

**G C FOSTER COLLEGE OF PHYSICAL EDUCATION AND SPORT**

**ASSOCIATE DEGREE IN SPORTS MASSAGE AND FITNESS**

**JANUARY 2021 EXAMINATION**

**ANATOMY AND PHYSIOLOGY**

**[SM103SEB]**

**YEAR 1**

**DURATION: 2 ½ HOURS**

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**Instruction: This paper consists of four (4) sections. Section A – Multiple Choice (30 marks), Section B – Labeling (30 marks), Section C – Short Answers (20 marks) and Section D – Essay (10 marks).**

**You are required to answer ALL questions in sections A, B & C and ONLY ONE in section D.**

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**DO NOT TURN OVER UNTIL YOU ARE TOLD TO DO SO**

**SECTION A**  
**MULTIPLE CHOICE**

*This section consists of 30 questions, one (1) mark for each correct answer. You are required to answer ALL questions (30 MARKS)*

1. Which of the following is a function of the cell membrane?
  - a. Powering the cell
  - b. Controlling movement through in and out of the cell
  - c. Having a hydrophobic and hydrophilic lipid bilayer
  - d. Protection of the cell
  
2. The movement of the body where one part of the body remains still and the other part makes a circle is called?
  - a. Circles
  - b. Circumduction
  - c. Abduction
  - d. Rotation
  
3. Which of the following is not an example of positive feedback?
  - a. Blood clotting
  - b. Shivering
  - c. Lactation (Breast Feeding)
  - d. Child birth contractions
  
4. Lysosomes attach to a vesicle in order to digest or breakdown a particle in that has been packaged extracellularly and brought into the cell through a process called
  - a. Exocytosis
  - b. Receptor mediated exocytosis
  - c. Pinocytosis
  - d. Phagocytosis
  
5. Which organelle is a set of extensively folded membranous sacs in which the synthesis of protein occurs?
  - a. Ribosomes
  - b. Mitochondria
  - c. Smooth Endoplasmic Reticulum
  - d. Rough Endoplasmic Reticulum

6. The movement of particles from an area of high concentration to an area of low concentration is referred to as
- Endocytosis
  - Filtration
  - Osmosis
  - Diffusion
7. Water makes up 75% of our body and is vital for urine formation which is filtered out of bloodstream which of the follow is essential to ensure that this occurs
- Filtration Membrane
  - Hydration
  - Bowmans capsule
  - Glomerulus
8. Movement across a semi-permeable membrane from outside of cell into a cell is called
- Osmosis
  - Filtration
  - Endocytosis
  - Diffusion
9. Where is the bowman's capsule located
- Nephron
  - Glomerular Capsule
  - Kidney
  - Bladder
10. Lipids and proteins are collected, modified, packaged and distributed here
- Rough Endoplasmic Reticulum
  - Smooth Endoplasmic Reticulum
  - Vacuole
  - Golgi Body
11. How many moveable bones are located in the spinal column of a regular adult?
- 24
  - 33
  - 34
  - 23

12. The structure of this type of connective tissue is firm but softer than bone contains large quantities of elastin and allows structures to return back to their shape. This type of connective tissue is called
- a. Elastic dense connective tissue
  - b. Blood
  - c. Fibrocartilage
  - d. Elastic Cartilage
13. What type of connective tissue are Ligaments considered to be?
- a. Hyaline Cartilage
  - b. Collagenous connective tissue
  - c. Elastic connective tissue
  - d. Elastic cartilage
14. What two parts are needed for growth in epiphyseal plate?
- a. Osteoblasts, Cartilage
  - b. Osteocytes, Bone
  - c. Osteocytes, Cartilage
  - d. Osteoblasts, Bone
15. The connective tissue that is hard, provides support, strength and protection to the body is?
- a. Cartilage
  - b. Bone
  - c. Blood
  - d. Dense connective tissue
16. The ankle bones are called tarsal bones, what bone type are they?
- a. Long
  - b. Sesamoid
  - c. irregular
  - d. Short
17. In an adult female thoracic cage contains how many bones?
- a. 24
  - b. 22
  - c. 12
  - d. 10

