NCFE Level 1/2 Technical Award in Health and Fitness (603/7007/5)

Examined assessment

Paper number: Past paper
Date: Summer 2024

Mark Scheme

v1.1 Post-Standardisation

This Mark Scheme has been written by the assessment writer and refined, alongside the relevant questions, by a panel of subject experts through the external assessment writing process and at standardisation meetings.

The purpose of this Mark Scheme is to give you:

- examples and criteria of the types of response expected from a learner
- information on how individual marks are to be awarded
- the allocated assessment objective (AOs) and total mark for each question.

Marking guidelines

General guidelines

You must apply the following marking guidelines to all marking undertaken throughout the marking period. This is to ensure fairness to all learners, who must receive the same treatment. You must mark the first learner in exactly the same way as you mark the last.

- The Mark Scheme must be referred to throughout the marking period and applied consistently. Do not change your approach to marking once you have been standardised.
- Reward learners positively giving credit for what they have shown, rather than what they might have omitted.
- Utilise the whole mark range and always award full marks when the response merits them.
- Be prepared to award zero marks if the learner's response has no creditworthy material.
- Do not credit irrelevant material that does not answer the question, no matter how impressive the response might be.
- The marks awarded for each response should be clearly and legibly recorded in the grid on the reverse of the question paper.
- If you are in any doubt about the application of the Mark Scheme, you must consult with your team leader or the chief examiner.

Guidelines for using extended-response marking grids

Extended-response marking grids have been designed to award a learner's response holistically and should follow a best-fit approach. The grids are broken down into levels, with each level having an associated descriptor indicating the performance at that level. You should determine the level before determining the mark.

When determining a level, you should use a bottom-up approach. If the response meets all the descriptors in the lowest level, you should move to the next one, and so on, until the response matches the level descriptor. Remember to look at the overall quality of the response and reward learners positively, rather than focussing on small omissions. If the response covers aspects at different levels, you should use a best-fit approach at this stage, and use the available marks within the level to credit the response appropriately.

When determining a mark, your decision should be based on the quality of the response in relation to the descriptors. You must also consider the relative weightings of the

assessment objectives, so as not to over / under credit a response. Standardisation materials, marked by the chief examiner, will help you with determining a mark. You will be able to use exemplar learner responses to compare to live responses, to decide if it is the same, better or worse.

You are reminded that the indicative content provided under the marking grid is there as a guide, and therefore you must credit any other suitable responses a learner may produce. It is not a requirement either, that learners must cover all of the indicative content to be awarded full marks.

Assessment objectives (AOs)

This unit requires learners to:

AO1	**Recall knowledge and show understanding.** The emphasis here is for learners to recall and communicate the fundamental elements of knowledge and understanding.
AO2	**Apply knowledge and understanding.** The emphasis here is for learners to apply their knowledge and understanding to real-world contexts and novel situations.
AO3	**Analyse and evaluate knowledge and understanding.** The emphasis here is for learners to develop analytical thinking skills to make reasoned judgements and reach conclusions.

The weightings of each assessment objective (AO) can be found in the Qualification Specification.

Qu	Mark Scheme	Total marks

Section A **Total for this section: 21 marks**

1	**Which** one **of the following is a structure of a vein?** **A** Narrow lumen **B** One cell thick **C** Thick walls **D** Wide lumen **Answer:** D – Wide lumen	**1** **AO1=1**

2	**Which** one **of the following blood vessels delivers oxygenated blood to the body?** **A** Aorta **B** Pulmonary artery **C** Pulmonary vein **D** Vena cava **Answer:** A – Aorta	**1** **AO1=1**

3	**Which** one **of the following bones' main function is protection?** **A** Fibula **B** Radius **C** Sternum **D** Ulna **Answer:** C – Sternum	**1** **AO2=1**

4	**Name** one **short bone.** Award **one** mark for the correct response: • carpals • tarsals. **Accept any other suitable responses.**	**1** **AO1=1**

5 (a)	Figure 1 **shows muscles in the human body.** **Identify the muscles labelled** A**,** B **and** C **in** Figure 1. Award **one** mark for each of the following answers. **A** Pectorals (1) **B** Abdominals (1) **C** Tibialis anterior (1)	**3** **AO1=3**

