



<b><u>FACULTY</u></b>	: Health sciences
<b><u>DEPARTMENT</u></b>	: Sport and movement studies
<b><u>CAMPUS</u></b>	: DFC
<b><u>MODULE</u></b>	: ANP01BA1 Anatomy and physiology
<b><u>SEMESTER</u></b>	: First
<b><u>EXAM</u></b>	: July 2019

<b><u>DATE</u></b>	: July 2019	<b><u>SESSION</u></b>	: 12:30
<b><u>ASSESSOR(S)</u></b>	: Mrs BF Hoorzook		
<b><u>MODERATOR</u></b>	: Mr R Lombard		
<b><u>DURATION</u></b>	: 3 HOURS	<b><u>MARKS</u></b>	: 100 MARKS

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NUMBER OF PAGES: 10 PAGES

INSTRUCTIONS:

1. Answer ALL THE QUESTIONS.
  2. Number your answers clearly
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**QUESTION 1 – Multiple Choice (30 marks)**

1.1 The peripheral nervous system is comprised of

- a) Brain
- b) Nerves
- c) Spinal cord
- d) Basal ganglia

1.2 Which of the following is not a function of neuroglia

- a) Phagocytosis
- b) Support
- c) Myelination
- d) Cushioning

1.3 A dendrite function in

- a) Conducting impulses towards the cell body
- b) Conducting impulses away from the cell body
- c) Conducting impulses towards and away from the cell body
- d) Conducting impulses away from the cell body and release neurotransmitter

1.4 Ion concentration of a cell back to resting state is restored by

- a) Sodium ion pump
- b) Potassium ion pump
- c) Sodium-potassium pump
- d) None of the above

1.5 The reflex arc is composed of \_\_\_\_ components

- a) 2
- b) 3
- c) 4
- d) 5

1.6 Which of the following systems is required to produce a reflex

- a) Only the CNS
- b) Only the PNS
- c) Both the CNS and PNS
- d) Neither the CNS nor PNS

1.7 There are \_\_\_\_ pairs of cranial nerves

- a) 12
- b) 15
- c) 18
- d) 21

1.8 Which of the following is not a function of the parasympathetic division

- a) Increased heart rate
- b) Eliminates faeces and urine
- c) Increased blood pressure
- d) Withdraws blood from digestive organs

1.9 Which nerve is not sensory in function

- a) Optic
- b) Olfactory
- c) Vestibulocochlear
- d) Oculomotor

1.10 Fascicles are bound together by a tough fibrous sheath called,

- a) Endoneurium
- b) Epicardium
- c) Epineurium
- d) Endocardium

1.11 Smooth muscles are found in the walls of

- a) Stomach
- b) Bladder
- c) Respiratory passages
- d) All of the above

1.12 Which of the following is not a function of muscle fibers

- a) Energy conservation
- b) Irritability
- c) Contractility
- d) Extensibility

1.13 Fast glycolytic fibers have

- a) High myoglobin content
- b) High glycogen stores
- c) First recruitment order
- d) Intermediate rate of fatigue

1.14 Slow oxidative fibers are

- a) Red to pink to colour
- b) Pink in colour
- c) Red in colour
- d) Pale white in colour

1.15 Fast glycolytic fibers have

- a) High myoglobin content
- b) First recruitment order
- c) Intermediate rate of fatigue
- d) High glycogen stores

1.16 The right side of the heart

- a) Receives oxygen poor blood from arteries
- b) Receives oxygen poor blood from veins
- c) Receives oxygen rich blood from veins
- d) Receives oxygen rich blood from arteries

1.17 The atria play a role in

- a) Acting as a discharging chamber
- b) The pumping activity of the heart
- c) The filling of the ventricles
- d) The flow of ions from cell to cell

1.18 The heart has \_\_\_\_ hollow cavities

- a) 2
- b) 4
- c) 6
- d) 8

1.19 The heart pumps approximately \_\_\_\_ per day

- a) 6000L/day
- b) 4000L/day
- c) 7000L/day
- d) 5000L/day

1.20 The intrinsic conduction system of the heart enforces a contraction rate of

- a) Approximately 77bpm
- b) Approximately 72bpm
- c) Approximately 75bpm
- d) Approximately 70bpm

