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**PHYSICAL EDUCATION STUDIES**

**YEAR12 GENERAL**

**Functional Anatomy Test**

**2019**

**Question/Answer Booklet**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Time allowed for this paper***

Reading/planning time before commencing work: Five minutes

Working time for paper: Fifty minutes

|  |  |
| --- | --- |
| ***Material required/recommended for this paper***  **To be provided by the supervisor**  This Question/Answer booklet  Sections One and Two: Write your answers in this Question/Answer booklet.  Spare lined paper  **To be provided by the candidate**  Standard items:Pens, pencil, eraser, correction fluid, highlighter, ruler, |  |

Special items: **non programmable calculator**

***Important note to candidates***

No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.

***Structure of this paper***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Section | Number of questions available | Number of questions to be attempted | Suggested working time  (minutes) | Marks available |
| Section One:  Short Answer | 11 | 11 | 40 | 38 |
| Section Two:  Extended Answer | 1 | 1 | 15 | 12 |
|  |  |  | Total Marks | 50 |

**Instructions to candidates**

1. The rules for the conduct of this exam have been outlined. Sitting this examination implies that you agree to abide by these rules.

2. Answer all questions according to the following instructions.

Section One: Write answers to in this Question/Answer Booklet.

Section Two: Write answers to in this Question/Answer Booklet.

3. You must be careful to confine your responses to the specific questions asked and to follow any instructions that are specific to a particular question.

4. Spare pages are included at the end of this booklet. They can be used for planning your responses and/or as additional space if required to continue an answer.

* Planning: If you use the spare pages for planning, indicate this clearly at the top of the page.
* Continuing an answer: if you need to use the space to continue an answer, indicate in the original answer space where the answer is continued, i.e. give the page number. Fill in the number of the question(s) that you are continuing to answer at the top of the page

**Section One: Short Answer (38 marks)**

This section has 8 questions. Answer all questions. For each question circle the box to indicate your answer. Use only a blue or black pen to circle the correct answer. If you make a mistake, place a cross through that letter, do not erase or use correction fluid, and circle your new answer. Marks will not be deducted for incorrect answers. No marks will be given if more than one answer is completed for any reason.

1. Explain the following movements.

(4 marks)

* 1. Plantarflexion:   
     Increasing the angle between the foot and the leg, so that the toes are taken further away from the shin.
  2. Adduction:   
     Movement towards the midline of the body
  3. Rotation:   
     Moving a bone around its own axis
  4. Flexion:   
     Decreasing the angle between two bones

1. Define extension and give two sporting examples where extension is used. (3 Marks)

1 Mark: Increasing the angle between two bones

2 Marks: For two correct sporting examples

1. Complete the table below. Name the specific joints involved and the movements that take place at those joints.

(6 marks)

|  |  |  |
| --- | --- | --- |
| **Action** | **Joint(s) involved** | **Movement(s) at the joint** |
| Turning head from side to side | Pivot Joint | Rotation |
| Push-up (arms only) | Ball and Socket  or  Hinge Joint | Abduction and Adduction  or  Flexion and Extension |
| Kicking a football (leg only) | Ball and Socket  or  Hinge Joint | Abduction and Adduction  Or  Flexion and Extension |

1. Define origin and insertion of the muscles.

(2 Marks)

1 Mark Each correct definition (max 2 marks):

* Origin: The tendon at the non-moving or fixed end of a muscle / The point at which the muscle joins the stationary bone / attachment site that doesn’t move during contraction
* Insertion: The tendon at the moving end of a muscle / The point where the muscles tendon joins the moving bone / attachment that moves when the muscle contracts

1. Provide two (2) characteristics of a concentric muscular contraction.

(2 marks)

Max 2 Marks for two correct characteristics:

* Muscle shortens under tension
* Insertion moves towards origin
* Occurs in the agonist muscle

1. Explain how muscles work in pairs and give an example.

(3 marks)

1 Mark: antagonistic pairs

1 Mark: example (biceps and triceps/quads and hamstrings)

1 Mark: work together in pairs; as one contracts the other relaxes or muscles can only pull they cannot push

1. In the table below name the agonist and antagonist and for each movement.

(4 marks)

|  |  |  |
| --- | --- | --- |
| **Movement** | **Agonist** | **Antagonist** |
| Plank position arms flexed at the elbow | Bicep | Triceps |
| Flexion at the knee to kick a soccer ball | Hamstring | Quadriceps |

1. Identify and describe the three (3) characteristics of skeletal muscle tissue.

(6 marks)

1 mark for identifying (max 3)

1 Mark for correct description (max 3)

* Elasticity = muscle has the ability to snap back to original position
* Contractibility = shortening of the muscle
* Extendibility = lengthening of the muscle

1. Identify and describe the three (3) types of muscle contractions.

(3 marks)

1 mark for identifying (max 3)

1 Mark for correct description (max 3)

* Isometric = Occur when there is NO CHANGE in the length of the contracting muscle, although it does produce force.
* Concentric = which cause the muscle to shorten as it contracts.
* Eccentric = occur when the muscle lengthens as it contracts.

1. When your Gastrocenemius (calf) contracts concentrically, what movement are you likely to be doing? Provide a sporting example. (2 Marks)

1 Mark: Plantar flexion

1 Mark for correct example:

* Jumping off the ground rebounding in basketball
* Kicking a football pointing toes
* Kicking a soccer ball

1. During a Bicep Curl the biceps muscle group is playing the role of Prime Mover (Agonist):
   1. What type of contraction are your biceps performing? (1 Mark)

Concentric Contraction

* 1. What type of joint movement is being performed as a result of this contraction? (1 Mark)

Flexion

* 1. Which muscle is the antagonist? (1 Mark)

Triceps

**END OF SECTION A**

**Section Two: Extended Answer (10 marks)**

This section has **one (1)** question. Write your answers in the spaces provided in the question/answer booklet. Wherever possible, confine your answers to the line spaces provided. Use a blue or black pen (**not** pencil) for this section.

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Suggested working time: 10 minutes.

1. Cassie a sprinter is wanting to do a 42km marathon and doesn’t understand why she cannot run for long periods of time. Outline the differences between these two fibres and explain what type of activity is best suited for which muscle fibre types (12 Marks)

1 Mark: Slow Twitch Muscle Fibres

1 Mark: Marathon Runner

4 Marks: 4 correct characteristics

Characterised by:

* Slow contraction speed
* Red in colour
* Generate energy through aerobic pathway (require O2 to produce energy)
* Maintain continuous activities requiring constant rate of energy transfer.
* Less powerful contraction.
* Fatigue resistant (very slow).
* Little force generated.
* Stimulated by relatively small motor neurons.

1 Mark: Fast Twitch Muscle Fibres

1 Mark: Sprinter

4 Marks: 4 correct characteristics

Characterised by:

* Rapid contraction
* White in colour
* High capacity for anaerobic ATP production (produce energy without O2)
* Become more active during ‘stop and go’ activities
* Fatigue quickly
* Fast contraction speed.
* Used for speed endurance.