

**MARK SCHEME for the October/November 2011 question paper  
for the guidance of teachers**

**9396 PHYSICAL EDUCATION**

**9396/13**

Paper 1 (Theory), maximum raw mark 90

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

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### Section A

#### Anatomy and Physiology

1 (a) 6 marks in total

elbow joint

Joint type	Movement occurring	Working muscle
1. hinge	2. extension	3. triceps brachii/anconeus

shoulder joint

Joint type	Movement occurring	Working muscle
4. ball and socket	5. horizontal/transverse flexion/adduction	6. pectoralis major/anterior deltoid

[6]

(b) 6 marks in total

Sub max 4 marks from:

Joint feature	Function
1. joint capsule	2. forming a capsule round the joints adds stability
3. ligaments	4. by securing the bones of a joint together it adds significantly to joint stability
5. medial/lateral (collateral) ligament	6. keep the femur and tibia from moving from side to side
7. pads of fat	8. improve the fit of articulating bones
9. meniscus	10. deepen the joint
11. patella	12. prevents hyperextension of knee joint
13. anterior/posterior cruciate ligaments in addition the ACL	14. hold the femur and tibia together
	15. also prevents hyperextension of the knee

Sub max 2 marks

- 16. the femur is balanced on top of the tibia making it very unstable as a joint
- 17. vulnerable to side impact which damages the medial ligament (e.g. tackle in football)
- 18. twisting/pivoting action puts strain on the ligaments
- 19. sudden stopping and changes of direction put strain on the ligaments.

[6]

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(c) 5 marks from:

1. adrenaline/noradrenaline is released (from the adrenal glands)
2. stimulates the SA node
3. increasing heart rate
4. the conduction process speeds up when the heart muscle temperature increases
5. warm heart muscle myocardium distends further
6. allowing greater filling of the heart with blood/increased end diastolic volume
7. increase in stretch stimulates the SA node
8. venous increases during exercise, stretching cardiac muscles stimulating SA node. [5]

(d) 4 marks in total  
(take first two mechanisms)

Sub max 2 marks

1. the skeletal/muscle/pump mechanism
2. the contraction of skeletal muscles puts pressure on/squeezes the vein walls helping to force blood back to the heart

Sub max 2 marks

3. valves in the veins
4. prevent back flow and keep blood flowing in one direction back to the heart

Sub max 2 marks

5. the respiratory pump mechanism
6. changes in pressure in the thoracic cavity put pressure on the abdominal veins helping to force blood back to the heart

Sub max 2 marks

7. venous tone
8. partial contraction of the smooth muscle in the vein wall helps to force blood back to the heart

Sub max 2 marks

9. gravity
10. from veins flowing from above the heart helps force blood back to the heart. [4]

(e) 4 marks from:

1. both myoglobin and haemoglobin have an affinity/will combine with oxygen
2. at the lungs oxygen combines with haemoglobin/forms oxy-haemoglobin
3. haemoglobin can carry four molecules of oxygen when fully saturated
4. haemoglobin carries oxygen to the muscle tissue
5. oxygen diffuses into cell because of the diffusion gradient/diffusion from high to low
6. myoglobin acts as a temporary store/transporter of oxygen to the mitochondria/site of aerobic respiration
7. myoglobin higher affinity for O<sub>2</sub> than haemoglobin
8. Bohr shift explained. [4]

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(f) 5 marks in total

Sub max 3 marks from:

1. high partial pressure of oxygen/low pp CO<sub>2</sub> in alveoli
2. low partial pressure of oxygen/high pp CO<sub>2</sub> in capillaries
3. reversal O<sub>2</sub>/CO<sub>2</sub>
4. diffusion occurs from area of high pressure to area of low pressure
5. steeper diffusion gradient increases rate of diffusion
6. oxygen combines with haemoglobin in the RBC to form oxy-haemoglobin
7. CO<sub>2</sub> combines with haemoglobin to form carbaminohaemoglobin

Sub max 2 marks from:

7. alveoli is covered in capillaries
8. short diffusion pathway between alveoli and capillary
9. walls of capillaries are only one cell thick allowing diffusion to take place
10. millions of alveoli mean very large surface area for diffusion.

