NAME: ……..... SIGNATURE: …….

S.6 BIOLOGY ASSESSMENT TEST

TIME: 120 MINUTES TOPIC: EXCRETION & HOMEOSTASIS

INSTRUCTIONS: Attempt all questions.

1. (a) What is meant by the following homeostatic mechanisms;

(i) Negative feedback mechanism ***(03 marks)***

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(ii) Positive feedback mechanism ***(03 marks)***

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(b). Give two characteristics of the following features of an efficient homeostatic system. ***(02 marks)***

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(c). What is the need for Homeostasis? ***(03 marks)***

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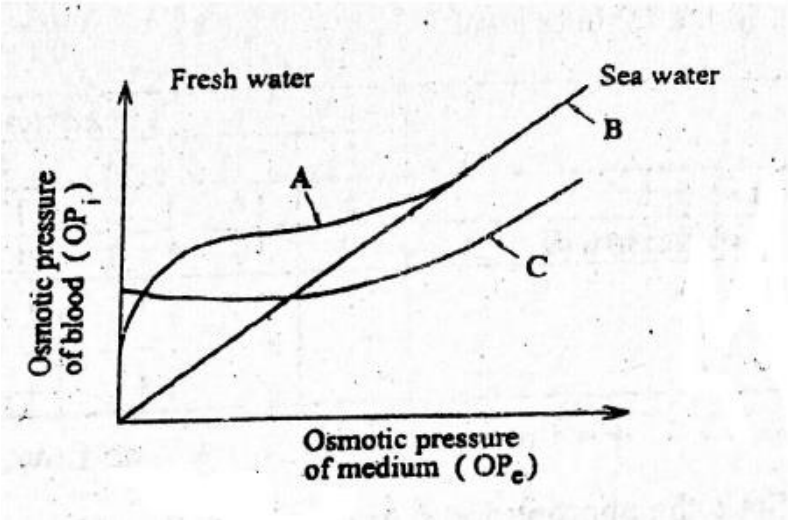
2. Figure below shows the relationships between the osmotic pressure of blood and external medium of three animals A, B and C.



(a) Suggest the likely habitat for each animal, give a reason in each case. ***(06 marks)***

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(b) Explain the osmoregulatory problems of each of the following animals.

(i) Fresh water teleosts. ***(02 marks)***

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(ii) Marine teleosts. ***(02 marks)***

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3. (a) (i) Define Osmoregulation ***(01 mark)***

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(ii). What osmoregulatory problems are faced by small rodents like the Kangaroo rat living in dry environments. ***(02 marks)***

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(b)(i) Mention three physiological adaptations of arid rodents to scarcity of water. ***(03 marks)***

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(ii). State one life style in the Kangaroo rat to avoid extreme diurnal heat. ***(01 mark)***

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(c). Explain why marine bony fish drink vast quantities of water unlike fresh water bony fish. ***(03 marks)***

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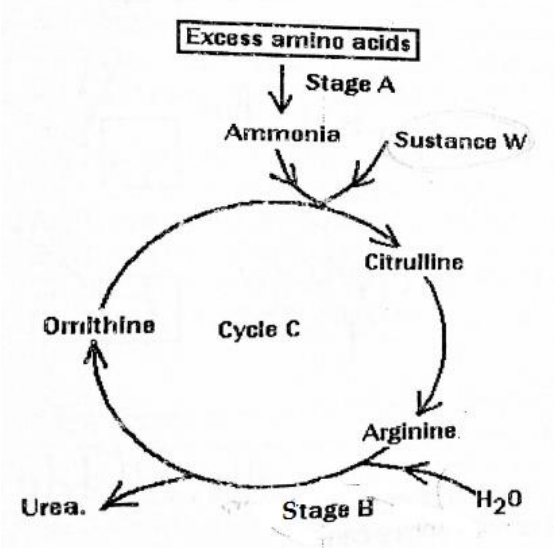
4. The figure below shows how excess amino acids are converted to urea in the liver. Study it carefully and use it to answer the question



(a) Name substances, cycles and stage labeled in the reaction shown above. ***(02 marks)***

Stage A……..……... Stage B……..……..……..

Cycle C ……..…….. Substance W ……

(b) Name the blood vessel in which the urea that is formed leaves the liver and briefly outline how urea is excreted from the body. ***(03 marks)***

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(c) Aquatic animals are able to excrete ammonia into the water surrounding them. Suggest why this is advantageous compared to the excretion of urea. ***(03 marks)***

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(d) Another metabolic reaction which takes place in the liver and which involves amino acid is transamination. Describe Transamination and explain why it takes place. ***(03 marks)***

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5. Figure 4 shows the variation of metabolic rate with environmental temperature in a mammal.

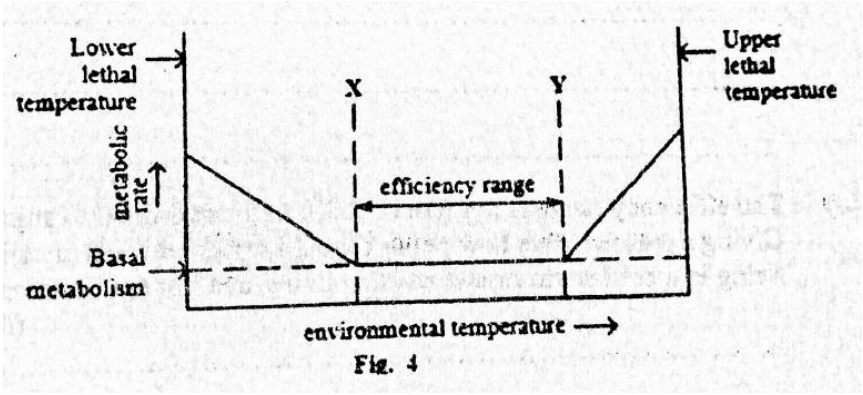

Fig. 4

(a) What do the temperature X and Y represent? (01 mark)

(i) X ……

(ii) Y ……

(b) What does the efficiency range mean? (02 marks)

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(c) Explain the variation of metabolic rate with environmental temperature outside the efficiency range. (05 marks)

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(d) The efficiency range is not fixed but differs from animal to animal. Giving a reason, state how point X would differ between an animal living in a cold environment and that living in a hot environment. (02 marks)

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SECTION B

6. ***(a)***Describe adaptations of the liver to its functions ***(08 marks)***

(b)Describe the homeostatic role of the liver in blood sugar regulation. ***(12 marks)***

7. (a)What is meant by the term Ultra-filtration? ***(04 marks)***

(b) Describe how intercellular fluid is formed ***(16 marks)***

END!!!

"Don´t ask what the world needs. Ask what makes you come alive, and go do it."