The EverLearner

National Mock Exams 2025

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Mark Scheme
Edexcel A-level PE - Paper 1

Please read before distributing to students.

Purpose of this document

This document and the associated question paper are based on the data analysis performed by The EverLearner Ltd and published within the 2025 infographics. Please, note the following:

- We believe this mark scheme has a very strong association with previous Edexcel A-level PE Paper 1 exams in relation to command terms, skills, AO distribution, extended writing requirements and topics.
- However, this is categorically NOT a mark scheme for a predicted paper. No one can accurately predict an exam paper and we make no claim to this end.
- It is vital that you only use this document internally in your school/college. Publishing the document online or sharing it in any other way is strictly prohibited, as this will undermine the potential educational experiences of students in other schools/colleges.
- Finally, please make sure you attend the associated revision session in May.

This mark scheme contains:

- Copy of each question for reference
- Marking guidance where appropriate
- Marking points containing alternative acceptable responses plus relevant assessment objective

How should schools use this mark scheme?

The mark scheme has been constructed specifically for the exam paper used in The EverLearner's National Mock Exams from 2025. Many of these questions will be discussed in the live revision show provided by James Simms on **Monday 12th of May 2025 at 17:00** (available to all subscribing schools live and on demand; a shorter version for non-subscribers will be available on YouTube after the live session).

The paper is available to be set, answered and marked online via ExamSimulator. ExamSimulator is a premium resource available via TheEverLearner.com and provides immediate diagnostics of student writing performance after every exam answer. Get in touch with us to start a free trial.

I hope this helps both students and teachers in their exam preparations.

James Simms

The EverLearner

Subject	Physical Education
Course	Edexcel Linear GCE PE Component 1: Scientific Principles of Physical Education
Time allowed	2 hours 30 minutes

Title	**Edexcel A-level** PE Component 1: Scientific Principles NME 2025

Guidance	• The total mark for this paper is 140 marks. • You have 2 hours 30 minutes (plus additional time for those who have exam access arrangements). • The marks for each question are shown in brackets (use this as a guide for how much time should be spent on each question). • The question marked with an asterisk (*) requires you to use your knowledge from across the course of study in your response. • You may use a calculator. • Read each question carefully and answer **all** questions. • If the timer reaches zero prior to you submitting your paper, the software will automatically submit your responses. • Good luck!

Total marks	140

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1. Look at the image of the heart. State the missing label.

Marking points **(maximum 1)**

(1) [AO 1] Sinoatrial node/Sino-atrial node/SA node

2. Look at the image. Describe the role of the feature labelled A.

Marking points **(maximum 1)**

(1) [AO 1] Initiates the electrical impulse

(2) [AO 1] Sets the rate of electrical excitation/Sets the rhythm of the heart/Pacemaker

3. Look closely at this image. Describe the role of the deltoids **and** triceps brachii during an overhead pass in basketball.

Marking points **(maximum 4)**

(1) [AO 1] Deltoid is acting as the fixator

(2) [AO 2] Deltoid is stabilising the movement as it occurs

(3) [AO 1] Triceps brachii is acting as the prime mover/Triceps brachii is the agonist

(4) [AO 2] Triceps brachii is contracting to cause elbow extension

4. Use a sporting example to describe the term eccentric contraction.

Marking guidance

Accept other reasonable examples of eccentric contractions during sporting or athletic movements. Do not accept examples which are not sporting, such as 'quadriceps when sitting down in a chair'.

Marking points **(maximum 2)**

(1) [AO 1] Muscle lengthens under tension/Muscle lengthens when contracting

(2) [AO 2] Quadriceps during the downward phase of a squat/Biceps brachii in downward phase of a bicep curl/Triceps brachii when catching a medicine ball

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5. Summarise the functions of the respiratory system shown in the table.