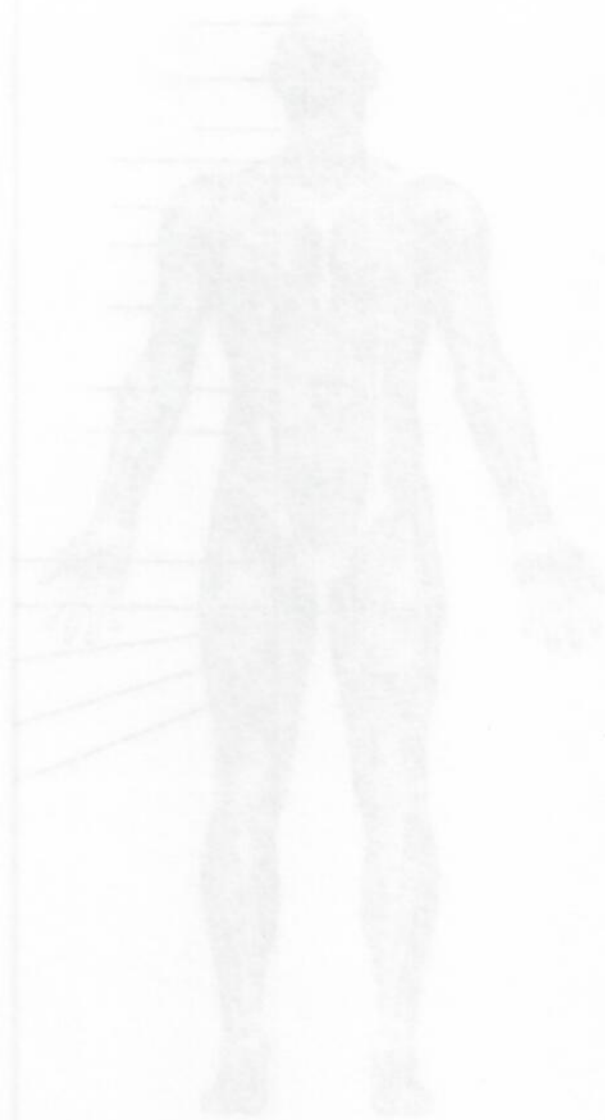


18. A Ball and socket joint is located in the
- Wrist
  - Ankle
  - Hip
  - Knee
19. What muscle is often confused as a hamstring muscle?
- Adductor magnus
  - Gracilis
  - Popliteus
  - biceps brachii
20. Delivery of oxygen from lungs to blood stream and carbon dioxide from blood stream to lungs is called?
- Pulmonary exchange
  - Oxygen transfer
  - Gas exchange
  - Breathing
21. Oxygenated blood is carried to the heart by which of the following structures?
- Aorta
  - Carotid arteries
  - Pulmonary veins
  - Superior vena cava
22. Which of the following allows gas exchange in the lungs?
- Alveoli
  - Bronchi
  - Bronchioles
  - Capillaries
23. The major function of the hamstring is to?
- Flex
  - Extend
  - Rotate
  - Pronate

24. Which muscle in the body is responsible for 75% of the air inhaled?
- The lungs
  - Intercostal Muscles
  - Diaphragm
  - Sternohyoid
25. Where is the largest organ of the body found?
- The Heart
  - The Brain
  - The Skin
  - The Stomach
26. Which system has major differences between male and female?
- Reproductive system
  - Skeletal System
  - Endocrine system
  - Muscular system
27. From the anatomical position, which muscle is seen to be the antagonist muscles in the flexing of the elbow joint?
- Biceps
  - Deltoid
  - Triceps
  - Trapezius
28. Peristalsis does not occur in which part of the Digestive system?
- Mouth
  - Esophagus
  - Stomach
  - Small intestine
29. When an athlete tips on his or her toes, which two muscles is seen as the primary muscles?
- Gastrocnemius & soleus
  - Rectus femoris & Vastus Lateralis
  - Tibialis Anterior & Fibularis Longus
  - Bicep Femoris & Semitendinosus