1.21 The length of a cardiac cycle is

- a) Approximately 0.2 seconds

- b) Approximately 0.4 seconds
- c) Approximately 0.6 seconds
- d) Approximately 0.8 seconds

1.22 The tunica intima functions in

- a) Support of the blood vessel wall
- b) Continuous blood circulation
- c) Protection of the blood vessel wall
- d) Minimising friction

1.23 Which of the following statements is correct

- a) Arteries are red and carry blood away from the heart
- b) Aretries are blue and carry blood away from the heart
- c) Arteries are blue and carry blood towards the heart
- d) Arteries are red and carry blood towards the heart

1.24 \_\_\_\_\_ prevents the backflow of blood in the atria when the ventricles contract

- a) Tricuspid valve
- b) Atrioventricular valve
- c) Bicuspid valve
- d) Semilunar valve

1.25 The paranasal sinuses

- a) Drains mucous into the nasal cavity
- b) Moves contaminated mucous towards the pharynx
- c) Produce mucous
- d) Drains tears into the nasal cavity

1.26 \_\_\_\_\_ functions in respiration only

- a) Nasopharynx
- b) Laryngopharynx
- c) Oropharynx
- d) Nasopharynx, Oropharynx and laryngopharynx

1.27 Pressure in the interpleural space of the lung is called

- a) Interpleural pressure
- b) Interpulmonary pressure
- c) Intrapleural pressure
- d) Atmospheric pressure

1.28 Which factor does not affect respiratory rate and dept

- a) Talking
- b) Sleeping

- c) Watching a scary movie
- d) Holding your breath

1.29 Following strenuous expiration \_\_\_\_ air remains in the lungs

- a) 1000ml
- b) 1250ml
- c) 1500ml
- d) 1200ml

1.30 The inspiratory reserve volume is

- a) Approximately 3500ml
- b) Approximately 3100ml
- c) Approximately 3700ml
- d) Approximately 3300ml

### **Question 2 – True and false (10 marks)**

2.1 a neuron can influence other neurons by releasing neurotransmitters that attach to a receptor on a postsynaptic cleft	
2.2 There are 5 types of reflexes	
2.3 Electrical gradients is a movement of ions toward an area of the same electrical charge	
2.4 Skeletal muscle is also referred to as striated muscle	
2.5 Muscles play a role in protection of fragile internal organs	
2.6 Cardiac muscle have no presence of intercalated disc	
2.7 The P wave on an ECG represents ventricular depolarisation	
2.8 Terminal bronchioles lead into respiratory zone structures that terminate in the alveoli	
2.9 Gas exchange in the lungs and tissue occur towards an area of high concentration	
2.10 During hypoventilation, breathing becomes more shallow	

### **Question 3 – Explain each of these conditions (5 marks)**

- 3.1 Multiple Sclerosis
- 3.2 Meningitis
- 3.3 Hypertension
- 3.4 Myocardial infarction
- 3.5 Apnea

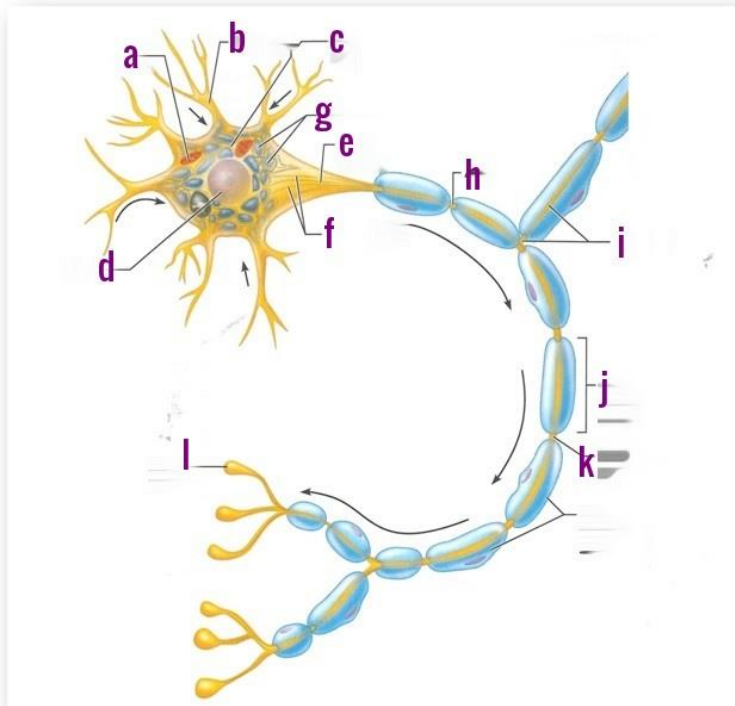
**Question 4 - Match Column A with Column B (10 Marks)**

