

UNIVERSITY OF FORT HARE

HUS 521

DEGREE EXAMINATIONS

November 2018

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Time: 3 HOURS

Subject: Motor Control and Learning

Marks: 100

This paper consists of 3 pages including cover page

Internal Examiner

Mr Simbarashe Mandiringana

Prof Maya van Gent

External Examiner

Mr K.B. de Wet (TUT)

**Question 1** (20 marks)

1. Define Motor Behaviour and describe its relationship to Motor Development, Motor Learning and Motor Control. **10 marks**
2. Why is it important for a Human Movement Scientist to have a good understanding of Motor control? **5 marks**
3. Explain the role of the individual, the task and the environment in the control of movement. **5 marks**

**Question 2** (20 marks)

1. Referring to the work of Feldman (2006), explain how the following problems can be solved/explained:
  - a. Posture-Movement Problem **5 marks**
  - b. Problem of Co-Activation **5 marks**
  - c. Control of Multiple Muscles **5 marks**
  - d. Guiding Multiple Degrees of Freedom without Redundancy Problems **5 marks**

**Question 3** (50/2 = 25 marks)

1. How does the CNS system organise itself in order to control movements? **6 marks**
2. What role do the following structures play in co-ordinating and controlling movements?
  - a. Primary Motor Cortex **5 marks**
  - b. Sensorimotor Cortex **5 marks**
  - c. Prefrontal Cortex **3 marks**
  - d. Posterior Parietal Cortex **3 marks**
  - e. Cerebellum **6 marks**
  - f. Basal Ganglia **6 marks**
  - g. The alpha motor neuron **2 marks**
  - h. The motor unit **2 marks**
  - i. Muscle Spindle and Golgi Tendon Organ **4 marks**
3. Discuss how the following diseases affect movement:
  - a. Parkinson's Disease **4 marks**
  - b. Huntington's Disease **4 marks**

**Question 4** (38/2 = 19 marks)

1. What is a theory? **3 marks**
2. How do motor control theories help us explain movement? **5 marks**

3. With relation to the following theories, answer the proceeding questions:

- a. Reflex Theory
- b. Hierarchal Theory
- c. Dynamic Systems Approach

3.1 What are the assumptions about the theory?

3.2 What are the implications of the theory?

3.3 What are the limitations of the theory?

3.4 Give us an example that shows the theory in action.

**3x10 marks**

**Question 5**

**(16 marks)**

1. Why is early assessment of children's motor capabilities important? **3 marks**
2. How can the data collected be effectively used? **5 marks**
3. Name a valid and reliable assessment test whilst also stating its protocol and resources/equipment needed. **8 marks**

**End of paper**