Marking points (maximum 4)

(1) [AO 1] A warms, filters and moistens air/Allows air to be inhaled

(2) [AO 1] B is where vocal cords are located/Manipulates pitch and volume

(3) [AO 1] C provides airflow to bronchi

(4) [AO 1] D allows gaseous exchange/Gas exchange

6. Calculate the maximal potential cardiac output for a 20-year-old athlete with a maximal stroke volume of 160ml of blood.

Marking points (maximum 2)

(1) [AO 2] MaxHR = 220 - age/MaxHR = 220 - 20/MaxHR = 200

(2) [AO 2] Maximal cardiac output = Maximal heart rate x Maximal stroke volume/Maximal cardiac output = 200 x 160/Maximal cardiac output = 32L per minute

7. Outline the process of venous return during exercise.

Marking guidance

All answers must specifically reference exercise conditions. Answers that simply describe venous return are not suitable responses to this question.

Marking points (maximum 4)

(1) [AO 1] Volume of blood returning to the heart increases during exercise

(2) [AO 1] Ongoing movement causes the skeletal muscle pump to increase pressure on the blood

(3) [AO 1] Greater depth of breathing causes the respiratory pump to increase the pressure on the blood

(4) [AO 1] Smooth muscles within veins pulse more to cause an increase in pressure on the blood

(5) [AO 1] Pocket valves and gravity offer no further assistance to venous return compared to at rest

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8. Summarise **three** neuromuscular adaptations that could occur at the end of an eight-week strength training programme.

Marking guidance

Do not accept any responses that only relate to the musculoskeletal system. This question is specific to neuromuscular adaptations.

Marking points (maximum 3)

(1) [AO 1] Hypertrophy of larger motor units/Increased number of myofibrils in larger motor units

(2) [AO 1] Greater proportion of type IIx motor units

(3) [AO 1] Hyperplasia of type IIx fibres within larger motor units

(4) [AO 1] Easier recruitment of larger motor units

(5) [AO 1] Lower action potential required for larger motor units

(6) [AO 1] Increased rate of response of central nervous system/Increased rate of response of CNS

(7) [AO 1] Improved coordination of fast-twitch fibre motor units

(8) [AO 1] Toughening of proprioceptors

9. Summarise **both** components of EPOC in assisting a performer's recovery from exercise.

Marking guidance

Sub max four marks for the fast component of EPOC. To score full marks, the candidate must make at least two relevant points for each stage of EPOC.

Marking points (maximum 6)

(1) [AO 1] Fast component involves the resynthesis of phosphocreatine

(2) [AO 1] Fast component involves the resaturation of myoglobin

(3) [AO 1] Fast component involves the resynthesis of ATP

(4) [AO 1] Fast component requires 30s for 50% recovery/2-3 minutes for full recovery

(5) [AO 1] Fast component requires 2-3.5 litres of oxygen

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(6) [AO 1] Slow component involves the removal of lactic acid

(7) [AO 1] Slow component requires between 5 and 60 minutes for full recovery

(8) [AO 1] Slow component requires 5-8 litres of oxygen

10. Identify the predominant muscle fibre type for a 110m high hurdler in athletics.

Marking points **(maximum 1)**

(1) [AO 1] Type IIx fast glycolytic fibres

11. Explain how the predominant muscle fibre type for a 110m high hurdler benefits their performance.

Marking points **(maximum 4)**

(1) [AO 2] High force of contraction allows the hurdler to accelerate rapidly

(2) [AO 2] High speed of contraction allows the hurdler to get their foot back on the floor quickly after jumping a barrier

(3) [AO 2] Low fatigue resistance does not negatively affect the performance which is over in approximately 13-15 seconds

(4) [AO 2] High anaerobic capacity means the energy is available from the very first moment of the race

(5) [AO 2] Large quantity of phosphocreatine (PC) in the cell means energy is available immediately

(6) [AO 2] Presence of glycolytic enzymes in the cell allows for power to be applied throughout the race

12. Look closely at this image. State **both** horizontal forces acting on the runner.

Marking points **(maximum 2)**

(1) [AO 1] Friction

(2) [AO 1] Air resistance

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13. Look closely at this image. Describe the relationship between the horizontal forces if this runner is accelerating.

