2 Hours		02 / 11 / 2017		DEPARTMENT		**EXAMS OFFICE USE ONLY**

University of the Witwatersrand, Johannesburg

Course or topic No(s)		ANAT 2033
Course or topic name(s) Paper Number & title		ANATOMY FOR PHYSIOTHERAPISTS AND OCCUPATIONAL THERAPISTS FINAL EXAMINATION
Examination to be Held during month of		NOVEMBER 2017
Year of Study (Arts & Science leave blank)		SECOND
Degree/Diplomas for which This course is prescribed		BPhysio AND BOccTh II (ANAT 2033)
Faculty/ies presenting Candidates		FACULTY OF HEALTH SCIENCES
Internal examiner(s) And telephone extension Number(s)		PROF E MBAJIORGU (011 – 717 – 2018) DR D BRITS (011 – 717 – 2304) **(COURSE COORDINATORS)**
External examiner(s)		PROF G LEBONA and DR P ACKERMANN
Special materials required (graph/music/drawing paper) maps, diagrams, tables, computer cards, etc.		
Time allowance		Course No. ANAT 2033 Hours TWO
Instructions to candidates (Examiners may wish to use this space to indicate, inter alia, the contribution made by this examination or test towards the year mark, if appropriate)		SEE DETAILED INSTRUCTIONS ON THE FOLLOWING PAGE – PAGE TWO

Internal Examiners or Heads of Department are requested to sign the declaration overleaf.

SCHOOL OF ANATOMICAL SCIENCES

ANATOMY FOR BPhysio II and BOccTh II (ANAT 2033)
FINAL EXAM: 2nd NOVEMBER 2017

TIME: 2 Hours **TOTAL MARKS: 100**

TOTAL NUMBER OF QUESTIONS = 20 MCQ AND 14 SHORT WRITTEN QUESTIONS

Instructions:

1. Answer **all** questions.
2. Write your Anatomy number on each answer book and MCQ sheet.

SECTION A: MULTIPLE CHOICE QUESTIONS (MCQs) 40 MARKS

a. Write your name, the degree for which you are registered, your student number, and anatomy test number on the **"Faculty of Health Sciences"** side of the computer sheet.
b. On the **"circles"** side of the computer sheet in the block headed **"student number"** write your student number. Fill **in the circles with a soft HB pencil.**
c. There is one type of MCQ question in this paper:

X-Type: For this type of question there are five (5) options, each must be marked as either **CORRECT or INCORRECT**. For each question, at least one of the options will be correct and one incorrect. **Please note that this type of MCQ carries negative marking.**

d. **DO NOT** use CORRECTION FLUID on your MCQ sheet. You may use an eraser with care.
e. **DO NOT** fold or bend the computer card.
f. The computer sheet **MUST be filled in during the examination time.** NO TIME WILL BE ALLOWED after the end of the examination for filling in the sheet.

SECTION B: SHORT WRITTEN QUESTIONS 60 MARKS

a. Answer all Gross Anatomy questions in the **COLOURED** book and all Histology and Embryology questions in the **WHITE** book.
b. Relevant and correctly labelled diagrams may be used to enhance your answers.
c. **ONLY** scripts written in blue or black ink will be marked. Pencil may be used **ONLY** for drawings.

SECTION A: MULTIPLE CHOICE QUESTIONS 40 MARKS

GROSS ANATOMY 24 MARKS

1. **Regarding the posterior wall of the axilla:**
   a. Latissimus dorsi inserts onto the greater tubercle of the humerus
   b. Subscapularis inserts onto the lesser tubercle of the humerus
   c. Teres major is innervated by the thoracodorsal nerve
   d. Long head of triceps brachii originates from the infraglenoid tubercle on the scapula
   e. Latissimus dorsi extends the forearm at the elbow joint

2. **Regarding the vertebrae:**
   a. Laminae join the vertebral body and the vertebral arch
   b. The spinous process is formed where the pedicles meet
   c. Typical cervical vertebrae possess transverse foramina
   d. The superior articular facets of thoracic vertebrae face medially
   e. Lumbar vertebrae have costal facets on the body

3. **Regarding muscles of the back:**
   a. Superficial muscles serve a respiratory function
   b. Levator scapulae form part of the extrinsic muscles of the back
   c. The rhomboid muscles are classified as intermediate muscles
   d. Deep muscles are innervated by the anterior rami of spinal nerves
   e. Deep muscles are directly related to movements of the vertebral column and head

4. **Anatomical features found at the transverse thoracic plane include:**
   a. The beginning of the arch of the aorta
   b. Origin of the right recurrent laryngeal nerve
   c. The bifurcation of the trachea
   d. Joint between sternum and the second rib (2^{nd} sternocostal joint)
   e. The inferior vena cava penetrates the pericardium to enter the heart

