Engage Education Foundation

Units 3 and 4 Physical Education

Practice Exam Solutions

Stop!

Don't look at these solutions until you have attempted the exam.

Any questions?

Check the Engage website for updated solutions, then email practiceexams@ee.org.au.

Section A – Multiple-choice questions

Question 1
The correct answer is D.

Question 2
The correct answer is A.

Question 3
The correct answer is C.

Question 4
The correct answer is B.

Question 5
The correct answer is A.

Question 6
The correct answer is A.

Question 7
The correct answer is A.

Question 8
The correct answer is B.

Question 9
The correct answer is B.

Question 10
The correct answer is D.

Question 11
The correct answer is D.

Question 12
The correct answer is D.

Question 13
The correct answer is C.

Question 14
The correct answer is D.

Question 15
The correct answer is D.

Section B – Short-answer questions

Marks allocated are indicated by a number in square brackets, for example, [1] indicates that the line is worth one mark.

Question 1a

W = Increase [1].

X = Decrease [1].

Y = Cardiac Output **or** Ventilation **or** diastolic blood pressure [1].

Z = Submaximal [1].

Question 1b

Continuous **or** Aerobic **or** Fartlek **or** Long Interval [1].

Question 1c

After 6 months of aerobic training, at submaximal levels, stroke volume increases [1] so the heart does not have to beat as often to meet the Oxygen demand, therefore heart rate decreases [1].

Question 1d

A training adaptation of aerobic training is increased mitochondrial size and density [1] which enables increased aerobic ATP production [1] at higher intensities, resulting in increased LIP [1].

Question 1e

Training volume: Y [1].

CHO intake: Z [1].

Question 1f

As seen in the graph, increasing CHO intake (Z) and decreasing volume of training (Y) in the final week before the event [1] allows for optimal glycogen stores and muscles to be rested therefore preventing glycogen depletion [1] & being able to work at higher intensities for longer, so allowing Robert to "peak" for event [1].

Question 1g

Goal setting/mental imagery/mental rehearsal/breathing techniques prior to the race [1], therefore decreasing arousal/anxiety allowing him to focus/concentrate on cues and increase confidence [1].

Question 1h

Sports gels/sports drinks/high GI food/water during the event [1] in order to rapidly replenish glycogen stores/ electrolytes/rehydrate [1] therefore delaying time to deplete stores or prevent dehydration and therefore delaying fatigue [1].

Question 1i

Massage/hydrotherapy/hot-cold contrast therapy [1] increase blood and oxygen flow to muscles therefore increasing removal of waste products/decreased DOMS [1].

Question 2a
Anaerobic capacity [1].

Question 2b
[1] For each of the three of the following:

- Explanation of test e.g. what it involves.
- Explanation of risks e.g. short of breath.
- Gaining parental consent if under the age of 18 years.

Question 2c
Kate [1] as she has the most consistent results 7-6 indicating she has the most efficient replenishment of CP [1].

Question 2d
The aerobic energy system plays a minimal role throughout the sprints as they are completed at maximal intensity [1]. However, the aerobic energy system is predominant during the low intensity recovery periods between sprints 1] due to sufficient oxygen during this time to replenish CP stores [1].

Question 3a
[1] For each required:

- Individual: informed about guidelines, inform about opportunities to be active, etc.
- Social environment: student leaders/staff as role models, teams, peer groups, etc.
- Physical environment: provide equipment, posters up around school about activities, undercover area for when raining/hot, fitness trails, etc.
- Policy: students have to complete a log/classrooms closed during breaks, etc.

Question 3b
[1] For any three from: decreased absenteeism, increased academic results, increased school community morale, decreased sick days.

Question 3c
The more accurate a measure is, the less practical it is likely to be [1] and the more practical a measure is the less accurate it is likely to be [1]. A physical activity log is practical as it can be completed easily and is cheap. However, it is not very accurate as it is subject to social desirability bias [1].

Question 3d
- Increased time of data collection [1].
- Kept anonymous [1].

Question 4a
Should be one increment higher than 200m for both [1] and both 400m and 800m should be the same [1].

Question 4b
Compare: both experience oxygen deficit as they both use the anaerobic energy systems due to the time delay before aerobic energy system becomes predominant [1].

Contrast: As 200m is longer, it will use more of the anaerobic glycolysis energy system and, therefore, have a bigger O2 deficit than the100m [1].

ATP-PC energy system is predominant [1].

Question 4c
The 800m [1] would experience the highest EPOC as it is performed at high intensity and exhausts the anaerobic energy systems [1] and EPOC lasts longer to oxidise metabolic by-products, such as H+ ions [1].