Marking points **(maximum 2)**

(1) [AO 1] Forces would be unbalanced

(2) [AO 1] Net forward force

(3) [AO 1] Friction is greater than air resistance

14. Look closely at this image. List three ways in which the risks to cardiovascular health can be reduced for the population of Wiggleton-by-Sea.

Marking points **(maximum 3)**

(1) [AO 1] Regular exercise for a greater range of people in the town

(2) [AO 1] Improved diet for a greater range of people in the town/Energy intake and energy output being balanced for a greater range of people in the town/Eating more fruit and veg and fewer fatty foods

(3) [AO 1] Reduced sedentary time for a greater range of people in the town

(4) [AO 1] Reduced participation in other negative lifestyle behaviours which cause cardiorespiratory damage alongside being overweight or obese/Reduced rates of smoking or recreational drug use/Reduced alcohol intake

(5) [AO 1] Reduced experience of negative psychological states such as stress

(6) [AO 1] Increased rates of high-quality sleep for a greater range of people in the town

15. Using your knowledge of wave summation and the gradation of muscle contraction, analyse the graph provided in the image.

Marking guidance

Responses may include (but are not limited to) the answers in the mark scheme. Please read the response in combination with the level descriptors to award an appropriate mark. Edexcel A-level PE (8 marks AO1 and AO3)

Marking points **(maximum 8)**

(1) [AO 1] Green segment involves a twitch

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(2) [AO 3] Green segment has sufficient time after the impulse for full relaxation

(3) [AO 1] Red segment is wave summation

(4) [AO 3] Red segment includes too short a relaxation period after an impulse for full relaxation

(5) [AO 3] Red segment has each subsequent impulse causing a larger force of contraction

(6) [AO 3] Red segment includes a non-maximal contraction despite the increased force

(7) [AO 1] Yellow segment is tetanus/Tetanic contraction

(8) [AO 3] Yellow segment includes too short a relaxation period after an impulse for any relaxation

(9) [AO 3] Yellow segment provides ongoing maximal contraction

(10) [AO 3] Yellow segment is unsustainable

16. Examine the role of **both** the ATP-PC and anaerobic glycolytic systems for a football goalkeeper.

Marking guidance

Responses may include (but are not limited to) the answers in the mark scheme. Please read the response in combination with the level descriptors to award an appropriate mark.Edexcel A-level PE (8 marks AO1 and AO3)

Marking points (maximum 8)

(1) [AO 1] ATP-PC system is very short duration/In the region of 10s

(2) [AO 3] Provides immediate energy source for short-duration moves such as dives, jumps or tackles

(3) [AO 1] ATP-PC system is very high intensity

(4) [AO 3] Provides immediate energy source for explosive movements such as sprints

(5) [AO 1] ATP-PC system recovers 50% in 30s/Full recovery in 2-3 minutes

(6) [AO 3] Capable of recovering for multiple subsequent power moves if there is sufficient time between for recovery

(7) [AO 1] ATP-PC system has no fatiguing by-products

(8) [AO 3] Fatigue of the system does not provide feelings of pain or heaviness for the goalkeeper

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(9) [AO 1] Glycolytic system is short but not very short duration/In the region of 60s of energy

(10) [AO 1] Provides ongoing energy for sustained movements AFTER the ATP-PC system has exhausted

(11) [AO 3] Such as sustained repositioning during an opponent's attack

(12) [AO 1] Glycolytic system is high but not very high intensity

(13) [AO 3] Provides ongoing energy source for high-intensity movements such as positioning or ready positions

(14) [AO 1] Glycolytic system recovers fully in approximately 5 minutes if fully exhausted

(15) [AO 3] Football goalkeepers rarely fully exhaust the glycolytic system, so they can recover faster than 5 minutes

(16) [AO 1] Glycolytic system produces the fatiguing by-product lactic acid

(17) [AO 3] Football goalkeepers may experience pain or discomfort by utilising the glycolytic system

17. Marathon runners often train for four months for a single race in order to get maximal adaptations.
Analyse the chronic adaptations of the cardiorespiratory system for a marathon runner in the final weeks of a 16-week training programme for an upcoming road race.