5. **Regarding the mandible:**
   a. It is elevated by the temporalis, masseter and medial pterygoid muscles
   b. It is depressed by gravity and the digastric, geniohyoid and mylohyoid muscles
   c. It is protruded by the temporalis and masseter muscles
   d. It is retracted by geniohyoid, deep part of master and the medial pterygoid muscles
   e. The temporomandibular joint is classified as a modified synovial hinge joint

6. **Projection fibers include the following fiber tracts:**
   a. Corona radiata
   b. Corticospinal tracts
   c. Hippocampal commissure
   d. External capsule
   e. Uncinate fasciculus

7. The following features form part of the temporal lobe:
   a. Calcarine sulcus
   b. Inferior temporal gyrus
   c. Postcentral gyrus
   d. Primary auditory area
   e. Parahippocampal gyrus

8. Relating to the accessory glands of the female reproductive system:
   a. They include the bulbourethral glands
   b. The homologue for the prostate is the paraurethral glands
   c. They include the bulb of the vestibule
   d. They all open into the vestibule
   e. The paraurethral glands are involved in female ejaculation

9. Damage to the common fibular nerve is a common cause of footdrop and would affect which of the following muscles in the leg?
   a. Plantaris
   b. Tibialis anterior
   c. Flexor digitorum longus
   d. Soleus
   e. Extensor hallucis longus

10. Which muscles of the thigh insert onto the medial surface of the proximal tibial shaft to form the pes anserinus?
   a. Semimembranosus
   b. Gracilis
   c. Rectus femoris
   d. Sartorius
   e. Semitendinosus

11. Regarding the abdominal aorta:
   a. Pierces the diaphragm at vertebral level TXII
   b. It terminates as the common iliac arteries
   c. The coeliac trunk supplies the foregut derivatives
   d. The inferior phrenic arteries are visceral branches
   e. The posterior branches supply the hindgut derivatives

12. The stomach:
   a. Consists of the cardia, fundus, body and pylorus
   b. Is considered part of the midgut
   c. Is supplied by branches of the inferior mesenteric artery
   d. Is the most dilated part of the gastrointestinal tract
   e. Is attached to the greater omentum along the lesser curvature

HISTOLOGY & EMBRYOLOGY 16 MARKS

13. With regard to the formation of the interatrial septum:
a. It is formed by the pars muscularis
b. It is formed by septum primum and septum secundum
c. Septum primum functions as a valve
d. Foramen primum closes at birth
e. Foramen ovale forms fossa ovalis

14. With regard to the islets of Langerhans:
a. The alpha cells are the predominant cell type
b. It contains fenestrated capillaries
c. It is the exocrine component of the pancreas
d. The cells are arranged in clumps
e. The delta cells secrete somatostatin

15. With regard to the suprarenal gland:
a. The cortex is responsible for the production of steroids
b. Catecholamines are produced in the medulla
c. Chromaffin cells are found in the zona reticularis
d. The cells of zona fasciculata are arranged in “long, straight cords”
e. Zona glomerulosa cells secrete adrenaline

16. Stratified squamous non-keratinized epithelium:
a. Plays a role in waterproofing
b. Lines the oesophagus
c. Has an apical layer of squamous cells
d. All the cells are attached to the basement membrane
e. Is derived from the endoderm

17. With regard to leukocytes:
a. They consist of five cell types
b. They play a role in the immune response
c. They are only found within blood vessels
d. Agranulocytes have azurophilic granules
e. Granulocytes have a lobed nucleus

18. With regard to muscle tissue:
a. Cardiac muscle has branching fibres
b. The plasma membrane of a muscle cell is called the sarcomere
c. Perimysium supports the bundles of muscle fibres
d. Skeletal muscle fibre has a centrally placed nucleus.
e. Smooth muscle fibre is the main constituent of the myometrium

19. Concerning the respiratory system:
a. Its functions are the conduction and filtration of air
b. The mucosa generally consists of epithelium, lamina propria and muscularis mucosa
c. Respiratory bronchioles contain ciliated columnar epithelium
d. Alveoli are lined by simple squamous epithelium
e. The pneumocyte type I cell is found in the alveolar ducts

20. Regarding the liver:

a. The bile duct is lined by simple cuboidal epithelium
b. The hepatic portal vein carries oxygen rich blood
c. The perisinusoidal Space of Disse surrounds the sinusoids
d. The hepatocyte plates are usually one cell layer thick
e. The hepatic artery carries oxygen poor, nutrient and toxins rich blood

