Question 38 (a)

Tissue=a group of cells working together to perform a particular function.

(1 mark)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Tissue type | Description | Example |
| Connective | Has a matrix | Bone, cartilage or blood |
| Nervous | Caries electrochemical nerve impulse  s(messages) | Sensory neurons  etc |
| Epithelial | Lines organs and glands | Lining of gut |
| Muscle | Can contract | Skeletal muscle  Or c  Cardiac muscle  Or  Smooth muscle |
| Mark | 4 | 4 | 4 |

(b)

Normal process

|  |  |
| --- | --- |
| Inspiration | |
| Diaphragm contracts an pulls down | 1 |
| Intercostals muscles  Cause rib cage to move up and out | 1 |
| Elastic tissue of lungs expands | 1 |
| Volume inside lungs increases | 1 |
| Expiration | |
| Diaphragm relaxes and moves up | 1 |
| Intercostals muscles relax and rib cage moves down and in | 1 |
| Elastic tissue of lungs contracts | 1 |
| Volume inside lungs decreases | 1 |
| Maximum 6 | |

The sucking wound will allow air to enter and leave the lungs preventing a difference in pressure needed for air to be moved into an out of the lungs.

(1 mark)

Question 39 (a)

**Question 39 (20 marks)**

A chef has accidentally cut herself with a knife. The chef is calm, as she believes she has cut a vein and not an artery.

1. Explain two observations the chef could make to determine if she has cut a vein or an artery and describe the sequence of events that would occur that would eventually lead to the development of a dry clot and the formation of a scab.

* Vein - the blood flows slowly out of the wound / Artery- blood squirting out rhythmically, in time with her heart beat. (1 mark)
* Vein - the blood is dark red or purplish / Artery blood is bright red (1 mark)
* Muscles in the walls of the ruptured vessels contract (1 mark)
* Platelets/thrombocytes start to stick to the rough surface of the damaged

Vessel (1 mark)

* Sticking platelets attract others to the site, creating a plug (1 mark)
* Platelets release vasoconstrictors constricting damaged vessels. (1mark)
* Clotting factors in the blood plasma create threads of insoluble protein (1 mark)
* The threads form a meshwork that traps blood cells, platelets and plasma (1 mark) which is known as a clot.
* The threads stick to the damaged blood vessels and hold the clot in position (1 mark).
* As time passes, the threads contract and pull the edges of the damaged vessels together (1 mark)
* As contraction occurs, serum is squeezed out, causing the clot to dry. (1 mark)
* The dry clot is now a scab (1 mark)

(12 marks)

(b)

|  |  |  |
| --- | --- | --- |
| Location | Right atrium | 1 mark |
| Function | Natural pacemaker | 1 |
|  | Bundle of nerve cells | 1 |
|  | Spontaneously generates an electrical impulse | 1 |
|  | Causes heart to contract | 1 |
|  | Sends impulse via the atrioventricular node so that atria contract before ventricles | 1 |
|  | Can be sped up by sympathetic system | 1 |
|  | Can be slowed by parasympathetic system. | 1 |
|  |  |  |
| Maximum | | 8 |

Question 40

(a)

|  |  |  |
| --- | --- | --- |
| Sources | Dairy, untrimmed meat, plant oils etc any two | 2 |
| Function | Energy storage  Making cell membranes  Padding  Insulation  Any 2 | 2 |

(b)

|  |  |  |
| --- | --- | --- |
| Mechanical | Chewing in mouth  Churning in stomach | 1  1 |
|  | Bile  Emulsifies lipids  Increasing the surface area available for enzymes to work on. | 1  1  1  1 |
| Chemical | Lipase from  Pancreatic juice  And intestinal juice  Break the lipids down into fatty acids and glycerol | 1  1  1  1 |
| Maximum | | 8 |

(c)

|  |  |
| --- | --- |
| Long so large surface area | 1 |
| Villi increase surface area | 1 |
| Microvillus increase surface area | 1 |
| Microvillus and villi have an extensive network of capillaries able to absorb products of digestion | 1 |
| Blood quickly brought to and taken away from the circulatory system | 1 |

(d)