GCE AS MARKING SCHEME

SUMMER 2023

AS
PHYSICAL EDUCATION - UNIT 1
2550U10-1

INTRODUCTION

This marking scheme was used by WJEC for the 2023 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

WJEC GCE AS PHYSICAL EDUCATION - UNIT 1

SUMMER 2023 MARK SCHEME

<table>
<tr><th>Question</th><th>Mark Scheme</th><th>AO1</th><th>AO2</th><th>AO3</th><th>Total</th></tr>
<tr><td>1. (a)</td><td>Identify a tracking analysis system from the list below.

C – GPS</td><td>1</td><td></td><td></td><td>1</td></tr>
<tr><td>(b)</td><td>Using information from Figure 1 complete the following table:

<table>
<tr><th>Question</th><th>Answer</th></tr>
<tr><td>(i) Identify which player had the lowest mean metres covered per minute in the second half.</td><td>1</td></tr>
<tr><td>(ii) Identify which player had the greatest difference in mean metres per minute covered between the first and second half.</td><td>4</td></tr>
<tr><td>(iii) Identify which player was the most consistent in metres covered between the first and second half.</td><td>3</td></tr>
</table>
</td><td>3</td><td></td><td></td><td>3</td></tr>
</table>

Question	Mark Scheme	AO1	AO2	AO3	Total
(c)	Describe time-motion analysis and discuss the benefits and limitations of such analysis within team games. Max of 2 marks for the description of time and motion analysis Time-motion analysis has been used to provide a general insight into the • physiological demands and • movement patterns of athletes • Tracking progressive change over position and speed over time Through assessing • the total distance covered, • total time in discrete activities e.g. walking/jog/sprint • frequency of activities during match-play • Time spent completing a movement. 1-2 marks for discussion that is only one sided either benefits or limitations. 3-4 marks for both benefits and limitations Benefits • Objective statistics on distance covered, speeds run, rest periods which are easy to compare • Assessment of physiological demands of the sport • Levels of players fitness • Can monitor variations in players physical performance between games, seasons etc • Can be used in training sessions to ensure they replicate game intensity • Monitor the training load of the players • Monitor seasonal variations in players work rate/performance • Can aid team and tactical selections • Used to set specific goals Limitations • Only takes into consideration physical demands and not tactical and technical ability • Running large distances isn't always an indicator of good play (players could be running unnecessarily) • Standard of opposition will impact on distances and speeds recorded • Playing surface and weather will impact on speeds and distances covered	2		4	6
		6	**0**	**4**	**10**

<table>
<tr><th>Question</th><th>Mark Scheme</th><th>AO1</th><th>AO2</th><th>AO3</th><th>Total</th></tr>
<tr><td>2. (a)</td><td>Identify the joint action, agonist(s) and type of muscular contraction at the shoulder joint of the gymnast.

<table><tr><th>Joint action</th><th>Agonist(s)</th><th>Type of muscular contraction</th></tr><tr><td>Abduction

Lateral extension</td><td>Must have
Deltoids
plus
Pectorals
Biceps
triceps
lats
Would be accepted with deltoids</td><td>Isometric</td></tr></table></td><td>3</td><td></td><td></td><td>3</td></tr>
<tr><td>(b)</td><td>Explain how the characteristics of the muscle fibre type that is predominantly used in a high intensity gymnastic rings routine aids performance.

1 mark for correct muscle fibre type available
Type II – Fast Twitch
1 mark can be awarded for a basic explanation
2 marks for a detailed explanation using the characteristics.

