| To be completed by the examiner | | | |
|---|---|---|---|
| Question | Mark | Question | Mark |
| 1 | | 12 (a) | |
| 2 | | 12 (b) | |
| 3 | | 13 (a) | |
| 4 | | 13 (b) | |
| 5 | | 13 (c) | |
| 6 | | 14 (a) | |
| 7 | | 14 (b) | |
| 8 | | 14 (c) | |
| 9 (a) | | 14 (d) | |
| 9 (b) | | 15 (a) | |
| 9 (c) | | 15 (b) | |
| 10 (a) | | 15 (c) | |
| 10 (b) | | 16 | |
| 11 (a) | | 17 | |
| 11 (b) | | 18 | |
| 11 (c) | | TOTAL MARK | |

# NCFE Level 1/2 Technical Award in Health and Fitness (603/2650/5)

## Unit 01 Introduction to body systems and principles of training in health and fitness

## Paper number: P001400

**Wednesday 17th November 2021 9.00am-10.30am**

**Time allowed:** 1 hour 30 minutes

### Learner instructions

- Use black or blue ink.
- Answer **all** questions.
- Read each question carefully.
- You **must** write your responses in the spaces provided.
- You may do rough work in this answer book. Cross through any work you do not wish to be marked.
- All of the work you submit **must** be your own.

### Learner information

- The marks available for each question are shown in brackets.
- The maximum mark for this paper is 80.
- You may use a calculator.

Please complete the details below clearly and in BLOCK CAPITALS.

Learner name _____

Centre name _____

Learner number | | Centre number | |

**Do not turn over until the invigilator tells you to do so.**

## Section 1

This section has a possible 8 marks.

You should spend about 10 minutes on this section.

Answer **all** questions in the spaces provided.

**1** Which **one** of the following muscles is located in the chest?

**[1 mark]**

**A** Deltoid

**B** Latissimus dorsi

**C** Pectoralis major

**D** Soleus

Answer _____

**2** What is the function of a ligament at a joint?

**[1 mark]**

**A** To attach muscles to bones

**B** To hold bones in place

**C** To protect the ends of bones

**D** To provide lubrication

Answer _____

**3** Which **one** of the following occurs when breathing out?

**[1 mark]**

**A** The chest contracts and the diaphragm contracts

**B** The chest expands and the diaphragm contracts

**C** The diaphragm relaxes and the chest contracts

**D** The diaphragm relaxes and the chest expands

Answer _____

**4** Which **one** of the following is a long-term effect of exercise?

**[1 mark]**

**A** Decreased hydration levels

**B** Decreased resting heart rate

**C** Increased body temperature

**D** Increased breathing rate

Answer _____

**5** Which **one** of the following regions is positioned at the top of the spine?

**[1 mark]**

**A** Cervical

**B** Coccyx

**C** Lumbar

**D** Sacrum

Answer _____

**6** Arteries are one type of blood vessel in the human body.

Which **one** of the following statements is true?

**[1 mark]**

**A** Arteries assist with gaseous exchange

**B** Arteries contain valves to ensure blood flows in one direction

**C** Arteries have thick, muscular, and elastic walls

**D** Arteries have very thin walls

Answer _____

**7** Which **one** of the following heart chambers receives deoxygenated blood from the right atrium?

**[1 mark]**

**A** Aorta

**B** Left atrium

**C** Left ventricle

**D** Right ventricle

Answer _____

**8** Tanveer is 23 years old.

Which **one** of the following would be his predicted maximum heart rate (MHR)?

**[1 mark]**

**A** 197

**B** 207

**C** 223

**D** 243

Answer _____

## Section 2

This section has a possible 51 marks.

You should spend about 50 minutes on this section.

Answer **all** questions in the spaces provided.

**9 (a)** Give **one** example of a short bone.

**[1 mark]**

**9 (b)** State the main function of a short bone.

**[1 mark]**

**9 (c)** Complete **Table 1** by describing **each** function of the skeletal system.

**[4 marks]**

**Table 1**

| Function of the skeletal system | Description |
|---|---|
| Blood cell production | |
| Protection | |
| Storage | |
| Support | |

**10 (a)** **Figure 1**

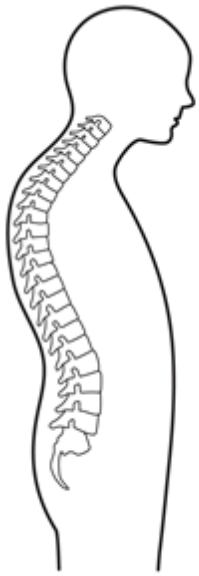

**Figure 1** shows a diagram of the spine.

State the postural condition shown.

**[1 mark]**

**10 (b)** An individual is taking part in health and fitness activities.

Outline why posture is important.

**[4 marks]**

**11 (a)** Describe the term ‘health’.

**[1 mark]**

**11 (b)** Describe the term ‘fitness’.

**[1 mark]**



**Question 11 continues on the next page.**

**11 (c)** Define flexibility **and** reaction time **and** give **one** example of each in a health and fitness activity.

