

P 530/2
Biology Theory
8th 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

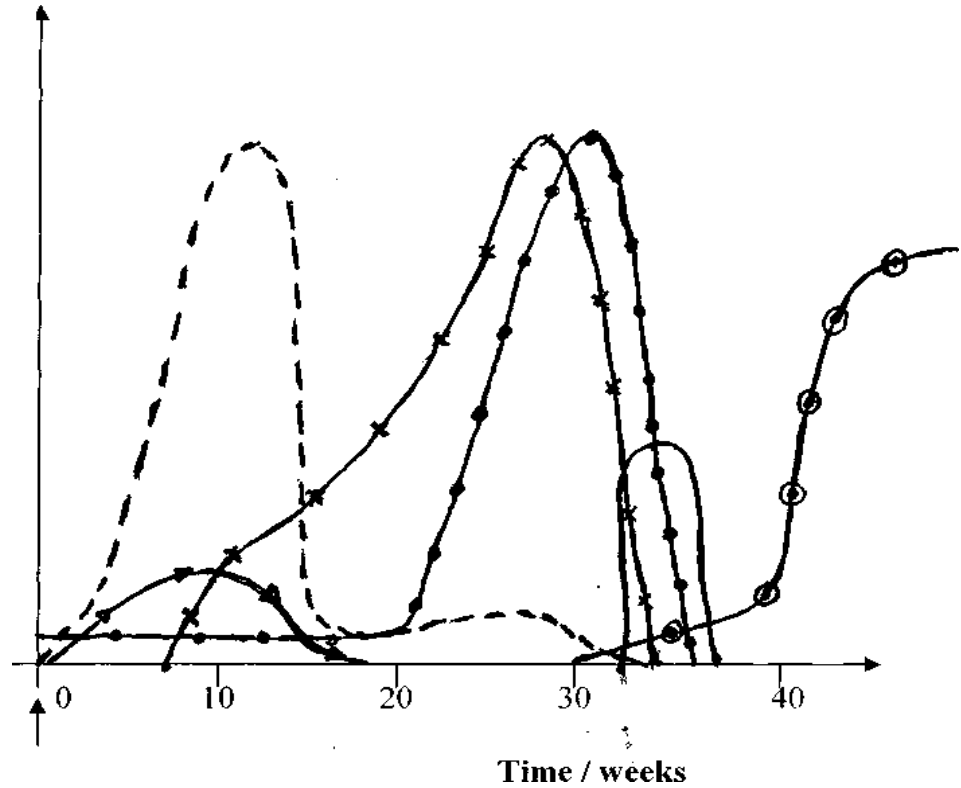
Partial pressures of Oxygen / KNM ⁻²	% saturation of blood with oxygen	
	Mother	Foetus
1.3	8	10
2.7	20	30
3.9	40	60
5.3	65	77
6.6	77	85
8.0	84	90
9.3	90	92
10.6	92	92

- 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