30. Food moves through the digestive tract through?

- a. Smooth muscle
- b. Peristalsis
- c. Pushing
- d. Swallowing

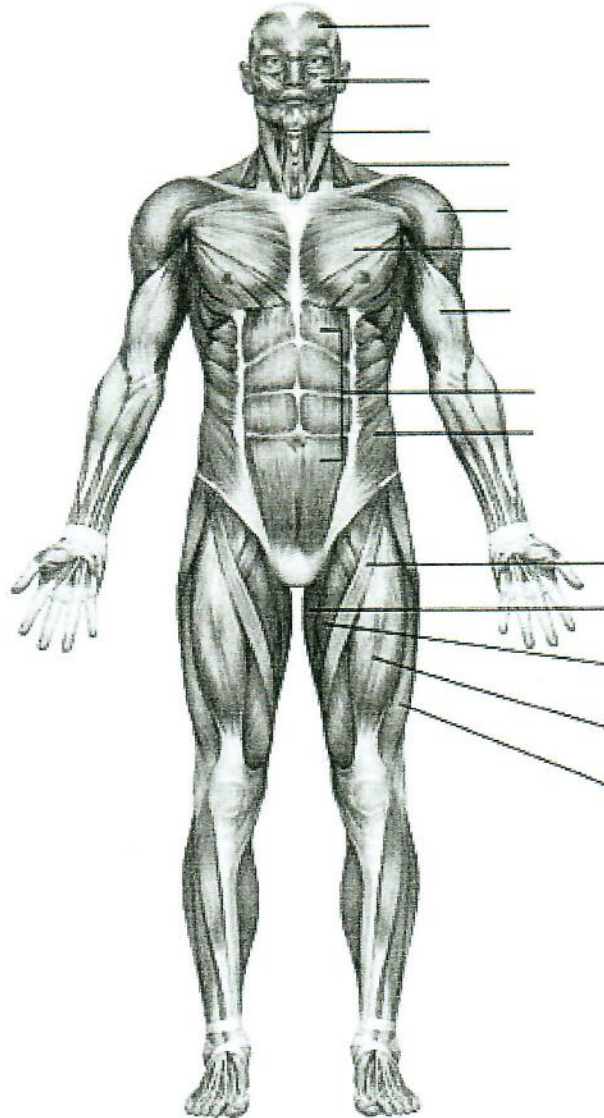


## SECTION B LABELING

*This section consists of 5 diagrams for you to label specific sections. You are required to correctly label as per instruction. (30 MARKS)*

### Diagram 1

Diagram 1 is the major skeletal muscles of a human being. From the list below accurately label ten (10) of these muscles. One mark for each correct answer. (10 MARKS)

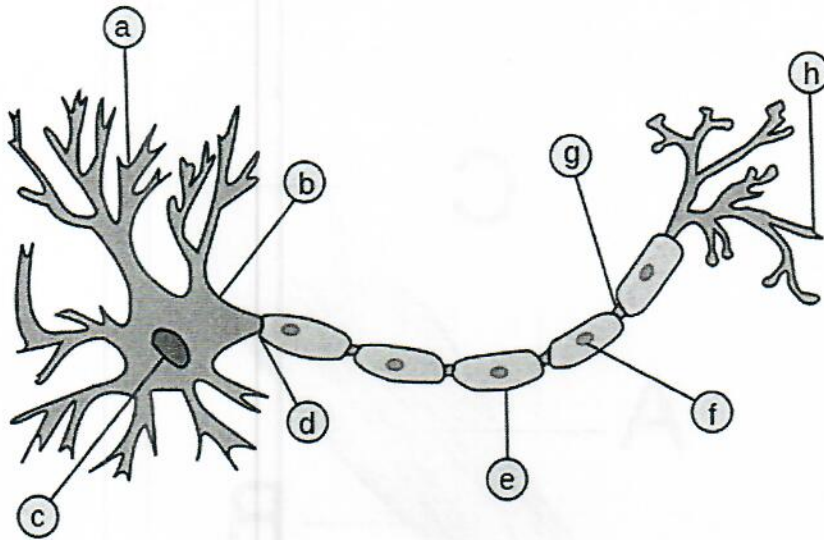


List: ( Latissimus Dorsi, Rectus abdominus, Rectus femoralis, Gracilis, Biceps brachii, Pectoralist major, Deltoid, External Oblique, Sartorius, Vastus Lateralis, Adductor longus, Frontalis, Trapezius, Zygomaticus, Sternocleidomastoid).



