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JUNE EXAMINATION

PROGRAM : HUMAN MOVEMENT STUDIES
MODULE NAME : EXERCISE PHYSIOLOGY
MODULE CODE : ANP 01A1 / EXP 1AA1 / EXP 2AB1
DATE : 10 JUNE 2016
DURATION : TWO (2) HOURS
TOTAL MARKS : 100 MARKS

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NUMBER OF PAGES : FOUR (4) PAGES

INSTRUCTIONS TO CANDIDATES:

MAKE SURE THAT YOU HAVE THE COMPLETE PAPER.

ANSWER ALL THE QUESTIONS.

SECTION A IS NEUROMUSCULAR PHYSIOLOGY.

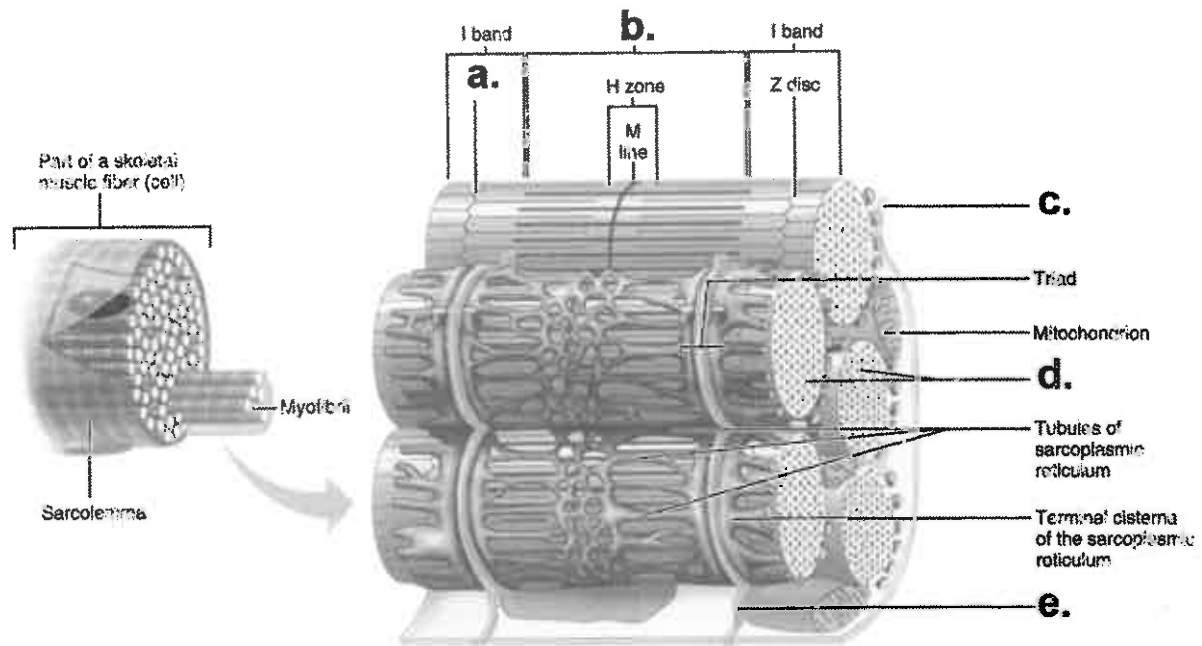
SECTION B IS CARDIORESPIRATORY PHYSIOLOGY.

SECTION A – NEUROMUSCULAR PHYSIOLOGY (50 MARKS)

QUESTION 1 (10 MARKS)

1.1. Give the below diagram a suitable heading.

[1]



1.2. Provide labels for the following structures a. to e.

[5]

1.3. Name the phases of skeletal muscle contraction.

[4]

QUESTION 2 (10 MARKS)

2.1 The nervous system works with the endocrine system to regulate and maintain homeostasis.

2.2 The autonomic nervous system is the involuntary division of the peripheral nervous system.

2.3 Neurons processes that convey incoming messages toward the cell body are called axons.

2.4 The gaps, or indentations, between Schwann cells are called nodes of Ranvier.

2.5 The neuron conducting impulses toward the synapse is called a postsynaptic neuron.

2.6 All fascicles of a neuron are bound together by a tough fibrous sheath, called the epimysium.

2.7 The parasympathetic division of the nervous system prepares the body to cope with threat.

2.8 The sympathetic and parasympathetic divisions serve the same organs.

2.9 Cardiac muscle is found in the heart.

2.10 Smooth muscle is responsible for maintaining posture and body position despite gravity.

QUESTION 3 (7 MARKS)

