

P 530/2  
Biology Theory  
8<sup>th</sup> June, 2012  
2½ hours

# EXTERNAL BIOLOGY

Mock Examinations June, 2012

Senior Six

Biology Theory P530/2

Time: 2½ hours

## Instructions:

- Answer question **one** in Section **A** plus **three** others from Section **B**.
- You are advised to read the questions carefully, organize your answers and present them precisely and logically, illustrating with well labeled diagrams wherever necessary.

## SECTION A: (40 Marks)

1 a) The table below shows the difference in percentage saturation of blood with oxygen between a pregnant woman and that of a foetus developing in her uterus at varying partial pressures of oxygen

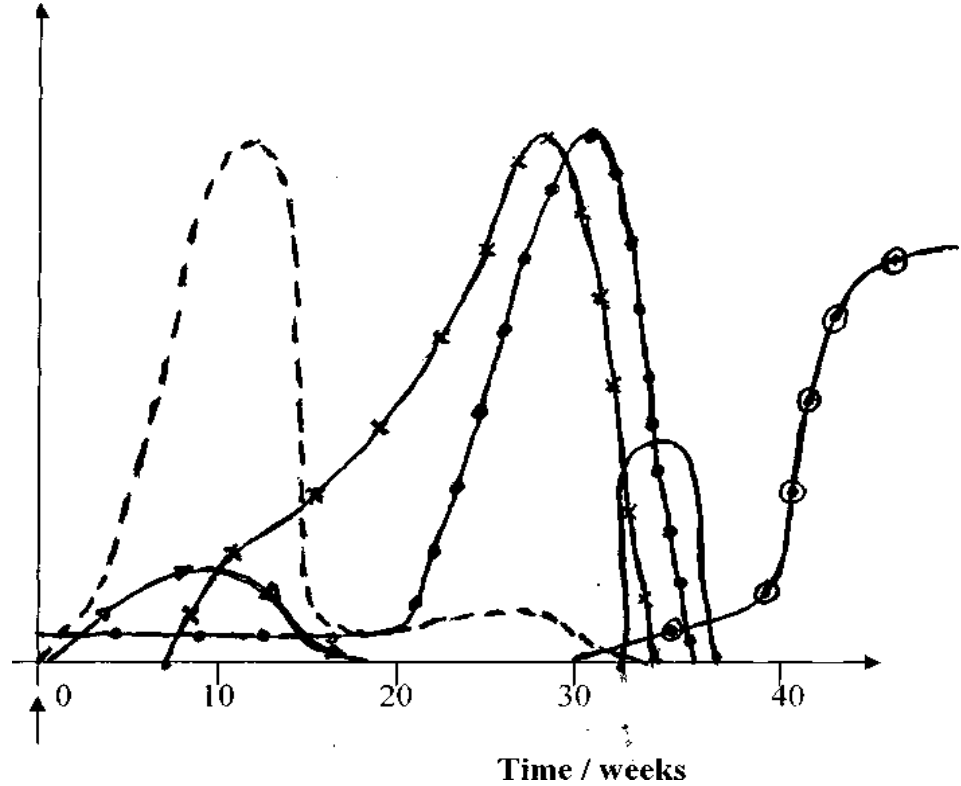
Partial pressures of Oxygen / KNM <sup>-2</sup>	% saturation of blood with oxygen	
	Mother	Foetus
1.3	8	10
2.7	20	30
3.9	40	60
5.3	65	77
6.6	77	85
8.0	84	90
9.3	90	92
10.6	92	92

- Plot the results in a suitable graphical form (08 marks)
- Outline the differences between percentage saturation of blood for the mother and that of the foetus (03 marks)
- Explain the physiological significance of the position of the foetal curve (07 marks)

iv) Suggest why the two curves plotted in a (i) are sigmoid / S-shaped? (04 marks)

b) The figure below shows the changes in the level of some reproductive hormones immediately after conception

Relative concentration of hormones in maternal blood.



Conception

**Key to hormones**

- "Human chorionic Gonadotrophin -
- Oxytocin
- ▶—▶— Prolactin
- ×—×— Luteal progesterone
- Placental progesterone
- Oestrogen

i) Compare the level of luteal and placental progesterone (03 marks)

ii) Explain the variation in the level of ;

- HCG (07 marks)
- Oestrogen (06 marks)

iii) What are the effects of hormones Oxytocin and Prolactin towards the end of pregnancy?

*(03marks)*

**SECTION B (60 marks)**

2a) Describe the structure of a mature ovule

*(5 marks)*

b) Describe the development of a mature ovule.

*(11marks)*

c) What are the advantages of self-pollination?

*(4 marks)*

3a) Describe the mechanisms of increase in the speed of impulse transmission

*(12 marks)*

b) Describe the structure of the rod of the mammalian eye

*(8 marks)*

4a) Show how the variation of the glomeruli in teleost fish reflects the level of water retention in their bodies in relation to their habitat

*(12 marks)*

b) Describe the osmoregulatory survival of the migratory

*(8 marks)*

5a) In what ways may predator – prey relationships benefit both the predator and prey species?

*(08 marks)*

b) Describe how the prey individuals can avoid predation

*(08 marks)*

c) Predators are sometimes introduced in control areas to manage the populations of the pests. Suggest some precautions taken before the predator is introduced in the control area.

*(04 marks)*

6a) Define the term **osmotic pressure**

*(2 marks)*

b) Draw a sketch graph to show the variation of pressure potential with osmotic pressure of a plant cell.

*(2 marks)*

c) Explain the graph in 5b, above

*(9 marks)*

d) Describe the structure of eukaryotic nucleus

*(7 marks)*

**END**