<table><tr><th>Characteristic</th><th>Aid to performance</th></tr><tr><td>High PC stores</td><td>More powerful contractions due to increased energy source for ATP production via the ATP-PC system</td></tr><tr><td>High glycogen stores</td><td>increased energy source (for ATP production via the lactate anaerobic allowing more prolonged energy</td></tr><tr><td>Larger cross-sectional area / larger fibre size</td><td>Apply more force</td></tr><tr><td>High myosin ATPase activity</td><td>Increased enzyme activity for ATP production within the ATP-PC system</td></tr><tr><td>High glycolytic enzyme activity</td><td>Increased enzyme activity or ATP production within the lactate</td></tr></table></td><td>1</td><td>2</td><td></td><td>3</td></tr>
</table>

Question	Mark Scheme	AO1	AO2	AO3	Total
(c)	Identify the lever system of the throwing arm and analyse the mechanical advantage associated with this type of lever. 1 mark for the identification of the First Class lever Type of lever = 1st class – elbow Type of lever = 3rd class – shoulder 1 AO1 mark for knowledge first/third class lever Up to 3 marks for analysis of mechanical advantage of a First or Third Class lever Mechanical advantage = the mechanical advantage equals the length of the effort arm divided by the resistance (or load) arm. (1 mark) Analysis of mechanical advantage of 1st class lever • The effort arm is longer than the load arm • Force can be applied over a longer period of time • Large load can be moved with relatively low amount of effort • The longer the effort arm the greater force/speed can be initiated • Greater range of motion Analysis of mechanical advantage of 3rd class lever • Resistance arm is longer than the effort arm • Can move quickly due to force being applied close to fulcrum • Greater range of movement Don't accept third class for elbow Don't accept first class for shoulder	2		3	5
		6	**2**	**3**	**11**

Question	Mark Scheme	AO1	AO2	AO3	Total
3. (a)	Identify which of the following theories is associated with personality. Tick (✓) the appropriate box. B – Trait Theory	1			1
(b)	Describe, using sporting examples, the characteristics of an individual with a Type A personality. To gain 3-4 marks must have sporting examples Type A • Strong competitive drive/need to succeed • High levels of alertness/easily aroused • Work at a fast pace/strong sense of urgency • Find it hard to delegate/become angry easily • Need to be in control/ leaders • Highly stressed 2 x 2 marks for Type A 1 mark for description of trait 1 mark for relevant practical application E.g. strong competitive drive for example wanting to place 1st in the 100m sprint. E.g. high levels of alertness, may false start easily	2	2		4

Question	Mark Scheme	AO1	AO2	AO3	Total
(c)	Discuss how stress could have a positive or a negative impact on sporting performance. Up to 2 AO2 marks for impact on sporting performance One for positive One for negative **Max 2 marks for positive impact of stress (Eutress)** Eustress – A positive reaction of a performer to stress, leading to optimal arousal • makes you more alert, • more motivated to practice push yourself etc. • Help gain more gain a competitive edge. • Prepare, focus, and perform at your optimal level. **Max 2 marks for negative impact of stress** Distress/anxiety – A negative reaction of a performer to stress, often leading to over arousal. An emotional state, similar to fear, associated with arousal and accompanied by feelings of nervousness and apprehension. (characteristics of cognitive and somatic anxiety) Somatic • experiencing butterflies • sweating • heavy breathing • elevated heart rate Common symptoms of cognitive anxiety include • negative thoughts / lack of confidence • feelings of apprehension or nervousness • decreased concentration • shorter attention span		2	4	6
		3	**4**	**4**	**11**

Question	Mark Scheme	AO1	AO2	AO3	Total
4. (a)	Explain how correct nutrition and an active cool down can speed up the recovery process, following high intensity exercise. Maximum 2 marks for the knowledge of nutrition and cool downs impact on recovery Maximum 4 marks for explanation of how nutrition/ hydration and cool down speed up recovery following high intensity exercise. **Types/methods of Nutrition/Hydration/ cool down 2x1 marks)** • Protein for growth and repair of muscles • Eating a high carbohydrate meal within 30 mins post exercise, the optimum time for the body to take up carbohydrate • Carbs to restore glycogen stores /fats to restore energy and aid transport of O2 • Hydration after exercise e.g. 1litre for every KG of body weight lost • Replenishment of electrolytes • Active recovery and related topics **Explanation of nutrition /hydration and cool down speeding recovery process** **1-2 marks for a basic explanation of nutrition and/or cool down speeding recovery process** **3-4 for a detailed explanation of nutrition and cool down speeding recovery process** Cool down *Maintains blood flow which Increases recovery by aiding resaturation of myoglobin and oxygen. *Increases speed of removal of waste products * Decreases risk of DOMS Nutrition – Eat a mixture of: • High/medium Glycaemic Index (fast releasing energy) carbohydrate in order to immediately begin to restore glycogen • Low Glycaemic Index (Carbohydrate that release energy at a slower rate e.g. fruit, wholemeal bread, wholemeal pasta and rice) continues to restore glycogen over a longer period of time (the metabolism remains elevated after exercise) Hydration If the athlete is dehydrated then the following problems occur, which means athletic performance will drop. • Hydration = Increased plasma volume in blood, allows for efficient circulation of blood or • De-hydration leads to an increase in blood viscosity	2	4		6