Briefly discuss the blood and nervous supply to skeletal muscle. [7]

QUESTION 4 (8 MARKS)

Name and discuss the functional characteristics of muscle tissue. [8]

QUESTION 5 (8 MARKS)

Describe the events that lead to the generation of a nerve impulse and its conduction from one neuron to another. [8]

QUESTION 6 (7 MARKS)

5.1. Discuss the function of the Golgi tendon organ. [1]

5.2. Discuss the function of the muscle spindle. [1]

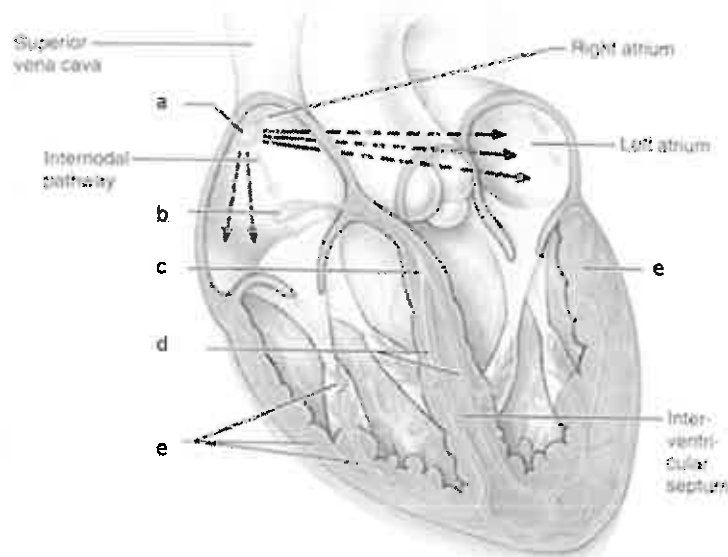
5.3. Name the components of the reflex arc. [5]

[50]

SECTION B – CARDIORESPIRATORY PHYSIOLOGY (50 MARKS)

QUESTION 1 (9 MARKS)

1.1 Give the below diagram a suitable heading. [1]



1.2 Provide labels for the following structures a. to e. [5]

1.3 Indicate what each individual wave on an ECG represents. [3]

QUESTION 2 (10 MARKS)

Please state whether the following is true or false:

2.1 The main function of a gap junction is to allow the passage of free ions from cell to cell.

2.2. Arterial pulse can be defined as the alternating expansion and recoil of a vein that occurs with each beat of the left ventricle creates a pressure wave that travels through the entire arterial system.

2.3. Inspiration is air flowing into the lungs.

2.4. When heart rate and/or stroke volume increases, cardiac output decreases.

2.5. An electrocardiogram is a graphic representation of the electrical activities in the heart.

2.6. Age and body position are factors that influence blood pressure.

2.7. The trachea is a respiratory zone structure, and not a conducting zone structure.

2.8. During ventricular filling, the atrioventricular valves are open.

2.9. When the atrioventricular valves are open, the semilunar valves are also open.

2.10. Stroke volume defined is the amount of blood pumped out of the ventricles every minute.

QUESTION 3 (7 MARKS)

Complete the table below regarding the differences between cardiac and skeletal muscle. [7]

CARDIAC MUSCLE	SKELETAL MUSCLE
Striated	a.)
Cells: short, fat, branched, interconnected	Cells: long cylindrical
b.)	Contraction: sliding filaments
c.)	d.)
e.)	Mitochondria: 2% of cell volume
Myofibrils vary in diameter	f.)
T tubules: wider and fewer	g.)

QUESTION 4 (10 MARKS)

Explain how the respiratory muscles cause volume changes that lead to air flow into and out of the lungs (breathing). [10]

QUESTION 5 (8 MARKS)

Name the organs forming the respiratory passageway from the nasal cavity to the lungs. [8]

QUESTION 6 (6 MARKS)

Name the three (3) layers that form the wall of the blood vessel and state the function of each. [6]

[50]

TOTAL: 100 MARKS