Marking guidance

Do not credit any factors that are not cardiorespiratory. For example, metabolic adaptations or even vascular (blood vessels and blood) are not accurate answers to this question even if they are chronic adaptions to training. This question specifically asks for cardiorespiratory factors. Responses may include (but are not limited to) the answers in the mark scheme. Please read the response in combination with the level descriptors to award an appropriate mark. Edexcel A-level PE (15 marks AO2 and AO3)

Marking points **(maximum 15)**

(1) [AO 2] Respiratory muscles such as the diaphragm and intercostals become stronger

(2) [AO 3] Causing an increased capacity to change air pressure within the chest

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(3) [AO 3] Causing a greater tidal volume/Reduced resting IRV/Reduced resting ERV

(4) [AO 3] Causing a greater potential maximal vital capacity

(5) [AO 2] Improved utilisation of the alveoli/Deeper alveoli reached

(6) [AO 3] Greater rate of diffusion/Increased gaseous exchange

(7) [AO 3] Greater efficiency of oxygen uptake AT THE LUNG

(8) [AO 2] Decreased resting breathing rate

(9) [AO 3] Causing an increased range of working breathing rate

(10) [AO 2] Myocardial hypertrophy

(11) [AO 3] Causing an increased force of ejection contraction

(12) [AO 3] Causing a greater stroke volume/Increased ejection fraction/Decreased end-systolic volume

(13) [AO 2] Decreased resting heart rate/Potential bradycardic heart rate

(14) [AO 3] Causing a greater range of available working heart rate

(15) [AO 2] Greater potential maximal cardiac ouput

(16) [AO 3] Causing a greater flow of oxygenated blood toward the functioning muscle tissues

(17) [AO 2] Increased supply of blood via the coronary arteries to the heart

(18) [AO 3] Causing the heart to be able to work at higher intensity efficiently

(19) [AO 3] Overall impact is the greater intake, transport and delivery of oxygen

(20) [AO 3] Marathon runner can run at higher intensities aerobically without experiencing any anaerobic fatigue

18. Using a sporting example, define the term local muscular endurance.

Marking guidance

Accept other relevant examples of local muscular endurance.

Marking points **(maximum 2)**

(1) [AO 1] Ability of a muscle group to sustain muscle contractions over time sufficient enough to cause muscular fatigue

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(2) [AO 2] Repeated contractions of the deltoids by a rower pulling on the oar in an Olympic final/Repeated contractions of the gastrocnemius of a 400m sprinter throughout a 60s performance/Repeated contractions of the triceps brachii when lifting and lowering an Olympic bar during a set of 21 bench presses

19. Outline the protocol for the MAOD fitness test.

Marking points (maximum 4)

(1) [AO 1] 10 x 4 minutes duration

(2) [AO 1] Gradual increase in intensity in each bout

(3) [AO 1] First few bouts provide a prediction of VO2max

(4) [AO 1] 10th bout is supramaximal/115% VO2max

(5) [AO 1] 10th bout provides a measure of VO2max

(6) [AO 1] MAOD is calculated by subtracting the accumulated oxygen uptake from the total oxygen cost

20. Identify **one** reason why a performer of your choice would use the MAOD fitness test.

Marking guidance

Sub max one mark for the example and one mark for the reason.

Marking points (maximum 2)

(1) [AO 1] Elite games player such as a hockey midfielder/Elite 800m runner/Elite tennis player

(2) [AO 1] Test measures anaerobic capacity/Test is running-based/Test is laboratory-based

(3) [AO 1] Highly reliable test

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21. Look closely at the table. For each type of injury, provide a description, give an example and state what preventative measure could be used.

Marking guidance

Accept any other appropriate responses.

