

UNIVERSITY OF FORT HARE

**APPLIED SPORT PHYSIOLOGY
HUS 227**

DEGREE EXAMINATIONS

**NOVEMBER
2024**

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Time: 3 hours
Subject: HUS 227
Marks: 100

This paper consists of 5 pages including the cover page

Internal Examiner

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Internal Examiner

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INSTRUCTIONS

Answer all the questions

SECTION A

(15)

QUESTION 1

Indicate whether the following statements are true or false. Provide the correct answer if the statement is false.

- 1.1 A child's heart rate is higher than an adult for the same rate or VO2 max.
- 1.2 Research suggests that living at high altitudes may be the best alternative.
- 1.3 Muscle length increases with bone growth due to an increase in sarcomeres added at the junction between the muscle and the tendon.
- 1.4 Strength gains are demolished from resistance training in children primarily from neurological adaptations with little change in muscle size.
- 1.5 During both submaximal and maximal exercise, a child's smaller heart and blood volume results in a higher stroke volume vs. Adults.
- 1.6 Heart rate responses for a given absolute submaximal work rate is lower to compensate for reduced SV.
- 1.7 Resting blood pressure is lower in children (proportional to body size), but progressively increases during the late teen years.
- 1.8 Existing research supports the assertion that altitude training improves sea-level performance.
- 1.9 Myelination of nerve fibers must be completed after fast reactions and skilled movements are fully developed.
- 1.10 Growth is completed when cartilage cells stop growing and growth plates are replaced by bone (by early 20s).
- 1.11 Muscle adaptations include decreased fiber area, increased capillary supply, and decreased metabolic enzyme activities.
- 1.12 Percentages of gases fluctuate but the partial pressures of the gases increase.
- 1.13 The reduction in PO2 at altitude affects the partial pressure gradient between the blood and the tissues and thus oxygen transport. This explains the decrease in endurance performance at altitude.
- 1.14 Calcium is not required to build and maintain bone strength.
- 1.15 Growth in weight follows the same trend as height, with the peak rate of weight increase occurring at age 11 in girls and 16 in boys.

SECTION B
QUESTION 2

(65)

2.1 Match the following questions or statements on column A to a correct answer on column B. (20)

Column A	Column B
1. Are the two membranes, one continuous one folded on itself, that surround each lobe of the	a) Puberty

lungs and separate your lungs from your chest wall.	
2. They help to regulate the temperature and humidity of inhaled air.	b) Development
3. Collects incoming air from your nose and mouth then passes down to the trachea	c) Growth
4. Is the passage leading from your throat to your lungs.	d) Metabolic response to altitude
5. Divides into two ----- one for each lung, which divides again into each lobe of your lungs.	e) Cardiovascular response to altitude
6. Each ---is like a balloon filled with sponge-like tissue. Air moves like in and out through one opening.	f) Chronic altitude exposure increases blood volume
7. Bronchial tubes are lined with small like very small hairs that move like waves.	g) Respiratory response
8. The smallest branches of the bronchial tubes are called.	h) Hypobaric adaptation
9. Are very small air sacs where the oxygen and carbon dioxide take place.	i) Muscle adaptation
10. Are blood vessels in the walls of alveoli.	j) HAPE
11. High-altitude pulmonary edema	k) Capillaries
12. Decrease in muscle fibre cross-sectional area and total muscle.	l) Alveoli
13. Relating to conditions of low air pressure and low oxygen content.	m) Bronchioles
14. Chemoreceptors are stimulated by low partial pressure.	n) Cilia
15. It triggers the release of erythropoietin from the kidney to stimulate red blood cell production.	o) Lobe
16. Cardiac output is increased at rest and during submaximal exercise.	p) Bronchial
17. Increased reliance on carbohydrates for fuel at rest and during exercise	q) Windpipe
18. An increase in the size of the body and/or of its parts.	r) Throat

19. The differentiation of cells along specialized lines of function (functional changes with growth).	s) Sinuses
20. Development of secondary sex characteristics; sexual reproduction becomes possible.	t) Pleura

2.2 Discuss the high-altitude pulmonary edema. (5)

2.3 Altitude is the height of the object or structure above the level explain the cardiovascular responses to altitude. (4)

2.4 Discuss the high-altitude cerebral edema in detail. (5)

2.5 State the phases of growth and development. (4)

2.6 You are appointed as a strength and conditioning coach for a basketball team at the University of Venda. List the cardiorespiratory adaptations to endurance training. (7)

2.7 Discuss in detail the stroke volume adaptations to endurance training (4)

2.8 Discuss in detail the respiratory adaptations to endurance training (6)

2.9 As a sport scientist explain the adaptation in muscle with training (6)

2.10 Identify the modes of heat transfer (4)

SECTION C (20)

QUESTION 3

3.1 Differentiate between the terms growth, development and maturation (6)

3.2 State the role of hypothalamus in controlling body temperature during hyperthermia. (5)

3.3 Explain in detail the role of hypothalamus in controlling the body temperature during hypothermia. (5)

3.4 List the variables of environmental heat load. (4)

TOTAL MARK:100