Question	Mark Scheme	AO1	AO2	AO3	Total
	The following factors below maybe drawn upon in relation to dehydration. The following are factors that will be affected by increased viscosity of blood and therefore decreased speed/velocity around blood vessels • Decreased stroke volume/increased heart rate • Impaired removal of lactic acid • Decrease in the supply of energy glucose to muscles • Lowering of blood pressure • Muscle function impairment • Reduction in the transport of enzymes • Reduction in heat loss from the skin (temperature control)				
(b)	Evaluate, using appropriate examples, how knowledge of the energy systems is important when developing a training programme for your sporting activity. The 3 Energy Systems • ATP-PC System or Alactic System • Anaerobic Glycolysis or Lactic Acid System uses carbohydrates (glucose) stored in the muscles as Glycogen. Because no oxygen is required to re-synthesise ATP, energy is produced quickly. Also because no oxygen is used in the process lactic acid is produced as an end product. • Aerobic System – This system uses carbohydrates (glucose/glycogen) and fats to replenish ATP. Because oxygen is required for the process, energy production takes a little longer but can continue for a much longer duration. Because of the presence of oxygen, no lactic acid is produced. Practical Application/Evaluation The energy systems are all working at the same time (Energy Continuum). However, the predominant Energy System used to re-supply ATP depends on 3 things: ▪ **INTENSITY** of exercise. ▪ Creatine phosphate = Maximum intensity 95-100% ▪ Anaerobic Glycolysis = High intensity 80-95%. ▪ Aerobic = Low to medium intensity exercise up to 80% E.g. A 100m sprinter would need to ensure they are training the CP system to ensure progression in their event whereas a marathon runner needs to train predominantly in the aerobic zone. ▪ **DURATION** of exercise. ▪ Linked to intensity E.G. If the exercise is max intensity e.g. 100% then there is only enough CP for 10-12 seconds or ▪ High intensity and lasts over 2 minutes then both CP and Muscle Glycogen will become depleted and need repaying.	2	2	4	8

Question	Mark Scheme	AO1	AO2	AO3	Total
	▪ Intensity of exercise will drop as the aerobic system becomes more dominant. E.g. a rugby player would need to train all 3 energy systems over the correct duration to ensure progression which matches a game ▪ **FITNESS LEVEL** of the performer. Individual levels of both aerobic and anaerobic fitness will impact on the predominant energy system being used. ▪ A higher level of **aerobic fitness** = longer to reach the Anaerobic Threshold ▪ This is beneficial because when a performer begins to work anaerobically there is only a limited supply of energy available (PC and muscle glycogen - up to 2 minutes max). You then would begin to fatigue quickly ▪ If the exercise continues to increase then the performer will run out of anaerobic energy and return to using aerobic ▪ The greater the anaerobic fitness the longer the performer can work in the anaerobic zone. In practice, all these factors work together to determine which are the predominant energy systems being used during the activity. ▪ **RECOVERY AFTER EXERCISE** – Understanding of alactic (CP replenishment) and lactacid recovery (removal of lactic acid and replenishment of glycogen) ▪ Candidates can also include nutrition and methods to speed up recovery (cool down. Ice baths etc) within the answer *** Use of examples will include - sprinting being linked to max 100% intensity and the use of CP system, medium 60-75% of max being linked to aerobic etc**				
		4	**6**	**4**	**14**

