



UNIVERSITY OF GHANA  
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ENGINEERING, SECOND SEMESTER EXAMINATIONS: 2014/2015

BMEN 302: HUMAN BIOLOGY II (PHYSIOLOGY) (2 credits)

**TIME ALLOWED: TWO HOURS**

Index #: \_\_\_\_\_

Signature: \_\_\_\_\_

**INSTRUCTIONS:**

**SECTION A: 20 MARKS: USE THESE WORDS/PHRASES LISTED BELOW TO FILL IN THE BLANKS PROVIDED IN QUESTIONS 1 THROUGH 3 ON THE QUESTION PAPER. FASTEN THE QUESTION PAPER IN THE ANSWER BOOKLET AT THE END OF THE EXAMINATION.**

Filtration  
Brain  
Pons  
Liver  
Diencephalon

Cerebrum  
Water  
Cerebellum  
Midbrain  
Medulla Oblongata

1. A lack of blood glucose would have the greatest effect on .....but during exercise there is rather an increase in blood flow to..... **[4 marks]**

2. This table pertains to function of the parts of the brain. Fill in the correct word or phrases.

	Control thought process, intelligence, memory, sensations and complex motor function.
	Relays and process sensory information, control of emotions, autonomic functions and hormone production.
	Process auditory and visual data, and generate involuntary motor response.
	A tract and relay center which also assist in somatic and visceral motor control,
	Responsible for voluntary and involuntary motor activities based on memory and sensory input.
	Relays sensory information to the rest of the brain, regulates autonomic function, including heart rate and respiration.

**[12 marks]**

3. The main function of the Urinary System is.....of blood plasma to remove excess and unwanted substances including..... **[4 marks]**

**SECTION B: 80 MARKS. ANSWER ALL QUESTIONS IN THE ANSWER BOOKLET PROVIDED.**

1. (a) How does sweating help to maintain normal body temperature? **[10 marks]**  
(b) Explain how a blood clot forms and how it helps in bleed prevention. **[10 marks]**
2. (a) Smoking irritates the trachea and bronchi causing mucus to build up and paralyses cilia. How do these changes affect the lungs? **[4 marks]**  
(b) Name three of the chemicals in the body fluid and state their transport mechanism. **[6 marks]**
3. (a) Distinguish between hyperventilation and hyperpnea. **[5 marks]**  
(b) Briefly describe how respiration is controlled by the respiratory center **[5 marks]**
4. (a) What three digestive enzymes are essential for breaking food in the stomach? Indicate the specific roles of these enzymes. **[6 marks]**  
(b) List the laboratory techniques used to analyze red blood cell physiology. Explain how they work. **[14 marks]**
5. (a) A person loses 30-40% of blood, what remedy is recommended for such a person? **[2 marks]**  
(b) What happens to a sickle cell patient's erythrocytes when they are exposed to low Oxygen? **[2marks]**  
(c) Anaemia is the reduction in red cell mass in the blood or Hb content of the blood resulting in a decrease in O<sub>2</sub> carrying capacity of the blood. List the causes of anaemia. **[6 marks]**
6. How does exercise affect cardiovascular function? **[10 marks]**