1. Briefly explain the homeostatic function of the following:

   (a) skin thermoreceptors: ____________________________________________________________  
                                                                                       (2 marks)

   (b) thermoreceptors of the hypothalamus: ________________________________________________  
                                                                                       (2 marks)

   (c) chemoreceptors in the pancreas: ____________________________________________________  
                                                                                       (2 marks)

   (Total: 6 marks)

2. (a) Complete the following table about blood sugar level control:

<table>
<thead>
<tr>
<th>Hormone</th>
<th>Stimulus</th>
<th>Result</th>
<th>Mechanism used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulin</td>
<td>Glucose is stored</td>
<td>i. increasing the rate at which glucose is stored into glycogen in the liver and muscles</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ii.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>iii.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Decrease in glucose level in the blood</td>
<td>i.</td>
<td></td>
</tr>
</tbody>
</table>

   (6 marks)
(b) (i) Name of the organ responsible for the control blood glucose concentration.

__________________________________________________________________________

(ii) Name of the groups of specialised cells responsible for the production of hormones that control blood glucose levels

__________________________________________________________________________  

(2 marks)

(c) Briefly describe what is meant by the term negative feedback.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________  

(3 marks)

(Total: 11 marks)

3. (a) Briefly explain why after heavy exercise a person (i) feels hot, (ii) appears red in the face and (iii) sweats profusely.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

(3 marks)

(b) Briefly explain why in cold weather we (i) shiver, (ii) appear pale in the face and (iii) get goose pimples (i.e. our body hair stands on end).

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

(3 marks)

(Total: 6 marks)
4. The diagram below shows a transverse section through the spinal cord showing a reflex arc.

(a) Name the structures labelled A, B and C:

A: __________________________  B: __________________________  C: __________________________

(b) What gives the white matter its white appearance?

____________________________________________________________________________________

(1 mark)

(c) What is the grey matter composed of?

____________________________________________________________________________________

(1 mark)

(d) Draw arrows on the diagram to show how a nerve impulse travels along the reflex arc.

(1 mark)

(e) What is a reflex action and why is it important?

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

(2 marks)

(f) Briefly outline the function of the cerebro-spinal fluid.

____________________________________________________________________________________

____________________________________________________________________________________

(2 marks)

(Total: 10 marks)
5. Fill in the following table with the most appropriate term from the list below. *(Each term can be used once, more than once or none at all).*

<table>
<thead>
<tr>
<th>synapse</th>
<th>medulla oblongata</th>
<th>motor area</th>
<th>ganglion</th>
</tr>
</thead>
<tbody>
<tr>
<td>cerebellum</td>
<td>hypothalamus</td>
<td>sensory area</td>
<td>dendrite</td>
</tr>
<tr>
<td>cerebrum</td>
<td>association areas</td>
<td>myelin sheath</td>
<td>cell body</td>
</tr>
</tbody>
</table>

| acts as an insulating layer around axons and increases the speed at which nerve impulses travel. | main control center for the autonomic nervous system. | the branching process of a neurone that conducts impulses toward the cell. | a junction that allows a nerve impulse to travel from one neurone to another. | connects the spinal cord with the rest of the brain. It is the automatic control centre for heartbeat, breathing, swallowing, coughing and sneezing. | a mass of neurone cell bodies. | controls balance, co-ordination of movements and timing. | largest part of the brain, consisting of two hemispheres and serving to control voluntary movements and coordinate mental actions. | function to produce a meaningful perceptual experience of the stimuli received. | produces hormones that control the hormonal secretions of the pituitary gland. |

*(Total: 10 marks)*

6. (a) Briefly distinguish between the sympathetic nervous system (SNS) and parasympathetic nervous system (PSNS).

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

*(4 marks)*
(b) From the following list of body functions underline the functions that are controlled by the parasympathetic nervous system (PSNS).

- increase heart beat rate
- tear production
- dilation of pupil
- movement of faeces along intestines
- saliva production for digestion
- urination
- dilation of bronchioles

(4 marks)
(Total: 8 marks)

7. (a) Complete the following table by giving the function of each structure listed.

<table>
<thead>
<tr>
<th>Structure</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye lashes</td>
<td></td>
</tr>
<tr>
<td>Choroid</td>
<td></td>
</tr>
<tr>
<td>Sclerotic</td>
<td></td>
</tr>
<tr>
<td>Iris</td>
<td></td>
</tr>
<tr>
<td>Retina</td>
<td></td>
</tr>
<tr>
<td>Ciliary body</td>
<td></td>
</tr>
<tr>
<td>Conjunctiva</td>
<td></td>
</tr>
</tbody>
</table>

(7 marks)

(b) Briefly explain the changes that occur in the eye in bright light.

_____________________________________________________________________

_____________________________________________________________________

(2 marks)
8. (a) Complete the following table by giving the function of each structure listed.

<table>
<thead>
<tr>
<th>Pinna</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditory ossicles</td>
<td></td>
</tr>
<tr>
<td>Cochlea</td>
<td></td>
</tr>
<tr>
<td>Semicircular canals</td>
<td></td>
</tr>
<tr>
<td>Eardrum</td>
<td></td>
</tr>
<tr>
<td>Eustachian Tube</td>
<td></td>
</tr>
</tbody>
</table>

(b) What is the function of the ear wax?

(c) Briefly outline how hearing occurs.
9. The diagram below shows the structure of the male reproductive organ.

(a) Name and state the function of the structures marked with the following letters:

A: __________________________ : __________________________

B: __________________________ : __________________________

C: __________________________ : __________________________

D: __________________________ : __________________________

E: __________________________ : __________________________

(10 marks)
(b) Briefly outline the collective function of the Cowper’s gland, prostate gland and the seminal vesicle.

(2 marks)
(Total: 12 marks)

10. The diagram below shows the structure of the female reproductive organ.

(a) Name and state the function of the structures marked with the following letters:

A: ______________________ : ______________________

B: ______________________ : ______________________

C: ______________________ : ______________________

D: ______________________ : ______________________

E: ______________________ : ______________________

F: ______________________ : ______________________
(10 marks)

(b) On the diagram provided:

(i) Put an X to mark the site where fertilization occurs.

(ii) Put a Y to mark the site where FSH (Follicle Stimulating Hormone) acts.

(iii) Put a Z to mark the site that secretes progesterone.

(3 marks)

(Total: 13 marks)