TEACHERS COLLEGES OF JAMAICA

BACHELOR OF EDUCATION

MAY 2022 EXAMINATION

COMMON PAPER

PHYSICAL EDUCATION

KINESIOLOGY
[PE205SEB]

YEAR 2
SECONDARY

TIME 2 HOURS

INSTRUCTIONS: Candidates are required to answer ALL questions in Section A and TWO questions from Section B.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

SECTION A (60 marks)
Answer ALL questions in this section

1. a) Using the arm as a third-class lever, assume that the biceps are flexing the forearm against resistance of 20 kg, the fulcrum is the elbow joint and the biceps are inserted 3 cm from the fulcrum and the distance from the fulcrum to the center of the resistance is 26cm, calculate the force needed to balance the lever. (4 marks)

   b) An athlete doing cleans in the gym displaces 175 lbs., 6ft in 3 seconds. Calculate his horsepower (hp.). (4 marks)

2. Describe clearly ALL of the following joint actions and provide examples of each. (12 marks)
   a) Extension
   b) Abduction
   c) Rotation
   d) Supinate

3. a) State what are Proprioceptors: (2 marks)

   b) State the stimulus to which the following Proprioceptors are sensitive. (2 marks)
      i. Muscle Spindles
      ii. Golgi Tendon

4. Mary's training routine includes a 3 km run west to the track then change direction and run a further 10 km north to the track. She completed the run in 30 minutes:

   a) Define velocity. (2 marks)

   b) Calculate her average speed and average velocity during her run. (5 marks)

5. Describe Newton's second law of motion and describe using examples how it relates to sports. (4 marks)

6. Describe what occurs when the muscle spindle is activated? (4 marks)

7. List the FIVE subdivisions of the parallel muscle and fibre arrangement. (5 marks)

8. Skeletal muscle tissue has 4 properties related to its ability to produce force and movement about joints. State the difference between Extensibility and Elasticity, providing an example of each. (4 marks)

9. Muscle contractions can be used to cause or prevent joint movement. List and briefly explain the TWO types of muscle contractions. (6 marks)

10. A sprinter accelerates from 4 m/s to 10 m/s in 4 seconds.

    a) Define *acceleration* (2 marks)
    b) Calculate his acceleration (4 marks)

SECTION B (40 marks)
Answer TWO questions in this section.

1. Analyze the shooting arm of a basketballer during the action of the shot towards the hoop considering the joints, muscle actions and levers involved. (20 marks)

2. Deductively analyze in detail, the action of the serving arm of a volleyball player of the overhead/ tennis serve. Considering the joints and muscle actions and levers involved in the action. (20 marks)

3. Analyze the action of the full body in the pushup exercise considering the joints and muscle actions and levers involved. (20 marks)

4. Analyze the actions of the takeoff leg in the long jump. In your response identify the actions, muscles involved, levers and the benefits of each lever identified. (20 marks)

END OF EXAMINATION