**Diagram 2**

Diagram 2 is that of a typical Neuron. From the list given, you are required to select the appropriate response for six (6) of the letters. (6 MARKS)



List: (Schwann cell, Terminal, Nucleus, Myelin sheath, Dendrite, Node of Ranvier, Cell body, Axon)

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

e. \_\_\_\_\_

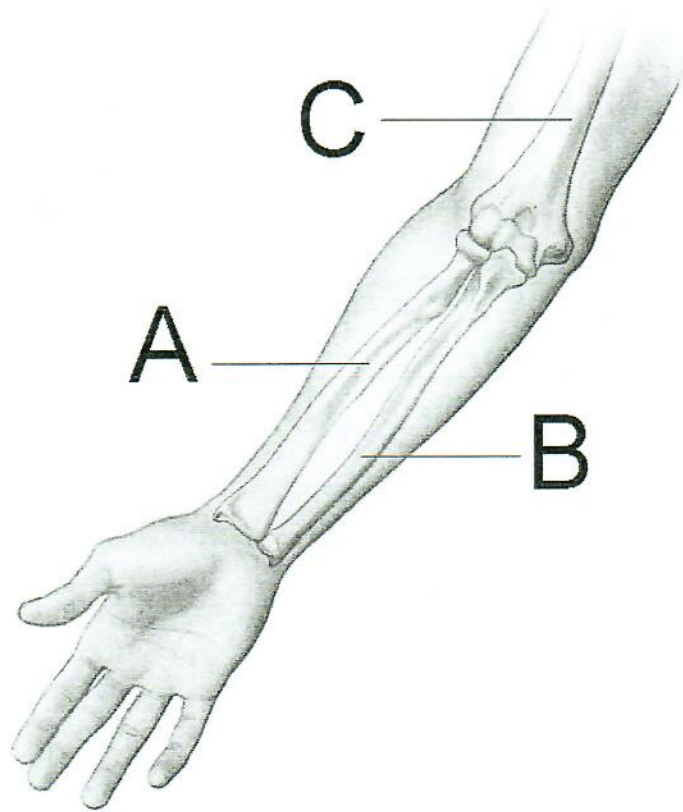
f. \_\_\_\_\_

g. \_\_\_\_\_

h. \_\_\_\_\_

**Diagram 3**

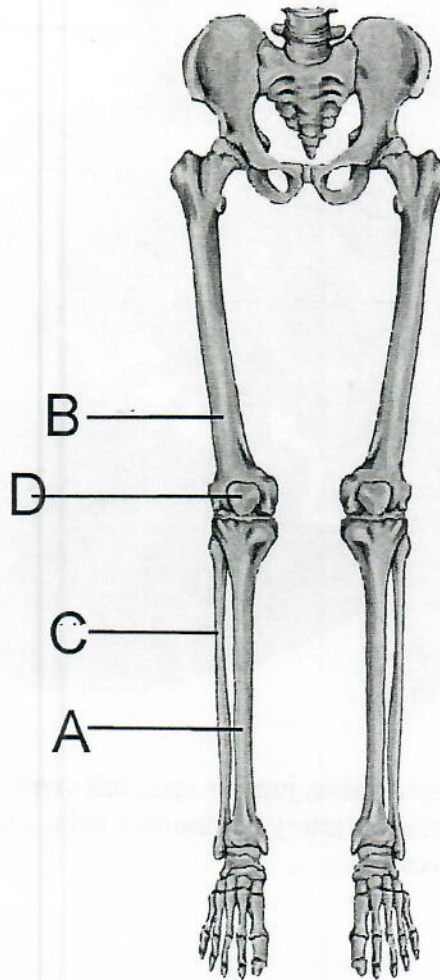
Diagram 3 is an unlabeled Skeletal Structure. From the list given, you are required to select the appropriate response for ALL the letters. (3 MARKS)