Question 4(b)

Band	AO1 2 marks	AO2 2 marks	AO3 4 marks
3			**3-4 marks** Excellent evaluation of how intensity, duration and fitness levels are linked to all the energy system. There are clear links with the type of training that is being carried out and what aspect of fitness/performance is being developed. The response is clearly expressed and shows an accurate use of terminology. Writing is very well structured using accurate grammar, punctuation and spelling.
2	**2 marks** Very good knowledge and understanding of the energy systems	**2 marks** Very good explanation and application of energy systems Appropriate examples from sporting situations are provided throughout.	**2 marks** A good evaluation of how intensity, duration and fitness levels are linked to the energy systems used (*not all have to be covered*). There are some links with the type of training that is being carried out and what aspect of fitness/performance is being developed. The response is adequately expressed and shows an accurate use of terminology. Writing is generally well structured using accurate grammar, punctuation and spelling.
1	**1 mark** Sound knowledge and understanding of the energy systems	**1 mark** Sound explanation and application energy systems Some examples from sporting situations are provided throughout.	**1 mark** A basic evaluation of how intensity, duration and fitness levels are linked to the energy system and therefore the type of training that is being carried out and what aspect of fitness/performance is being developed Basic information is provided The response shows basic use of terminology. Writing shows evidence of structure but some errors in grammar, punctuation and spelling.
0	**0 marks** No knowledge of energy systems	**0 marks** No application of knowledge and understanding of energy systems	**0 marks** No evaluation of energy systems and the link between intensity, duration and fitness levels

Question	Mark Scheme	AO1	AO2	AO3	Total
5. (a)	Analyse, using examples, how a coach could vary the types of guidance utilised between the cognitive and autonomous stages of learning. **1-2 marks for limited examples** **3-4 marks for examples used throughout** **Max 4 for no use of examples** **1-2 marks for a basic analysis of the types of guidance used in the cognitive and/or autonomous stage of learning** **3-4 marks for a detailed analysis of the types of guidance used in the cognitive and autonomous stage of learning** **Characteristics of a performer in the cognitive stage of learning** • Not always understanding new information. • Difficulty in processing large amount of information. • Difficulty processing complex info • Difficulty deciding what to pay attention to. • Errors are made which performer is unable to correct. **Cognitive phase, guidance is characterised by** • Manual in nature to get performer used to the kinaesthesia of the movement • Mechanical or manual to eliminate danger for the cognitive performer so gives confidence • Verbal repetition in terms of reinforcing on key points • Verbal identification of key cues • Visual demonstration of tasks essential creating a mental image • Modelling of good practice key to performers understanding • Coach may be more motivational / pep talks / verbal persuasion • Removal of critical comments/shouting from coach/equiv e.g. • Punishment is not applicable because it weakens response; **Characteristics of a performer in the autonomous stage of learning** • Performs complex skills with ease/correct technique/ confidence • Has plenty of time/efficient / consistent/ skills already habitual • Can pick up early signals/use of selective attention – good reaction time. • Can concentrate on other aspects other than technique i.e. tactics • Can detect and correct errors • Few errors in performance. • Use of intrinsic feedbac**k**		4	4	8