Question 4d
100m would not differ as the event is of short duration and relies predominantly on the ATP-CP system [1]. However, the 800m would have an increased EPOC [1] due to increased temperature so more blood and oxygen would be redistributed to the skin for thermoregulation so less goes to the muscles [1]. Therefore, more reliance will be on anaerobic glycolysis system so there is increased O2 deficit, resulting in a slower time and longer EPOC [1].

Question 5a
Positive: athletes know they are competing in fair competition/less athletes taking drugs therefore athlete enjoys sport, as per the WADA code [1].

Negative: inconvenient/intrusive [1].

Question 5b
ASADA supports WADA's aim of making sport safe and fair for all through [1] its policy to deter (harsh penalties deter athletes, education), detect (drug testing) and enforce (punishments handed out) [1].

Question 5c
Less people will be taking drugs so the sport will be fairer/safer [1], therefore more people would realise that they can compete fairly with other players who don't take drugs hence they will be more likely to participate [1].

Question 5d
Benefit: Increased glycogen sparing effect/improved focus & concentration/improve muscle contractility [1].

Side effect: Sleep deprivation/heart palpitations/dehydration/headaches/dependence [1].

Question 6a
As split time increases heart rate decreases [1].

Question 6b
165-170 bpm [1].

Question 6c
Glycogen [1] as the duration is approximately 4 minutes so the aerobic energy system would be predominant [1].

Question 6d
The increased contribution from the anaerobic glycolysis system increases the accumulation of metabolic by products [1]. Glycolytic enzymes and muscle contractions are inhibited [1] therefore less contractions happen at high intensity, resulting in decreased speed [1] (64 seconds – 70 seconds) [1].

Question 6e

For the first 400m the ATP-CP system is predominant for the initial take off and until CP stores start to deplete after the first 6-10 seconds whilst other systems have increasing contribution [1]. As CP depletes the anaerobic glycolysis system becomes predominant as there is still insufficient oxygen [1]. Once sufficient oxygen reaches the muscles (approximately 45-60 seconds 350-400m) the aerobic energy system becomes predominant [1]. In the final 400m there is sufficient oxygen at the muscles therefore the aerobic energy system is still predominant [1]. The anaerobic glycolysis system will contribute more during high intensity effort, such as the final sprint [1]. Due to the continuous nature of this event, the ATP-PC system contributes minimally during the final 400m [1].

Question 7a

- [1] For either Vertical jump/Standing long jump/Seated basketball throw.
- [1] For description of throwing/jumping as far as you can in one maximal effort.

Question 7b

In order to sufficiently replenish CP stores in order to perform maximal efforts each time [1] to specifically train muscular power & the ATP-PC energy system [1].

Question 7c

Increase repetitions by 1 repetition [1].

Intensity/height of efforts should be at maximal level so overload is not accepted here.

Question 7d

Training adaptations such as increased muscle hypertrophy/increased ATPase/increased CP stores [1] will lead to increased power/strength of stroke, therefore more efficient movements [1].

Question 7e

Aerobic training will increase aerobic capacity which will allow faster replenishment of ATP and CP during breaks [1] therefore can make more explosive efforts (e.g. powerful hits) [1].

Question 7f

Week	Sun	Mon	Tue	Wed	Thurs	Fri	Sat
3	Plyo	Rest	Aero	Plyo	Rest	Aero	Aero

- [2] For a rest day after each plyometrics training day.
- [1] For only 2 plyometrics sessions per week
- [1] For 3 aerobic sessions.

Question 8a

Olympic event	Expected lactate levels
100m sprint	2mmol
100m freestyle	5mmol
Marathon	4mmol

Question 8b

Olympic event	Most likely cause of fatigue
100m sprint	CP depletion
100m freestyle	Accumulation of metabolic by products (H+ ions)
Marathon	Any one of depletion of glycogen/dehydration/elevated body temperature

Question 8c
Active recovery (e.g. slow lap swimming).

Question 8d
Marathon runner [1] as massage increases blood flow and oxygen to muscles and venous return [1] to help remove metabolic by products [1]. This prevents venous pooling and DOMS [1] therefore speeding up the rate of recovery [1].

Question 8e
Lactate isn't harmful but it is associated with an increase in H+ ions if there is insufficient oxygen available to break down lactic acid [1] which can inhibit glycolytic enzyme activity and muscle contractions [1]. However, it can be helpful if sufficient oxygen is available to break it down [1] as it can be used to create further energy (pyruvate to glucose) for ATP resynthesis [1].