Marking points (maximum 6)

(1) [AO 1] A: Acute injuries are caused by an impact/Acute injury is sudden/Acute injuries happen suddenly

(2) [AO 1] B: Acute injury examples: Cruciate ligament injury/Soft tissue damage/Achilles tendon injury

(3) [AO 1] C: Preventative measure for acute injuries: Taping and bracing/Protective equipment/Flexibility training

(4) [AO 1] D: Chronic injuries can be caused by overtraining/Chronic injuries can happen from repetitive movements/Chronic injuries can be caused by poor technique

(5) [AO 1] E: Chronic injury examples: Stress fracture/Shin splints/Periostitis

(6) [AO 1] F; Preventative measure for chronic injuries: Correcting technique/Flexibility training/Screening

22. Look closely at this image. Using an example, explain why a performer's angular momentum curve would look like this.

Marking guidance

Award one mark for example and sub max three marks for explanation.

Marking points (maximum 4)

(1) [AO 2] Performer example such as a high diver performing a somersault/Trampolinist performing a twist/Ice skater performing a spin

(2) [AO 2] Angular momentum is preserved at the moment of take-off or release

(3) [AO 2] Relationship between angular velocity and moment of inertia is inversely proportional

(4) [AO 2] At the moment of release, the performer needs to maximise moment of inertia

(5) [AO 2] Causing the greatest POTENTIAL angular velocity

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(6) [AO 2] Performer then reduces moment of intertia by bringing mass close to the axis

(7) [AO 2] This increases angular velocity proportionally

(8) [AO 2] Performer increases moment of inertia again as rotation comes towards the end

(9) [AO 2] Causes a decrease of angular velocity to provide control over the spin

23. State **three** reasons for carrying out fitness testing.

Marking guidance

Accept any suitable alternative reasons for fitness testing.

Marking points (maximum 3)

(1) [AO 1] Identify strengths and weaknesses in performance/Identify strengths in performance/Identify weaknesses in performance

(2) [AO 1] Clear focus for a training programme/Identify specific areas to work on in training/Inform a suitable training programme

(3) [AO 1] Motivate performer by measuring progress

(4) [AO 1] Baseline measure BEFORE starting a training programme

(5) [AO 1] Provide data DURING a training programme to allow for adaptations

(6) [AO 1] Measure the effects of a training programme AFTER completion

(7) [AO 1] Talent identification

(8) [AO 1] Provide objective data on fitness/Direct fitness measurements/Quantitative assessment

24. Look at the image. Identify an appropriate fitness test for this performer.

Marking points (maximum 1)

(1) [AO 1] 30m sprint/Repeat anaerobic sprint test/RAST

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25. Look at the image. Using Karvonen's theory, calculate the sprinter's heart rate reserve.

Marking guidance

Award one mark for correct answer and one mark for correct units of measurement. Can gain two marks for correct answer only.

Marking points **(maximum 2)**

(1) [AO 2] 190bpm-53bpm

(2) [AO 2] 137bpm

26. Look at the image. Calculate the sprinter's training heart rate.

Marking guidance

Award one mark for correct answer and one mark for correct units of measurement. Can gain two marks for correct answer only.

Marking points **(maximum 2)**

(1) [AO 2] 90/100*137=123.3

(2) [AO 2] 123.3+53=176.3bpm

(3) [AO 2] 176bpm

27. Look at the image. Explain how a sprint coach could use their knowledge of training intensities during the pre-season phase of the training year.

Marking points **(maximum 2)**

(1) [AO 2] First part of pre-season training should involve working below target intensities in preparation/Avoid working at peak intensity at the start of pre-season

(2) [AO 2] Performers should be working at target intensities part way through pre-season to adapt and prepare for peak season

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28. Explain why different types of sports drinks are used by athletes.

Marking guidance

Answers must reference **at least** two types of sports drink.

