ocular lens | Objective lens | **Total magnification** |
| x4 | x10 | **40x** |
| x10 | x100 | **1000x** |
| x4 | x40 | **160x** |
| x10 | x10 | **100x** |

(4 marks)

11. **Define** the following:

i) Nerve cell \_\_\_\_\_\_\_\_\_ **a cell that carries information from the brain.**

ii) Specialised cells \_\_\_\_\_\_\_\_ **cells that have a special job to do in the body.**

(2 marks)