Question	Mark Scheme	AO1	AO2	AO3	Total
	Autonomous phase guidance characterised by • Verbal guidance concentrates on style and form and finer points • Subtle technical cues are often given • Visual guidance through video analysis • Visual guidance through biomechanical analysis • Far more emphasis on tactics • Use of mechanical guidance for development of complex moves Analysis is the characteristic linked to the method of guidance therefore they may say the characteristic and then the method of guidance in one sentence. E.g. Cognitive stage = Difficulty in processing key information Guidance = verbal reinforcement of key point linked to a practical example Practical example = keep your elbow high and arm straight in the throwing arm of the javelin				
(b)	Explain why a coach would use massed practise within a training session for a team game. 1 mark for knowledge of massed practise Massed Repeated practice of the same skill with little or no recovery periods between blocks of practice 1 mark basic explanation 2-3 marks for a detailed explanation from points below: • Replicates fatigue of a game situation so the performer becomes familiar with situations/condition they will need to perform the skill under • Performer is highly skilled/autonomous stage of learning/experienced therefore they are familiar with the task and need to be placed under pressure to replicate the demand of the game/physical activity • Performer improves levels of fitness so they can work for longer before fatigue affects the learning of the skill • Skills are often discrete/simple/ballistic therefore they take a short time to perform reducing impact of fatigue • Replicate relevant learning tactics • Repetition allows overlearning /become habitual Accept other appropriate explanations of why a coach would use massed practice to produce optimum improvements in performance. Answers must relate directly to improvements brought about by massed practice.	1	3		4
		1	**7**	**4**	**12**

Question	Mark Scheme	AO1	AO2	AO3	Total
6.	Discuss, using examples where appropriate, how socio-cultural and political factors have influenced modern sport Possible indicative content, other examples will and can be included. Socio-cultural Factors • Social stratification (the development of unequal layers based on factors such as income, education, status and power) and hegemony • social differentiation in terms of • gender, race, ethnicity, class and disability • reinforcement of or smashing stereotypes • Discrimination stacking and centrality • Sport can transcend issues of money, power and economic inequalities • Can be used as a vehicle of social mobility • Promotion of values e.g. fair play • Traditional sports linked to countries e.g. Rugby in Wales • Reference to education if in relation to the socio-cultural factors Political factors • How sport has been used as a political tool for propaganda, boycotts • Reconciliation • National and international recognition • How sport is used to promote health • Use of Olympics as a political tool and promotion of political ideologies and power e.g. Beijing Olympics, • Lottery funding (positive and negative aspects) • nation building. • Commercial/political/showcase country/ • Shop window effect • Mask human rights issues e.g. Russia /Beijing/ Mexico • American scholarship system / Russian state funding allowing full time training	3	5	5	14
		4	**5**	**5**	**14**

Band	AO1 4 marks	AO2 5 marks	AO3 5 marks
3	**4 marks** Excellent knowledge and understanding of all the socio- cultural and political factors	**5 marks** Excellent explanation and application of the socio- cultural and political factors within modern sport Appropriate examples from sporting situations are provided throughout.	**5 marks** Excellent discussion of how a variety of socio- cultural and political factors influence modern sport in both a positive and negative way Relevant examples are provided throughout. The response is clearly expressed and shows an accurate use of terminology. Writing is very well structured using accurate grammar, punctuation and spelling.
2	**2-3 marks** Good knowledge and understanding of the socio-cultural and political factors.	**3-4 marks** Good explanation of the socio- cultural and political factors Some appropriate examples from sporting situations are provided throughout	**3-4 marks** Good discussion of how a variety of socio- cultural and/or political factors influence modern sport in both a positive and negative way Some relevant examples are provided throughout. The response is adequately expressed and shows an accurate use of terminology. Writing is generally well structured using accurate grammar, punctuation and spelling.
1	**1 mark** Limited knowledge and understanding of some socio-cultural and political factors	**1-2 marks** Basic explanation the socio- cultural and political factors Few examples from sporting situations are provided throughout	**1-2 marks** Limited discussion of how the of socio-cultural and political factors influence modern sport in both a positive or negative way Basic information is provided Few examples are provided. The response shows basic use of terminology. Writing shows evidence of structure but some errors in grammar, punctuation and spelling.
0	**0 marks** No knowledge of socio- cultural and political factors	**0 marks** No application of knowledge and understanding of socio- cultural and political factors	**0 marks** No discussion of socio- cultural and political factors

Unit 1: Assessment objectives mark allocations

	Q1	Q2	Q3	Q4	Q5	Q6	Total
AO1	6	6	3	4	1	4	**24**
AO2	0	2	4	6	7	5	**24**
AO3	4	3	4	4	4	5	**24**
Total	**10**	**11**	**11**	**12**	**12**	**14**	**72**