5 (b)	**State** two types **of muscle.** **Describe how the function of** each **muscle type helps in health and fitness activities.** **AO1** Award **one** mark for each type of muscle correctly stated up to **two** marks: • cardiac (1) • skeletal (1) • smooth (1). **AO2** Award **one** mark for the description of how the function of each muscle type helps in health and fitness activities up to **two** marks. • Cardiac – aids blood flow through the heart, which provides the oxygen for the body to exercise (1). • Skeletal – contract to move bones in our body during health and fitness activities (1). • Smooth – aids with digestion so that there is a supply of energy for exercise (1). **Accept any other suitable responses.**	**4** **AO1=2** **AO2=2**

6	**Give** one **example of when an individual would use the aerobic energy system in a health and fitness activity.** **Justify your choice.** **AO2** Award **one** mark for giving an example: • 5 km cycle (1) • marathon (1). **AO3** Award **one** mark for the justification up to a maximum of **two** marks. 5 km cycle • Cycling 5 km is a long duration activity which would last more than 60 seconds (1). • Cycling 5 km is dependent on oxygen due to the duration and intensity required to complete 5 km (1). Marathon • Running a marathon is a long duration activity, giving enough time to supply oxygen to the working muscles (1). • When running a marathon you are need to supply sufficient energy due to the length of time of the activity (1). **Accept any other suitable responses.**	**3** **AO2=1** **AO3=2**

7	**Give** two **health and fitness activities suited to fast twitch muscle fibres.** **Justify** one **of the activities you chose.** **AO2** Award **one** mark for each suitable health and fitness activity selected up to a maximum of **two** marks: • high jump (1) • sprinting (1) **AO3** Award **one** mark for the justification up to a maximum of **two** marks.	**4** **AO2=2** **AO3=2**

	High jump • They produce fast contractions which are needed to jump quickly in the high jump to clear the bar (1). • They provide a powerful force over a short period of time which allows the high jumper to get more height to clear the bar (1). Sprinting • They produce fast contractions which are needed to move arms and legs fast when sprinting (1). • They provide a powerful force over a short period of time which allows a sprinter to run a faster time (1). **Accept any other suitable responses.**	

8	**The knee is a synovial joint.** **Analyse how** three **structures of the knee joint help an individual to perform health and fitness activities.** Award **one** mark for each structure analysed up to a maximum of **three** marks. • Articulating cartilage – prevents the bones rubbing together which allows movement and participation in activities to be pain free (1). • Ligaments – join bone to bone which strengthen joints which allows individuals to turn / change direction quickly with a strong base (1). • Tendons – join muscle to bone so helps produce movement at the knee that enables individuals to run / jump and travel in many ways (1). • Synovial fluid – lubricates the joint reducing friction and wear which enables an individual to move freely (1). • Synovial membrane – produces fluid which reduces friction and wear that enables an individual to move freely (1). • Joint capsule – strengthens joints and prevent unnecessary movements and possible dislocations that allows individuals to turn / change direction quickly with a strong base (1). **Accept any other suitable responses.**	**3** **AO3=3**

Section B **Total for this section: 21 marks**

9	**Which** one **of the following tests measures muscular strength?** **A** Bruce protocol test **B** Handgrip dynamometer test **C** Multi-stage fitness test **D** Sit-up test **Answer:** B – Handgrip dynamometer test	**1** **AO1=1**

10	**Which** one **of the following is the equation to predict maximum heart rate (MHR)?** **A** MHR = 220 ÷ age **B** MHR = 220 + age **C** MHR = 220 – age **D** MHR = 220 x age **Answer:** C – MHR = 220 – age	**1** **AO1=1**

11	**Which** one **of the following is a short-term effect of participating in health and fitness activities?** **A** Cardiac hypertrophy **B** Decreased resting heart rate **C** Increased depth of breathing **D** Muscle hypertrophy **Answer:** C – Increased depth of breathing	**1** **AO1=1**