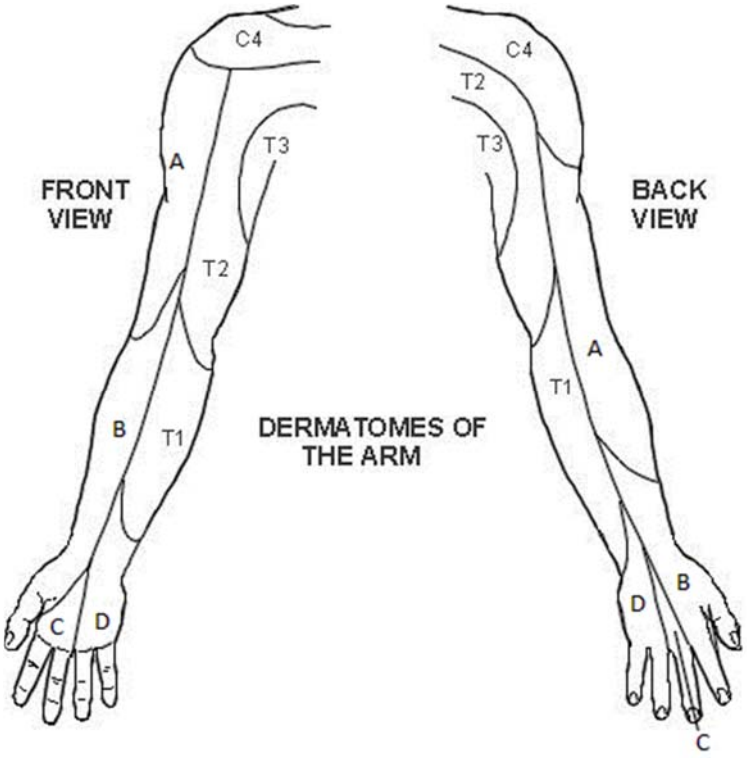
SECTION B: SHORT WRITTEN QUESTIONS 60 MARKS

GROSS ANATOMY 36 MARKS

QUESTION 1

a. Name the branches of the posterior cord of the brachial plexus and provide ONE muscle and/or muscle group innervated by each. **(5 marks)**

b. Regarding the dermatomes of the upper limb, give the specific spinal cord level for regions A, B, C and D. **(2 marks)**



c. What are the lateral and medial borders of the anatomical snuff box? **(1½ marks)**

d. List the three structures associated with the anatomical snuff box. **(1½ marks)**

QUESTION 2

a. List the functions and innervations of the subcostales and transversus thoracis muscles. **(2 marks)**

b. To what bones does transversus thoracis muscle attach? **(1 mark)**

QUESTION 3

Apart from the anterior and posterior longitudinal ligaments, name the ligaments associated with the stability of the vertebral column. **(2 marks)**

QUESTION 4

List the ligaments of the larynx under the following headings: **(3 marks)**

a. Extrinsic ligaments

b. Intrinsic ligaments

QUESTION 5

Copy the table below into your answer book and complete it by listing the four cranial nerves with parasympathetic functions. **(4 marks)**

Cranial nerve name	***Nucleus of origin for parasympathetic fibres***

QUESTION 6

Name six structures that exit the pelvic cavity through the greater sciatic foramen. **(3 marks)**

QUESTION 7

a. List the ligaments of the hip joint. **(2 marks)**
b. Give the function(s) of the deep gluteal muscles. **(1 mark)**
c. Name the muscles of the foot that make up the second layer of the plantar surface. **(1 mark)**
d. List the deep muscles in the posterior compartment of the leg and provide their respective insertions. **(4 marks)**

QUESTION 8

Use a flow diagram to describe the flow of urine from the renal pyramid to the urethra. **(3 marks)**

HISTOLOGY & EMBRYOLOGY 24 MARKS

QUESTION 1
List the cells of the olfactory epithelium and provide their specific function. **(4 marks)**

QUESTION 2
Compare the histological structure, location and function of hyaline cartilage and fibrocartilage by completing the following table: **(4 marks)**

	Hyaline Cartilage	**Fibrocartilage**
Cells		
Predominant fibre type		
Location		
Function		

QUESTION 3
List the three layers of **skin** and describe the main composition of each layer.
(4 marks)

QUESTION 4
Describe the histological structure of the cortex and medulla of the lymph node.
(4 marks)

QUESTION 5
The neural tube is the embryonic structure that ultimately forms the brain and spinal cord. It is formed in a process called neurulation. Briefly describe the layers of the developing neural tube. In your answer indicate the number of layers, position, and content(s) of each layer. **(4 marks)**

QUESTION 6
The pancreas has both exocrine and endocrine components.

a. Briefly describe the histological appearance of the cells found in the secretory units of the exocrine pancreas **(1 mark)**
b. Name the cells found in the endocrine component of the pancreas, and give the main secretion of each of these cells **(3 marks)**