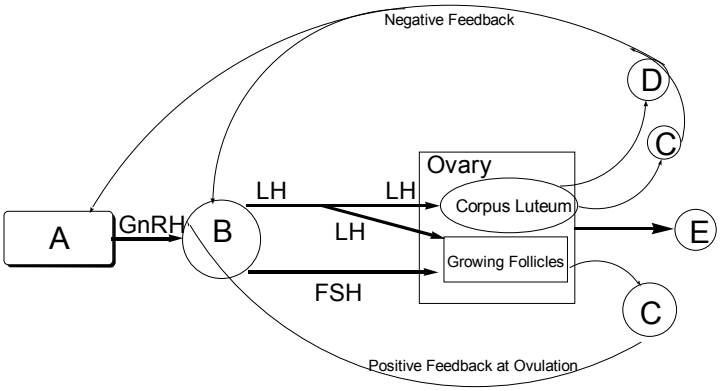
ZOO 401
(Comparative Vertebrates Anatomy and Embryology)
SECTION II: EMBRYOLOGY

Part I: Multiple Choice Questions (MCQs) : *All right answers in this part carry a single mark and a wrong answer is penalized by a deduction of minus a quarter (1/4) of a mark*

Use the following diagram for <u>Questions 1-5</u>. which illustrates the regulation of the process of oogenesis; Select the letter corresponding to the right description.



(1) A hormone that plays a major role during pregnancy

(2) A hormone responsible for the process of ovulation and the development of secondary sexual characteristics in a female.

(3) The part of the brain responsible for the regulation of body's automatic functions and hormonal system.

(4) The endocrine gland that act as a control centre.

(5) The process in which a mature egg is released from the ovary in the 28 day cycle between puberty and menopause.

Use the following instructions to answer <u>Questions 6-11</u>: Select letter

A if 1, 2 and 3 are correct
B if 1 and 3 are correct
C if 2 and 4 are correct
D if all are correct
E if none is correct

(6) Embryonic development involves (1) cleavage (2) Patterning (3) Differentiation (4) Growth.

(7) Gametogenesis involves (1) Fertilization (2) Spermatogenesis (3) Neurogenesis (4) Oogenesis

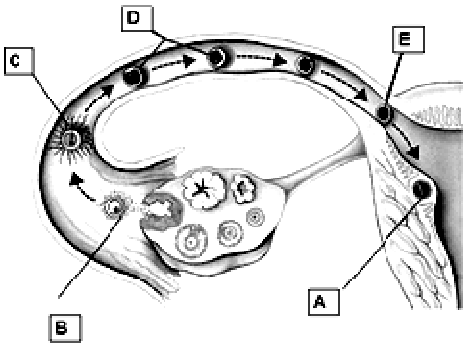
(8) The specialization of spermatozoa is designed to (1) get the sperm to the egg (2) Oogenesis (3) Fertilizing the egg (4) transformed into sperm factory

(9) The following hormones plays a role in the regulation of spermatogenesis (1) Testosterone (2) LH/FSH (3) GnRH (4) Progesterone.

(10) The major events of nuclear modification during spermiogenesis are (1) Chromosome condensation (2) Chromatin condensation (3) Physiological changes (4) Morphological changes

(11) Inhibin (1) is released from Sertoli cells into the blood stream (2) is released by the kidney (3) suppresses the secretion of FSH from the pituitary (3) inhibits sexual pleasure

Use the following diagram for <u>Questions 12-15</u>. which illustrates some stages in human embryonic development; Select the letter corresponding to the labelled event



(12) Ovulation

(13) Implantation

(14) Cleavage

(15) Fertilization of the ovum

Part II: Essay Questions

Answer all the two questions in this Part using complete sentences.

(1) Describe what happens from the time a frog's egg is fertilized until the time a tadpole is hatched. (7 marks)

(2) Selector genes play fundamental roles during the finishing touches of embryonic development; using specific examples, explain how specific selector genes function in the formation of :
   (a) Wings in *Drosophila*
   (b) Legs in *Drosophila*
   (c) Mammalian skeleton
   (d) Animal eyes (2 x 2 x 2 x 2 = 8 marks)