Word bank- navicular, femur, patella, calcaneus, humerus, radial, radius, ulna

**Diagram 4**

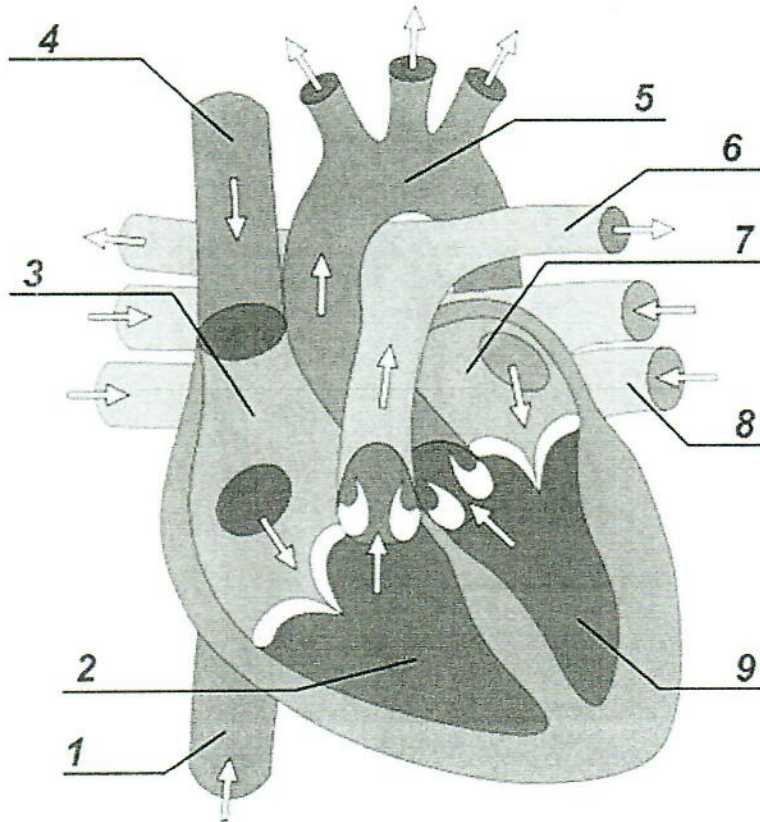
Diagram 4 is an unlabeled Skeletal Structure. From the list given, you are required to select the appropriate response for ALL the letters. (4 MARKS)



Word bank – patella, ischium, pubis, tibia, tibial tuberosity, fibula, greater trochanter, femur

**Diagram 5**

Diagram 5 is an unlabeled diagram of a typical Heart. From the list given, you are required to select the appropriate response for seven (7) of the letters. (7MARKS)



Word bank - Carotid artery, tricuspid valve, jugular vein, left ventricle, left atrium, right ventricle, right atrium, aorta, pulmonary artery, pulmonary vein, superior vena cava, inferior vena cava, femoral artery, blood vessels

## SECTION C SHORT ANSWER

*This section consists of ten (10) questions. Two (2) marks for each correct answer. You are required to answer ALL questions (20 MARKS)*

1. The anatomical position is known to be universal, briefly describe this position.(2 marks)
2. There are three main planes of the human body, what are they? (2 marks)
3. Give two areas in the body that gas exchange take place.(2 marks)
4. There are three different types of muscle tissues found in the human body, name any two(2 marks)
5. What two portions in the human body ALL make up the central nervous system? (2 marks)
6. Discuss the function of the diaphragm in respiration. (2 marks)
7. What is osmosis and what is diffusion? (2 marks)
8. Where is Cilia located and what is its purpose? (2 marks)
9. List the 5 sensor organs? (2 marks)
10. Muscle A contains 12,000 muscle cells and 30 motor neurons which innervate these cells. Muscle B contains 2,000 muscle cells and 400 motor neurons which innervate these cells. Which of these muscles would you expect to contract with precise control(Fine motor control)?Explain why. (2 marks)



**SECTION D**  
**ESSAY**

*This section consists of four (4) questions, you are required to answer only ONE (1) question, giving enough information to fully answer the selected question.  
(10 MARKS)*

1. In your own words or in a list describe the movement of blood into and out of the heart and throughout the body. **(In your description be sure to mention the four chambers of the heart, their main blood vessels and their major functions in circulating the blood.) (10 MARKS)**
  
2. Describe in your own words how urine is form in the human body. **(In your description explain the major processes that takes place from the within the nephron and end your explanation at the bladder). (10 MARKS)**
  
3. Give a detailed explanation how the body would respond to a very hot day, or after doing strenuous exercise, in reference to body temperature regulation and it's cooling down process. **(Be sure to mention what happen at the capillaries located at the skin surface, why the body sweats and why is it necessary to cool down). (10 MARKS)**
  
4. Explain the mechanism of a contraction. **(State the different myofilaments and their functions in regards to a muscle contraction). (10 MARKS)**

**END OF EXAMINATION**