Marking points (maximum 3)

(1) [AO 1] Hypotonic sports drinks are excellent for rehydration only/Water or rehydration/Used before, during and after performance

(2) [AO 1] Isotonic drinks allow ongoing replenishment of body sugars/Also contain equal quantities of electrolytes as the body/Excellent sugar replenishment during

(3) [AO 1] Hypertonic sports drinks provide additional volumes of sugar/Excellent for sugar replenishment after a performance/May not be suitable during performance

(4) [AO 1] Type of drink to use depends on the available sugars in the drinks

(5) [AO 1] Fizzy drinks must be avoided before and during performance/Alcoholic drinks must be avoided before, during and after performance

29. Using your knowledge of fluid mechanics, explain how a discus thrower can maximise the horizontal displacement of the discus.

Marking guidance

Responses may include, but are not limited to the answers in the mark scheme. Accept any other suitable responses that should be credited.

Please read the response in combination with the level descriptors to award an appropriate mark.Edexcel A-level PE (8 marks AO1 and AO3)

Marking points (maximum 8)

(1) [AO 1] Increase the release height/Release the discus at a higher point/Reach as high as possible before releasing the discus

(2) [AO 3] Higher the release height, the greater the horizontal travel because the peak of the flight path is higher

(3) [AO 1] Increase the release velocity by applying more force/Higher release speed by applying more force

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(4) [AO 3] Greater the release velocity, the longer it takes to reach the highest point of the flight path

(5) [AO 1] Hit the optimal release angle of less than 45 degrees/Release angle of just under 45 degrees/Less than 45 degrees

(6) [AO 3] <45 degrees is optimal because discus throwing is a measure of horizontal travel, not vertical travel

(7) [AO 1] Present the discus with an angle of attack/Angle of attack/Correct tilt angle

(8) [AO 1] Airflow over the discus must travel further/Airflow under the discus travels less distance/Air must go further over the discus

(9) [AO 1] Air must travel faster above the discus/Air travels slower below the discus/Faster air above the discus

(10) [AO 1] High-pressure air below the discus/Low-pressure air above the discus/Higher pressure below

(11) [AO 1] Pressure differential/Pressure gradient

(12) [AO 3] Bernoulli lift force/Bernoulli force/Lift force

(13) [AO 3] Bernoulli force elongates the flight path/Lengthened flight path/Travels with greater horizontal displacement

(14) [AO 3] Asymmetrical flight/Non-parabolic flight/Asymetrical

(15) [AO 3] A greater horizontal displacement means finishing higher in the ranking/Winning a gold medal

(16) [AO 3] Thrower may lose release velocity if they reach too high and don't release the discus in front of them/If the throwing arm is too vertical at release, velocity is lost

(17) [AO 3] If release velocity is too great, the angle of release may be compromised/If release velocity is too great, angle of attack might be lost

(18) [AO 3] If the release angle is too low, horizontal displacement will be lost

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30. A rugby player is using the FITT principle to improve the impact of their weight training.
Analyse the use of FITT to increase muscular strength and the impact this has when playing rugby.

Marking guidance

AO3 marks should only be awarded for answers which include correct links between FITT principles and muscular strength in rugby. Responses may include (but are not limited to) the answers in the mark scheme.

Please read the response in combination with the level descriptors to award an appropriate mark. Edexcel A-level PE (8 marks AO1 and AO3)

Marking points (maximum 8)

(1) [AO 1] Frequency is the number of sessions per week/Sessions per unit of time

(2) [AO 3] The rugby player increases from two sessions a week to three/The rugby player increases from three sessions per week to four

(3) [AO 3] This means the rugby player can play more games more frequently/The rugby player can train more frequently

(4) [AO 1] Intensity is the % of 1 rep max/How heavy the player is lifting/How hard they are working within the session

(5) [AO 3] The rugby player increases 1RM from 85% to 90%

(6) [AO 3] This means the player can apply greater force when tackling and push their opponent back/Can apply more force to the ground and sprint faster/Can lift a forward higher in the line-out to catch the ball

(7) [AO 1] Time is the number of reps/Time is the number of sets/Time is the length of the session overall