12	**Describe the procedure for the alternate hand wall toss test.** Award **one** mark for each of the following points up to maximum of **four** marks. • The individual stands 2 to 3 metres away from a wall (1). • A ball is thrown underarm against the wall and caught with the opposite hand (1). • The ball is then thrown against the wall again and caught with the original hand (1). • The amount of consecutive catches in 30 seconds is measured (1). **Accept any other suitable responses.**	**4** **AO1=4**

13 (a)	**Define 'muscular endurance'** and **'flexibility'.** **Give** one **example of when you would use** each **in a health and fitness activity.** **AO1** Award **one** mark for each definition up to a maximum of **two** marks. • Muscular endurance – the ability of a muscle or muscle group to undergo repeated contractions avoiding fatigue (1). • Flexibility – the range of movement possible at a joint (1). **AO2** Award **one** mark for each example up to a maximum of **two** marks. • Muscular endurance – an individual performing 30 press ups (1). • Flexibility – performing a lunge in a fitness circuit (1). **Accept any other suitable responses.**	**4** **AO1=2** **AO2=2**

13 (b)	**Give** one **example of when an individual would use explosive strength in a health and fitness activity.** **Justify your choice.** **AO2** Award **one** mark for identifying an example: • javelin throw (1) • snatch lift (1). **AO3** Award **one** mark for the justification up to a maximum of **two** marks. Javelin throw • When throwing a javelin strength will be exerted at speed, as the faster a javelin is moving at release the further it will go (1).	**3** **AO2=1** **AO3=2**

	• When throwing a javelin strength will be exerted at maximal force to extend the javelin a maximum distance and keep it going as it is in flight (1). Snatch lift • In order to raise a heavy bar above the head during a snatch lift it must be moved at maximum speed (1). • A huge force is required in an explosive movement to maximise the amount of weight lifted during a snatch lift (1). **Accept any other suitable responses.**	

14	**Amelia is following a weight training programme.** **Explain how Amelia would apply the principles of overload to make progress in training.** Award **one** mark for each explanation up to a maximum of **four** marks. • Frequency – Amelia could increase the number of times per week she carries out the weight training programme (1). • Intensity – Amelia could increase the weight, number of sets and number of reps that she completes in a training session (1). • Time – Amelia could increase the amount of time she spends carrying out her weight training programme which will result in longer periods of exercise (1). • Type – Amelia could change the weight training exercises from fixed machines to free weights in an attempt to avoid boredom, but these should always be relevant to what she wants to improve on (1). **Accept any other suitable responses.**	**4** **AO2=4**

15	**Jacob is training for a 100 mile charity cycle ride. He hopes to complete the ride over a period of two days.** **Suggest a suitable** training method **that would build up Jacob's fitness so he can complete the ride.** **Justify your choice.** **AO2** Award **one** mark for a suitable training method:	**3** **AO2=1** **AO3=2**

	• continuous (1) • fartlek (1). **AO3** Award **one** mark for the justification up to a maximum of **two** marks. • Continuous – as it is training that is carried out over a long period of time, similar to the cycle ride (1), it improves cardiovascular / aerobic fitness which is needed for a long cycle ride (1). • Fartlek – it maximises cardiovascular benefits which may be needed for different terrains on the cycle ride (1), it is training that is carried out over a long period of time, similar to the cycle ride (1). **Accept any other suitable responses.**	

Section C **Total for this section: 20 marks**

16	**Which** one **of the following describes when a PAR-Q questionnaire would be completed?** **A** After an individual has completed each session **B** Before an individual has completed each session **C** Prior to an individual taking part in an exercise programme **D** Whilst an individual is taking part in an exercise programme **Answer:** C – Prior to an individual taking part in an exercise programme	**1** **AO1=1**

17	**Which** one **of the following is a possible outcome of an active lifestyle?** **A** Increased stress **B** Muscle wastage **C** Weight gain **D** Weight loss **Answer:** D – Weight loss	**1** **AO2=1**

18	**Which** one **of the following activities is classed as a 'vigorous intensity activity' by the NHS as part of their physical activity guidelines?** **A** Aerobics **B** Brisk walking **C** Dancing **D** Rollerblading **Answer:** A – Aerobics	**1** **AO2=1**

