C

Free Exam
for 2011-16 VCE study design

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 B.

Question 3
The correct answer is D.

Question 4
The correct answer is C.

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 D.

Question 10
The correct answer is B.

Question 11
The correct answer is A.

Question 12
The correct answer is A.

Question 13
The correct answer is C.

Question 14
The correct answer is C.

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

One for each required [1 mark for each level]:

Individual: informed about guidelines, inform about opportunities to be active, educate on the importance of physical activity.

Social environment: student leaders/staff as role models, teams, adequate supervision, the construction of teams, building a culture of support through teamwork.

Physical environment: provide equipment, posters up around school about activities, undercover area for when raining, access to playgrounds/gyms/pools.

Policy: students have to complete a log/classrooms closed during breaks/ students allowed to wear PE uniform to and from school/reward students who have done the most exercise.

Question 1b

Must link policy to every other level of the SEM (individual, social environment and physical environment), preferably using previous case study as stem.

The following is an example of a high level response:

If you have policies in place such as students being allowed to wear PE uniform all day when they have PE, students may feel more comfortable participating in incidental physical activity e.g. running around at lunchtime (individual level).

Allowing students to wear PE uniform all day may encourage them to seek to be a part of a team/after school sport or even seek active transport with friends to and from school (social environment level).

If you have rules that allow students to wear PE uniform to and from school then they are more likely to use the gym/playground equipment (physical environment level).

Question 1c

Any three from [1 mark for each]:

Decreased absenteeism, increased academic results, increased community morale, increased productivity, increased concentration.

Question 1d

The following is an example of a high level response:

Jump rope for heart. Jump rope for heart aims to increase physical activity through a skipping program [1] implemented in schools [1] whilst raising awareness about cardiovascular health. Jump rope for heart teaches students how to skip, how skipping benefits health and students skip in groups [1].

Question 1e

[1 mark for identifying the general relationship between accuracy and practicality, 1 mark for identifying with a reason that logs are more practical, 1 mark for identifying with a reason that logs are not as accurate]

The following is an example of a high level response:

The more accurate a measure is the less practical it is likely to be 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 [1], however it is not very accurate as it is subject to social desirability bias. [1]

Question 1f

Any two of the following [1 mark each]:

Increased time of data collection, kept anonymous, inclusion of irrelevant questions

Question 2a

[1 mark for each]

Both should be slightly higher than 200 [1] both 400 and 800 should be the same [1]

Question 2b

Students must have at least one of each but could have 1 compare (similarities), 2 contrasts (differences) or 2 compares and 1 contrast. [1 mark for each compare/contrast]

The answer below is an example of a high level response:

Compare- both experience a deficit as they both use the anaerobic energy systems [1]

Both have a lower deficit than the 400 and 800m as they are shorter events therefore decreased reliance on anaerobic energy systems therefore decreased deficit [1]

Contrast- as 200m is longer it will use more of the anaerobic energy system therefore have a bigger deficit than the 100m [1]

Question 2c

[1 mark for identification.1 mark for link to anaerobic energy systems use, 1 mark for link between anaerobic energy systems, deficit and EPOC]

The following is an example of a high level response:

400 and 800 m [1] would experience similar EPOC and higher than other events as they both exhaust the anaerobic energy systems as seen on graph with highest deficits [1] therefore have similar EPOCs [1]

Question 3a

As split time increases heart rate decreases [1]

Question 3b

165-173 bpm [1]

Students should be able to identify that this is the slowest split therefore the average HR must be the lowest.

Question 3c
[1 mark for identification of fuel and 1 mark for justification]

Glycogen [1] as the duration is approx. 4mins the aerobic energy system would be predominant at high intensity therefore glycogen [1]

Question 3d
[1 mark for identification of cause of fatigue, 1 mark for explanation of how fatigue, 1 mark of how fatigue affects running speed, 1 mark for link to data]

The following is an example of a high level response:

Increased contribution from anaerobic glycolysis system therefore increase metabolic by products e.g. LA and H^+ ions [1] therefore inhibiting glycolytic enzymes and muscle contractions [1] therefore less contractions at high intensity therefore decreased speed [1] (64 secs – 70 secs) [1]

Question 3e
[3 marks for interplay (must mention all 3 energy systems) in first 400m, 3 marks for interplay in last 400m]

Students must explain the difference in times.

The following is an example of a high level response:

For the first 400m;

CP system predominant for the initial take off and until CP stores start to deplete after the first 80-100m whilst other systems have minimal contribution [1]. As CP depletes anaerobic glycolysis system becomes predominant as there is insufficient oxygen [1]. Once sufficient oxygen reaches the muscles the aerobic energy system becomes predominant [1] and due to high intensity anaerobic glycolysis system continues to contribute significantly whilst CP system contributes minimally whereas in the final 400m there is sufficient oxygen at the muscles therefore the aerobic energy system will be predominant from the start to the end of the 400m lap [1]. The anaerobic glycolysis system is still contributing but not as much as it was at the end of the first lap due to increased accumulation of metabolic by products e.g. H^+ ions [1]. The CP system continues to contribute minimally [1] Due to the increased predominance of aerobic system in the 4^{th} lap, which has a slower rate, times are slower e.g. 69 seconds vs. 60 seconds.

