

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
SCHOOL OF ANATOMICAL SCIENCES

B.Sc. II: HUMAN AND COMPARATIVE BIOLOGY (ANAT 2021)

EVOLUTION, EMBRYOLOGY and HISTOLOGY
BLOCK 2 TEST: 19 MAY 2017

TIME: 1.5 HOURS

TOTAL MARKS: 60

Instructions:

- Answer **ALL** questions. Note some questions have multiple parts.
- Relevant and correctly labelled diagrams may be used to enhance your answers
- **ONLY** scripts written in blue or black ink will be marked. Pencil may be used **ONLY** for drawings

QUESTION 1

- a. Briefly describe the main differences between endochondral and intramembranous ossification. (4 marks)
 - b. List and give the main function of all the cell types associated with bone tissue. (5 marks)
- [Total 9 marks]

QUESTION 2

Draw a fully labelled diagram illustrating the histological structure of an osteon/Haversian system of compact bone. (3 marks)

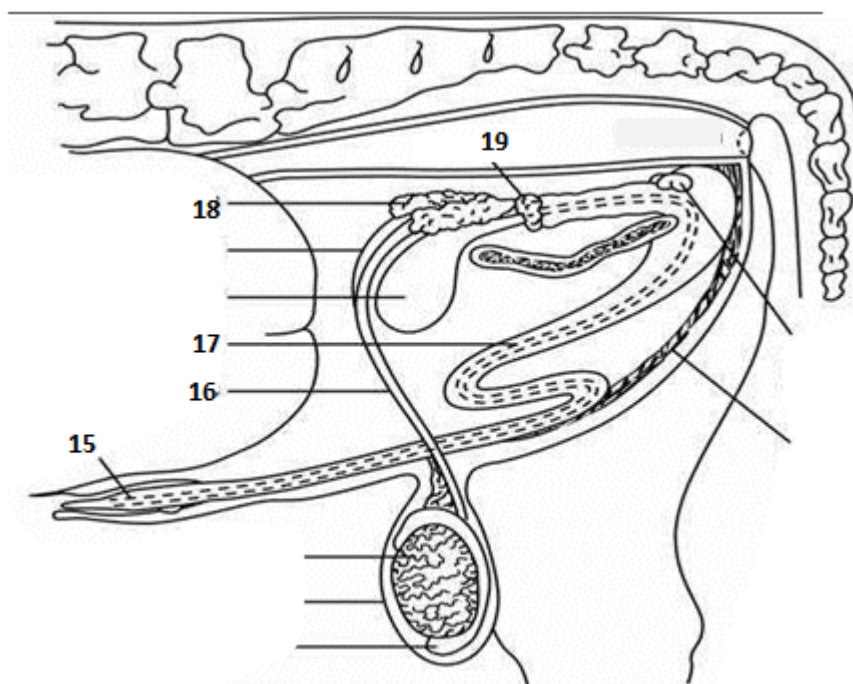
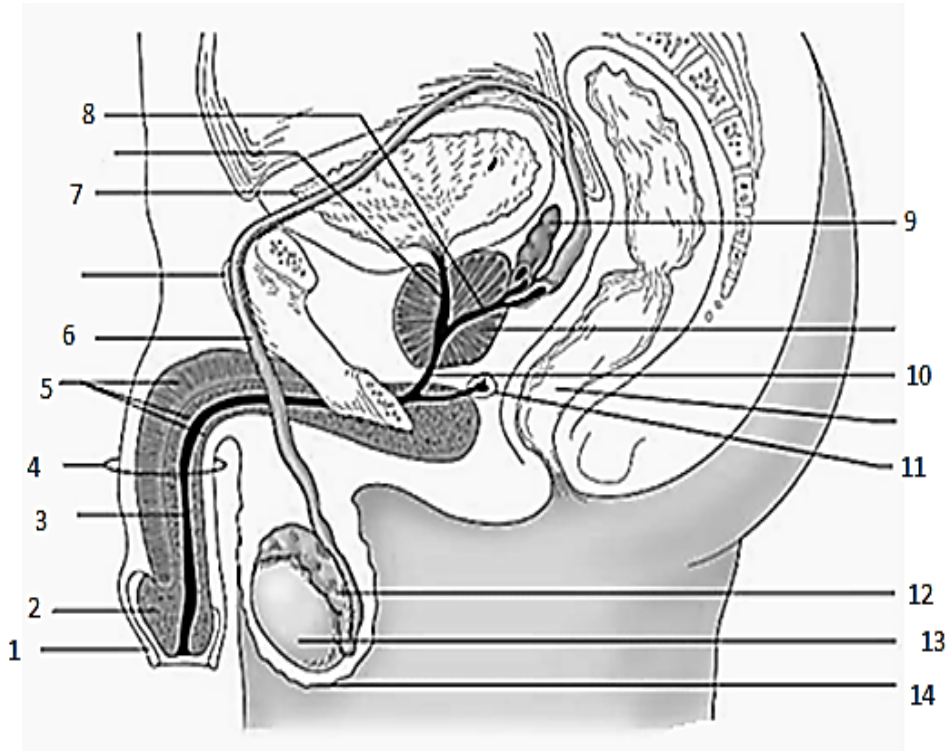
QUESTION 3

- a. Describe the antigen-independent development of T lymphocytes in the thymus. (4 marks)
 - b. Briefly describe the histological structure of a lymph node. (4 marks)
 - c. Briefly describe the immune response to infection. (4 marks)
- [Total 12 marks]

QUESTION 4

Provide labels for the two diagrams below (1-19)

(9.5 marks)



QUESTION 5

In the male reproductive gland, the prostate is a very important structure. Provide its anatomical location and functions. **(2.5 marks)**

QUESTION 6

The prepuce (*foreskin*) is part of male reproductive system. Briefly describe the prepuce and the associated glands. **(6 marks)**

QUESTION 7

Describe the events which take place within the uterine secretory phase of the menstrual cycle and the hormones involved during this phase. **(6 marks)**

QUESTION 8

- a. Define the window of implantation. **(1 mark)**
- b. Referring to the implantation process in humans, discuss its duration, the specific days and the hormonal influences it entails. The origin of the hormones which influence this specific period should be included in the answer. **(5 marks)**

[Total 6 marks]

QUESTION 9

- a. Identify the structure shown in the diagram below. **(0.5 mark)**
- b. Redraw this figure into your book and provide detailed labelling. **(5 marks)**
- c. Identify the phase of the ovary during which this structure is functional. **(0.5mark)**

(0.5mark)
[Total 6 marks]