19 (a)	**Give** three **reasons why an individual would keep a food diary when they are completing a health and fitness programme.** Award **one** mark for each correct reason up to a maximum of **three** marks. • Collects information about an individual's food and drink consumption (1). • Used throughout a training programme to monitor diet (1). • Establishes the diet changes required to reach fitness goals and helps an individual track their diet (1). **Accept any other suitable responses.**	**3** **AO1=3**

19 (b)	**Chloe is running a marathon in one week's time.** **Suggest a key nutrient in her diet that she should consume a lot of in the week ahead to help her performance, other than water.** **Justify your choice.** **AO2** Award **one** mark for a correct key nutrient: • carbohydrates (1) • fats (1). **AO3** Award **one** mark for the justification up to a maximum of **three** marks. • Carbohydrates – ensures the muscles / body has a large store of energy / glycogen ready for the marathon (1), can provide	**4** **AO2=1** **AO3=3**

	energy over a long period of time which the marathon is (1), provide energy for aerobic respiration which is used predominantly in the marathon (1). • Fats – ensures the muscles / body has store of energy in the adipose tissues ready for the marathon (1), can provide energy over a long period of time which the marathon is (1), provide energy for low intensity activities which is used predominantly in the marathon (1). **Accept any other suitable responses.**	

19 (c)	**After Chloe has completed the marathon, she needs to rest and recover.** **State** two **ways she could speed up her recovery.** **Explain how** each **way will way help with the process.** **AO1** Award **one** mark for each recovery method up to a maximum of **two** marks: • sleep / rest (1) • cool-down (1) • static stretching (1) • massages (1) • ice baths (1) • rehydration (1) • intake of food (1). **AO2** Award **one** mark for each explanation up to a maximum of **two** marks. • Sleep / rest – helps the body repair ready for the following day (1). • Cool-down – to remove lactic acid and other waste products (1). • Static stretching – which prevents delayed onset muscle soreness (DOMS) (1). • Massages – helps reduce pain and flushes waste products out of the system (1). • Ice baths – helps to prevent DOMS as when they leave the bath the blood vessels increase in diameter allowing oxygen rich blood to flush the muscles (1). • Rehydration – to ensure the body is fully hydrated so that all of the body systems can function effectively (1).	**4** **AO1=2** **AO2=2**

	• Intake of food – to replenish energy stores or repair muscles (1). **Accept any other suitable responses.**	

20	**Diet and alcohol are two lifestyle factors.** **State** three other **lifestyle factors.** **Explain how** each **factor could have a** negative **effect on performance in health and fitness activities.** **AO1** Award **one** mark for each lifestyle factor up to a maximum of **three** marks: • performance enhancing drugs (1) • recreational drugs (1) • smoking (1) • stress (1) • physical activity levels (1). **AO2** Award **one** mark for each explanation up to a maximum of **three** marks. • Performance enhancing drugs – Diuretics could cause dehydration which slows a performer down or makes them have to stop (1), anabolic steroids may increase blood pressure which could limit their ability to perform at high intensity for long periods of time (1). • Recreational drugs – ecstasy could lead to anxiety and depression which means someone may not want to take part in health and fitness activities (1), cannabis could cause breathing difficulties which may affect an individual's ability to participate for a long period of time (1), cocaine can increase blood pressure which could limit their ability to perform at high intensity for long periods of time (1). • Smoking – reduces the lungs ability to function effectively which will lower an individual's aerobic capacity (1). • Stress – could result in a more anxious performance which results in errors (1), it causes fatigue which means an individual may not take part as they do not feel they have the energy to do so (1) • Physical activity levels – low levels of physical activity can lead to weight gain which could lead to lower fitness levels when taking part in exercise (1), it could also lead to fatigue which could lead to a lack of concentration which could lead to	**6** **AO1=3** **AO2=3**

	mistakes (1). **Accept any other suitable responses.**	

Section D **Total for this section: 18 marks**

21 **Assess the benefits of a warm-up for an individual who is about to take part in a 5 km run.**