Question 4a
X = max [1]

Y = L/min [1]

Question 4b
Respiratory Rate: Number of breaths per min [1]

Tidal Volume: Amount of air breathed in and out per breath [1]

Question 4c
[1 mark for identifying increased V = increased oxygen into the body, 1 mark for explaining that this is due to increased oxygen demand at muscles]

The following is an example of a high level response:

Ventilation (TV x RR) increases the amount of oxygen into the body [1]. There is an increased need for oxygen into the body to meet the increased demand at the working muscles [1]

Question 4d

[1 mark for identifying that as exercise intensity increases as does V and AVO2 diff, 1 mark for explaining how exercise intensity affects V (must refer to graph), 1 mark for explaining how exercise intensity and V affect AVO2 diff]

The following is an example of a high level response:

As intensity increases as does ventilation (for example 16.1km/hr has higher V than 3.2km/hr) [1] as increase in exercise intensity means increase demand for oxygen so V increases to get more oxygen into the body [1]. In order for the oxygen to get into the muscles to meet the demand AVO2 diff must also increase [1]

Question 5a

[1 mark for each advantage and disadvantage for each energy system, from any of the below]

	Advantages	Disadvantages
ATP-CP system	High rate Immediate No oxygen required	Low yield Limited stores
Anaerobic glycolysis system	High rate No oxygen required	Low yield Metabolic by products eg H+ions
Aerobic glycolysis system	High yield No fatiguing by products Long duration	Low rate Requires oxygen

Question 5b

[1 mark per correct word]

Glycogen-glucose- *pyruvic acid* - presence of oxygen- water, *heat and carbon dioxide*

Question 5c

[1 mark for compare (similarity), 1 mark for contrast (difference)]

The following is an example of a high level response:

Compare - both require oxygen

Contrast - aerobic glycolysis uses glycogen as a fuel whereas lipolysis uses triglycerides/ aerobic glycolysis has a simpler chemical pathway therefore higher rate/lower yield compared to aerobic lipolysis.

Question 6a

Olympic event	Expected LA levels
100m sprint	2mmol
3000m	4mmol
Marathon	5mmol

Question 6b

Olympic event	Most likely cause of fatigue
100m sprint	CP depletion
3000m	Accumulation of metabolic by products
Marathon	Dehydration or the accumulation of inorganic phosphates

Question 6c

Active recovery to assist with the oxygenation of metabolic byproducts by maintaining oxygen uptake. [1]

It also increases blood flow to the muscles through the mechanisms of the respiratory and muscle pump which increases the delivery of oxygen to and the removal of wastes from the muscles. [1]

Question 6d

Students must outline not just list.

Complete an active recovery e.g. light jog

[1 mark for identifying, 1 mark for explanation, 1 mark for link to performance]

The following is an example of a high level response:

3000m runner [1] as they work using the anaerobic glycolysis system for the longest period of time therefore will accumulate the greatest amount of LA and H^+ ions [1] By being able to tolerate higher amounts of metabolic by products they can maintain a higher speed for longer therefore decreased time [1]

Question 6e

[1 mark for identifying (train aerobically, CHO load, adequate hydration prior, replenishing High GI throughout), 1 mark for description]

The following is an example of a high level response:

By CHO loading the marathon runner will have increased stores of glycogen in the muscle [1] therefore be able to use CHO for longer and delay running out [1]

Question 6f

[2 marks for how it can be useful, 2 marks for how it can be harmful]

The following is an example of a high level response:

Lactate can be harmful if there is insufficient oxygen available to break it down [1] as it can cause an increase in H^+ ions which can inhibit glycolytic enzymes and muscle contraction [1] however it can be helpful if sufficient oxygen is available to break it down [1] as it can be broken back down to create further energy (pyruvate to glucose) for ATP resynthesis [1]

Question 7

[2 marks for two of the following benefits, 2 marks for one of the following side effects]

Benefits:

- Masks fatigue
- Increases alertness
- Increases aggression
- Improves muscle reaction
- Improves anaerobic performance

Side effects:

- Anxiety
- Restlessness
- Tremors
- Cardiac arrhythmia
- Stomach upsets
- Irritability
- Hypothermia
- Heart attack

Question 8

[3 marks for the 3 identifying the following points]

- Improves neural pathways in the brain and muscles and enhances muscle activity
- Slows down complex skills so that key components can be isolated and correct movements felt
- Allows potential technique problems to be identified

Question 9a

Nutritional:

- Consume high GI foods immediately (within 30 minutes) after the game [1], as this is the time when glycolytic enzymes are still receptive to quickly taking up and converting carbohydrates to glycogen [1].

Question 9b

Physiological:

- Beach or pool sessions the day after the match for recovery [1]. These encourage blood flow and therefore removal of waste products thereby reducing the severity of DOMS [1]. The buoyancy offered by the water also allows for relaxation of gravitational muscles.

Question 9c

Psychological:

- Mental imagery could be used to improve performance [1]. This would involve rehearsing set plays and actions in their mind's eye, enabling increased practice and confidence [1].

Question 10a

Balance is the ability to maintain equilibrium while stationary or moving [1]. Equilibrium balance is important in this image so the ballerina does not fall when on such a minimal base of support [1].

Question 10b

Flexibility is the capacity of a joint to move through its full range of motion, and reflects the ability of the muscles and connective tissues to stretch [1]. Flexibility is extremely important in this image as it enables the ballerina to fully extend her leg into this position [1].

Question 11

Muscular strength is the maximal force that can be generated by a muscle or muscle group in one maximal effort [1], whereas muscular endurance is the ability of the muscle or muscle group to perform repeated contractions for an extended period of time [1]. Different to muscular strength and muscular endurance which are health related fitness components, muscular power is a skill related fitness component [1]. It is the ability to exert a force rapidly over a short period of time [1].