(8) [AO 3] The player increases from three sets of six reps to four sets of six reps/Increases from four sets of four reps to five sets of four reps/Increases their session length from 45 minutes to an hour

(9) [AO 3] The rugby player can apply force repeatedly when mauling over a long distance/Can maintain longer sprints/Keep up with the ball in ongoing phases of play

(10) [AO 1] Type is the range of lifts that the player uses/Type is the inclusion of other types of training when weight training/Type is the use of different types of weights

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(11) [AO 3] The rugby player introduces squats into their training programme in week 4/Introduces some plyometric movements into their lifts/Introduces barbells, kettlebells or free weights as well as resistance machines

(12) [AO 3] The rugby player stays motivated to train due to the variety/Changing the type of training helps to avoid boredom and demotivation

(13) [AO 3] The rugby player strengthens a great range of muscle groups/Increases whole body strength/Increase in strength to tackle, scrum, ruck, kick or pass powerfully

31. Assess the most suitable training methods for a heptathlete.

Marking guidance

AO3 marks should only be awarded for points that include evaluation of training methods and their suitability for a heptathlete. Responses may include (but are not limited to) the answers in the mark scheme.

Please read the response in combination with the level descriptors to award an appropriate mark. Edexcel A-level PE (8 marks AO1 and AO3)

Marking points (maximum 8)

(1) [AO 1] Heptathlon is a varied sport and requires many different training methods

(2) [AO 1] Heptathlete needs a combination of aerobic and strength training as well as flexibility

(3) [AO 1] No single training method is sufficient

(4) [AO 1] Strength training methods such as plyometrics or resistance training

(5) [AO 3] Plyometrics is excellent to develop the power required from sprint starts, leaps and accelerations

(6) [AO 3] Resistance training is excellent for developing muscular strength in specific muscle groups

(7) [AO 1] Aerobic training includes continuous, Fartlek and HIIT

(8) [AO 3] Continuous is excellent preparation for the 800m event

(9) [AO 3] Fartlek is not particularly useful as there are no hills or changes of terrain in heptathlon

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(10) [AO 3] HIIT is excellent for training the heptathlete's body to recover effectively from explosive bouts/Speed, agility and quickness training can replicate short bursts of high intensity work similar to events such as the high jump or long jump

(11) [AO 1] Flexibility training includes stretching methods and PNF

(12) [AO 3] Stretching is excellent for the heptathlete to improve their hip flexibility when hurdling/Shoulder flexibility when throwing/Spinal flexibility when high jumping

(13) [AO 3] PNF is an excellent method to rapidly increase RoM in a busy training schedule

32. Sports drinks are a dietary supplement.
Evaluate the use of **other** dietary supplements for a performer who wishes to delay fatigue. Use your knowledge and understanding from across the course of study to answer this question.

Marking guidance

AO3 marks should only be awarded for answers which include correct links between dietary supplements and delaying fatigue, including evaluative points. Responses may include (but are not limited to) the answers in the mark scheme. Accept any other credible/suitable points relevant to dietary supplements and delaying fatigue.
Please read the response in combination with the level descriptors to award an appropriate mark. Edexcel A-level PE (15 marks AO2 and AO3)

Marking points (maximum 15)

(1) [AO 2] Creatine

(2) [AO 3] Excellent for power performers as it lengthens the period of output of the ATP-PC system/Delays the anaerobic threshold/Increases the time maximal power is available during a sprint finish

(3) [AO 3] Excellent for increasing peak power output for strength and speed athletes

(4) [AO 3] Long-term usage research is not yet established for creatine/Could be some long-term health implications

(5) [AO 3] Can cause renal stress if taken in large quantities

(6) [AO 2] Protein

(7) [AO 3] Excellent post-event supplement

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(8) [AO 3] Supports the adaptation process causing fitness gains to occur more readily

(9) [AO 3] Crucial for growth and repair of muscle tissues as well as cells such as red blood cells