9

AO1=3

AO2=3

AO3=3

Level	Mark	Descriptor
3	7 to 9	**AO3** – **Excellent** assessment of the benefits of a warm-up that is **comprehensive** and **highly relevant**. Supported with **excellent** justification which relate to a 5 km run that are **comprehensive** and **highly detailed**. **AO2** – **Excellent** application of knowledge and understanding of the benefits of a warm-up in relation to a 5 km run that is **comprehensive** and **highly detailed** and **highly relevant** to the question. **AO1** – **Excellent** recall of knowledge and understanding of the benefits of a warm-up that is **comprehensive**. Subject specific terminology is used **consistently** throughout.
2	4 to 6	**AO3** – **Good** assessment of the benefits of a warm-up that is **detailed** and **mostly relevant**. Supported with **good** justification which relate to a 5 km run that are **detailed**. **AO2** – **Good** application of knowledge and understanding of the benefits of a warm-up in relation to a 5 km run that is **detailed** and **mostly relevant** to the question. **AO1** – **Good** recall of knowledge and understanding of the benefits of a warm-up that is mostly **detailed**. Subject specific terminology is used, but not always consistently.
1	1 to 3	**AO3** – **Limited** assessment of the importance of a warm-up. Supported with **limited** justification relating to a 5 km run that have **minimal detail** and are **mostly superficial**. **AO2** – **Limited** application of knowledge and understanding of the benefits of a warm-up that

		has **minimal detail** and is **mostly superficial** with **minimal relevance** to the question. **AO1** – **Limited** recall of knowledge and understanding of the benefits of a warm-up that has **minimal detail**. Subject specific terminology is often **inappropriate**, and a lack of understanding is evident.
	0	No creditworthy material.

Examiners are reminded that indicative content reflects content-related points that a learner may make but is not an exhaustive list, nor is it a model answer. Learners may make all, some or none of the points included in the indicative content. Learners must be credited for any other appropriate response.

It is not a requirement that the learner formulate a response specifically against each assessment objective as laid out in the indicative content (IC).

Indicative content

AO1 – Learners will recall knowledge and understanding of the benefits of a warm-up for an individual who is about to take part in a 5 km run that may include the following:

- gradually increase heart rate
- mobilise joints
- increase blood flow to the muscles
- prepare muscles for health and fitness activities
- reduce the risk of injury
- aid mental preparation.

AO2 – Learners will apply knowledge and understanding of the benefits of a warm-up for an individual who is about to take part in a 5 km run that may include the following:

- Gradually increase heart rate to increase body temperature.
- Mobilise joints to improve range of movement.
- Increase blood flow to the muscles which increases oxygen supplied to muscles.
- Prepare muscles for health and fitness activities by stretching and carrying out movements that are similar to how the muscles are going to be used.
- Reduce the risk of injury as muscles and the body are prepared for what is to come.
- Aid mental preparation to be ready and focused for the event ahead.

AO3 – Learners will assess the benefits of a warm-up for an individual who is about to take part in a 5 km run that may include the following:

- The increased body temperature means that muscles are warm and can generate more power for the individual during the 5 km run which could mean they run a faster time.
- Greater range of movement in the hip and leg joints could increase the individual's stride length which means they would cover the distance faster.
- The increased oxygen supplied to the muscles could ensure aerobic respiration is occurring which delays the onset of fatigue.
- Fully prepared muscles mean that the individual will be able to get up to race pace quickly and not gradually build this up which means their time may be faster.
- As the body is fully prepared and the risk of injury is low the individual may be able to push their body faster than normal to try and run a faster time. The low chance of injury also means they have more chance of completing the race.
- As the individual is focused on running the 5 km they will not be distracted and their sole aim will be to finish in as fast a time as possible.

Accept any other suitable responses.

22 **Evaluate the components of skill-related fitness that are important for a tennis player.**

9

AO1=3

AO2=3

AO3=3

Level	Mark	Descriptor
3	7 to 9	**AO3** – **Excellent** evaluation of the components of skill-related fitness that is **comprehensive** and **highly relevant**. Supported with **excellent** justification of the importance for tennis players that are **comprehensive** and **highly detailed**. **AO2** – **Excellent** application of knowledge and understanding of the components of skill-related fitness which could explain the importance for tennis players that is **comprehensive** and **highly detailed** and **highly relevant** to the question. **AO1** – **Excellent** recall of knowledge and understanding of the components of skill-related fitness that is **comprehensive**. Subject specific terminology is used **consistently** throughout.