Column A	Column B
4.1 Gas exchange between pulmonary blood and alveoli	a) Expiratory reserve volume
4.2 The amount of air that can be taken in forcibly over the tidal volume	b) Internal respiration
4.3 Transport of oxygen and carbon dioxide to and from the lungs and tissue cells of the body via the bloodstream	c) Cellular respiration
4.4 After the most strenuous expiration, air still remains in the lungs that cannot be voluntarily expelled	d) Dead space volume
4.5 Gas exchange between blood and cells inside the body	e) Respiratory gas transport
4.6 Air leaving the lungs	f) Residual volume
4.7 The actual use of oxygen and production of carbon dioxide by tissue cells	g) Tidal volume
4.8 The amount of air that can be forcibly exhaled after a tidal expiration	h) External respiration
4.9 The amount of air inhaled or exhaled with a normal breath	i) Expiration
4.10 Air which never reaches the alveoli	j) Inspiratory reserve volume

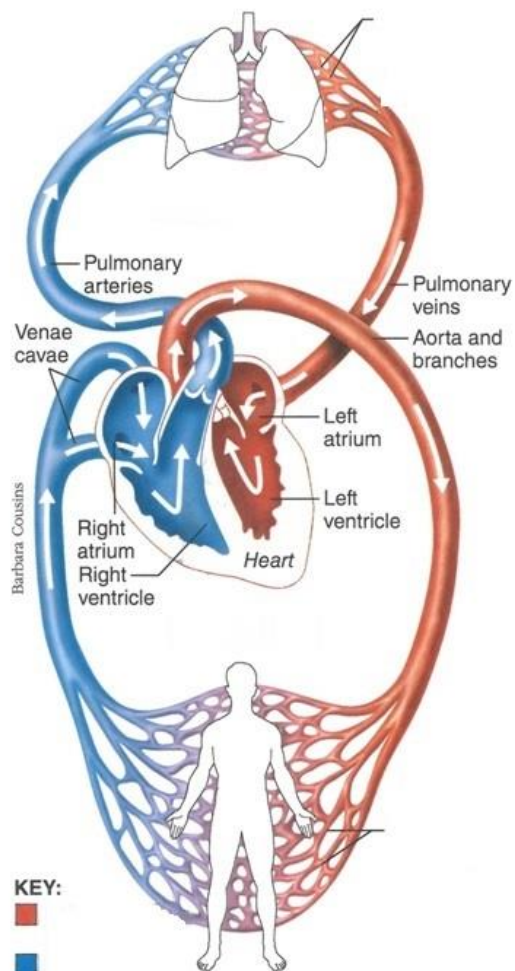
**Question 5 – Fill in the blank spaces (14 marks)**

The events at the neuromuscular junction occurs when, a [5.1] reaches the [5.2] of a motor neuron. [5.3] opens and enters the axon terminals. [5.4] entry causes some synaptic vesicles to release their contents by [5.5]. [5.6] diffuses across the synaptic cleft and binds to receptors in the [5.7]. [5.8] binds and opens channels that allow simultaneous passage of [5.9] into the [5.10] and [5.11] out of the muscle fiber, producing a local change in the electrical conditions of a membrane, called [5.12]. This eventually leads to an action potential. The enzyme [5.13] breaks down [5.14] in the synaptic cleft, ending the process.

**Question 6 – Label the diagram (12 marks)**



### Question 7 – Essay Question (12 marks)



- 7.1) Name the processes (2)
- 7.2) Explain the process which occurs on the left side of the heart (8)
- 7.3) List one function for each process (2)

**Question 8 – Essay Question (7marks)**

- 8.1) What does ECG stand for (1)
- 8.2) List and explain what each wave on an ECG represents (6)