(10) [AO 3] High-quality protein supplements can be expensive

(11) [AO 3] Excess protein is not processed by the body and passed as urea

(12) [AO 2] Bicarbonate

(13) [AO 3] Can be used during performance to assist lactic acid buffering

(14) [AO 3] Anaerobic athletes can delay lactic-acid-based fatigue/Delay OBLA

(15) [AO 3] Work at higher intensity before reaching OBLA

(16) [AO 3] However, bicarbonate can cause gastrointestinal problems/Stomach discomfort

(17) [AO 2] Herbal remedies such as ginseng, arnica and camomile

(18) [AO 3] Ginseng is a natural alternative to caffeine/Increases activity of the CNS/Improves alertness and motivation

(19) [AO 3] Ginseng can improve VO2max/Boost the immune system

(20) [AO 3] Arnica can reduce inflammation and pain associated with endurance events such as triathlon

(21) [AO 3] Camomile reduces stress, promotes sleeping and helps the adaptation process to promote better fitness gains

(22) [AO 3] Many athletes are unaware of herbal remedy purpose/Underutilised

(23) [AO 3] Some herbal remedies could be contaminated within factories with banned substances

(24) [AO 2] Caffeine

(25) [AO 3] Acts as a stimulant and heightens focus and motivation

(26) [AO 3] Some studies suggest caffeine improves fat solubility, which can lead to glycogen sparing

(27) [AO 3] However, lots of caffeine can cause agitation and nervousness

(28) [AO 3] Caffeine can disrupt sleep quality

(29) [AO 3] Caffeine withdrawal can occur when a person stops taking it

(30) [AO 3] Accept relevant points made from psychological field of study

(31) [AO 3] Accept relevant points made from sociocultural field of study

(32) [AO 3] Accept relevant points made from other scientific principles field of study

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Edexcel A-level Physical Education **8-Mark Level Descriptors (AO1 and AO3)**

Level	Marks	Description
	0	No rewardable material.
1	1-2	Some accurate and relevant knowledge (AO1). Simple or generalised statements supported by limited evidence (AO1). Limited balancing of ideas against each other (AO3). Limited evaluative statement (AO3).
2	3-5	A good level of accurate and relevant knowledge (AO1). A line of reasoning is presented and supported by some evidence (AO1). Examines a wide range of ideas, balancing ideas against each other (AO3). An evaluative statement which is relevant (AO3).
3	6-8	A high level of accurate and relevant knowledge (AO1). Articulates a clear viewpoint with clarity and precision which is well substantiated (AO1). Critically examines a wide range of issues balancing ideas against each other (AO3). Clear evaluative statement which is thorough and focussed (AO3).

Edexcel A-level Physical Education **15-Mark Level Descriptors (AO2 and AO3)**

Level	Marks	Description
	0	No rewardable material.
1	1-3	There are limited links between theory and practice. Limited technical language supports isolated elements of knowledge and understanding (AO2). Limited analysis of the factors that underpin performance and involvement in physical activity and sport (AO3). Analysis is not used to make a judgement (AO3).
2	4-6	Makes few links between theory and practice. Basic technical language supports some elements of knowledge and understanding (AO2). Attempts some analysis of the factors that underpin performance and involvement in physical activity and sport (AO3). Analysis may not be used to make a clear judgement (AO3).
3	7-9	Makes some links between theory and practice. Some appropriate technical language supports a good knowledge and understanding (AO2). Good analysis of the factors that underpin performance and involvement in physical activity and sport (AO3). Uses analysis to make a judgement but without full substantiation (AO3).
4	10-12	Makes strong links between theory and practice. Appropriate technical language supports a very good knowledge and understanding (AO2). Comprehensive analysis of the factors that underpin performance and involvement in physical activity and sport (AO3). Uses analysis to make a clear judgement and supports this with examples (AO3).
5	13-15	Makes many insightful and significant links between theory and practice. Appropriate technical language supports a significant level of knowledge and understanding (AO2). Sophisticated analysis of the factors that underpin performance and involvement in physical activity and sport (AO3). Uses analysis to make a fully informed judgement and supports this with examples (AO3).

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