		2	4 to 6	**AO3** – **Good** evaluation of the components of skill-related fitness that is **detailed** and **mostly relevant**. Supported with **good** justification of the importance for tennis players that are detailed. **AO2** – **Good** application of knowledge and understanding of the components of skill-related fitness that is **detailed** and **mostly relevant** to the question. **AO1** – **Good** recall of knowledge and understanding of the components of skill-related fitness that is **mostly detailed**. Subject specific terminology is used, but not always consistently.
		1	1 to 3	**AO3** – **Limited** evaluation of the components of skill-related fitness. Supported with limited justification for the importance for tennis players that have **minimal detail** and are **mostly superficial**. **AO2** – **Limited** application of knowledge and understanding of the components of skill-related fitness that has **minimal detail** and are **mostly superficial** with **minimal relevance** to the question. **AO1** – **Limited** recall of knowledge and understanding of the components of skill-related fitness that has **minimal detail**. Subject specific terminology is often **inappropriate**, and a lack of understanding is evident.
			0	No creditworthy material.

Examiners are reminded that indicative content reflects content-related points that a learner may make but is not an exhaustive list, nor is it a model answer. Learners may make all, some or none of the points included in the indicative content. Learners must be credited for any other appropriate response.

It is not a requirement that the learner formulate a response specifically against each assessment objective as laid out in the indicative content (IC).

Indicative content

AO1 – Learners will recall knowledge and understanding of the components of skill-related fitness that are important for a tennis player that may include the following:

- agility
- balance
- co-ordination
- power
- reaction time
- speed.

AO2 – Learners will apply knowledge and understanding of the components of skill-related fitness that are important for a tennis player that may include the following:

- Agility would improve a tennis players speed when changing direction and moving around the court.
- Balance would help a tennis player when they are turning / moving around the court this will be more efficient and help keep them upright.
- Co-ordination would allow the tennis player to move many body parts at once allowing them to move and play shots at the same time.
- Power would allow the tennis player to generate rapid force which could make their shots harder / faster.
- Reaction time would enable the tennis player to react / respond quickly to their opponents' shots.
- Speed would enable the tennis player to move their body quickly to get around the court.

AO3 – Learners will evaluate the components of skill-related fitness that are important for a tennis player that may include the following:

- Agility would help a tennis player reach opponents shots by being able to change direction quickly.
- Balance would help the tennis player move around the court efficiently so will help them reach shots or be in a better position to play their own shots.
- Co-ordination would allow the tennis player to play shots on the move or effectively serve during a match.
- Power in their shots would make it harder for opponents to reach the tennis players shots.
- Reaction time would enable the tennis player to be in a better position to play the return shot or reach a fast serve from their opponent.
- Speed would enable the tennis player to move quickly around the court to reach and return their opponents shots.

Accept any other suitable responses.

Assessment objective (AO) grid

Section A

Question	AO1	AO2	AO3	Total
1	1			1
2	1			1
3		1		1
4	1			1
5 (a)	3			3
5 (b)	2	2		4
6		1	2	3
7		2	2	4
8			3	3
Total	**8**	**6**	**7**	**21**

Section B

Question	AO1	AO2	AO3	Total
9	1			1
10	1			1
11	1			1
12	4			4
13 (a)	2	2		4
13 (b)		1	2	3
14		4		4
15		1	2	3
Total	**9**	**8**	**4**	**21**

Section C

Question	AO1	AO2	AO3	Total
16	1			1
17		1		1
18		1		1
19 (a)	3			3
19 (b)		1	3	4
19 (c)	2	2		4
20	3	3		6
Total	**9**	**8**	**3**	**20**

Section D

Question	AO1	AO2	AO3	Total
21	3	3	3	9
22	3	3	3	9
Total	**6**	**6**	**6**	**18**