**[4 marks]**

Definition of flexibility _____

_____

Example _____

_____

Definition of reaction time _____

_____

Example _____

_____

**12 (a)** Explain what is meant by:

1. systolic blood pressure
2. diastolic blood pressure.

**[2 marks]**

1. systolic blood pressure _____

_____

2. diastolic blood pressure _____

_____

**12 (b)** State **and** describe **two** factors that affect blood pressure.

**[4 marks]**

1 _____

_____

_____

_____

2 _____

_____

_____

_____

**13 (a)** Define 'body composition'.

**[1 mark]**

_____

_____

**13 (b)** Describe a mesomorph body shape.

**[2 marks]**

_____

_____

_____

_____



**Question 13 continues on the next page.**

**13 (c)** Identify a health and fitness activity suitable for the following body types:

1. ectomorph
2. endomorph.

Justify your answer.

**[4 marks]**

Activity suited to an ectomorph _____

Justification _____

_____

_____

Activity suited to an endomorph _____

Justification _____

_____

_____

**14 (a)** Define the term 'joint'.

**[1 mark]**

_____

_____

**14 (b)** Give **one** example of **each** of the following types of joint:

1. condyloid
2. pivot
3. saddle

**[3 marks]**

Condyloid example _____

_____

Pivot example _____

_____

Saddle example _____

_____

**14 (c)**

**Figure 2**

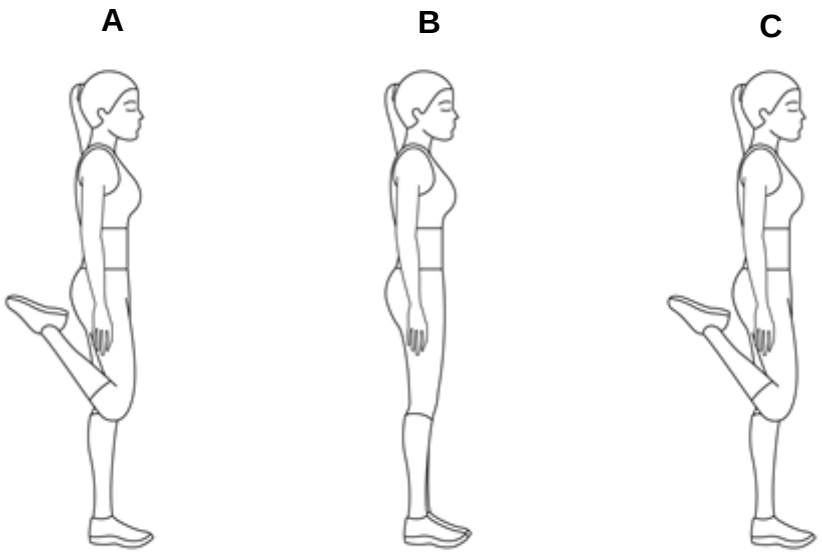


**Figure 2** shows **two** movements (**A** to **B** and **B** to **C**) that occur at the knee.

Complete **Table 2**. Identify the joint action occurring at the **knee** from position **A** to **B** (lowering) and from **B** to **C** (raising).

Identify the **agonist muscle** in the movement at the **knee** from position **A** to **B** (lowering) and from position **B** to **C** (raising).

**Table 2**

| | **A to B** | **B to C** |
|---|---|---|
| **Joint action** | | |
| **Agonist muscle** | | |

**[4 marks]**

**14 (d)** Using **Figure 2**, identify the type of muscle contraction occurring at the agonist muscle from position **A** to position **B**.

Justify your answer.

**[2 marks]**

Type of muscle contraction _____

Justification _____

_____

_____

**15 (a)** Cardiac muscle is one type of muscle in the body.

State the **other two** types of muscles **and** explain how their function in the body helps an individual doing health and fitness activities.

**[4 marks]**

Type of muscle 1 _____

Explanation _____

_____

_____

Type of muscle 2 _____

Explanation _____

_____

_____

**15 (b)** Identify the type of muscular strength that is needed when jogging for 10 minutes.

Justify your answer.

**[3 marks]**

Type of muscular strength _____

Justification _____

_____

_____

_____

_____

**15 (c)** State which energy system will be the main energy provider when jogging for 10 minutes.

Justify your answer.

**[4 marks]**

Energy system _____

Justification _____

_____

_____

_____

_____

_____

_____

## Section 3

This section has a possible 21 marks.

You should spend about 30 minutes on this section.

Answer **all** questions in the spaces provided.

**16** Oscar is trying to improve the number of star jumps he can perform in 30 seconds as part of a fitness circuit.

Evaluate the importance of explosive strength and balance when Oscar is performing the star jumps.

**[6 marks]**

**17** Using your knowledge of muscle fibre types, evaluate why an individual who completes a **long-distance** run in a fast time may not be as effective at **short-distance** sprinting.

**[6 marks]**

**18** Health and fitness activities can be designed to improve muscular endurance.

Discuss the importance of the principles of training in designing these activities.

**[9 marks]**

**This is the end of the external assessment.**

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