[5]

**[Total 30]**

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## Section B

### Acquiring, Developing and Performing Movement Skills

- 2 (a)** 4 marks for 4 from:  
(must use practical examples for full marks – 2 marks max with no practical examples)
1. learned – Practising/rehearsing
  2. efficient – no waste of time/effort/controlled/fluent/co-ordinated
  3. goal-directed – knowing what is required/pre-determined
  4. good technique/follows a model of performance/accurate/effective/high level of success
  5. aesthetic – looks good
  6. other relevant characteristics. [4]
- (b)** 3 marks for 3 from:
1. affected by environment/always changing
  2. is predominantly perceptual/you need to interpret and judge stimuli
  3. is usually complex/need to process a lot of information/stimuli
  4. usually externally paced/speed controlled by others
  5. outcome varies/not performed the same way everytime. [3]
- (c)** 4 marks for 4 from:
1. drive/need/motivation/desire to achieve/solve a problem/to win or learn
  2. practise/rehearsal/performance takes place to satisfy this need or drive
  3. if skill is performed successfully then learning is reinforced
  4. drive reduced when success (perceived) is experienced
  5. therefore motivation to do more subsides
  6. too much practice leads to drive reduction/reactive inhibition
  7. new tasks/goals/motivation is needed to remove this reduction in drive. [4]
- (d)** 4 marks for 4 from:  
one mark for each element
1. (Attention)  
drawing attention/selective attention/concentrating on relevant cues/on what is important  
pay attention if the model is significant.
  2. (Retention)  
remembering the model you want to copy/storing it in the LTM/mental rehearsal
  3. (Motor reproduction)  
physically practising/rehearsing the movements shown by the model
  4. (Motivation)  
having the drive/need/will to copy, attend, retain, practice the model/copying the role  
model/significant other. [4]

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(e) 4 marks for 4 from:

2 marks max for each memory store

(STM)

2 marks for:

1. limited capacity that can only retain 5–11 pieces of info at any one time
2. used to retain information under about a minute old
3. you can watch for cues/immediate info as you are playing and remember them in the short term to be able to respond
4. capacity can be increased by chunking/organising information to enable greater storage.
5. feeds info into LTM that is deemed relevant/meaningful
6. receives information from LTM (that is used in perception)/the work place/space/engine room of the memory process/working memory

(LTM)

2 marks for:

7. limitless capacity so stored information can be used over long period of time
8. used to retain info over 1 min old
9. you can remember info related to your strengths and weaknesses/your motor programmes/what you have learned
10. you can remember your opponents' strengths and weaknesses
11. retrieval more likely if you use the information regularly/refreshing your LTM will help retrieval
12. store of past experiences. [4]

(f) 5 marks for 5 from:

(must use a practical example to score full marks. 3 marks max with no practical example)

1. internal feedback is available during/after movement
2. called kinaesthesia/proprioception
3. this informs about position and quality of performance
4. information goes to central control mechanism/perceptual process
5. errors are detected/corrected
6. comparison between memory trace and perceptual trace
7. good movement is reinforced/S-R bond strengthened
8. changes initiated by effector system
9. muscular system adjusts/changes in movement take place
10. level 2 control involves sub-conscious/automatic control
11. level 3 control involves conscious control/involves attentional processes. [5]

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**(g) 6 marks for 6 from:**

1. coach helps to recall earlier experiences from LTM
2. recall schema
3. coach helps to identify new goals/objective/knowledge of initial conditions
4. learner adapts old response to new objective/modifies motor programme/change what is normally done/response specification
5. recognition schema controls the movement
6. perform motor action
7. intrinsic feedback
8. extrinsic feedback/KR/response outcomes
9. amends performance again to achieve goal
10. learner practices in a variety of situations/coach manipulates situations/e.g. small sided games
11. sensory consequences/kinaesthetic feedback/check whether movement feels right/judge whether to modify the movement
12. coach identifies transferable elements e.g. grip/stance
- . coach sets problem learner has to identify solution.

[6]

**[Total: 30]**

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### Section C

#### Contemporary Studies

- 3 (a) (i)** 4 marks for 4 of:  
(not spare time)
1. time when all other obligations are met/work/family
  2. freely chosen activity
  3. activity done for self realisation/personal development/self expression
  4. activity done for relaxation/relieve stress/escape
  5. activity done for pleasure. [4]
- (ii)** 3 marks for 3 of:
1. provides a range of activities for pupils to sample/initial interest/find one to enjoy
  2. gives foundations in skills/techniques/rules/fair play/safety
  3. gives confidence to have a go/join in activity
  4. provides links with clubs/other agencies
  5. exercise, health link/teach benefits of active life style. [3]
- (b) (i)** 5 marks for 5 of:
1. to build muscle/increase energy/increase O<sub>2</sub> transport
  2. to mask tiredness/injury/train harder/recover more quickly
  3. pressure to win from coaches/media
  4. to win/earn big money/win at all costs/keep sponsorship/fame
  5. perception that everybody else does it
  6. to increase aggression/arousal
  7. decreases stress/impact on nervous control/enhance reactions
  8. don't see it is wrong/worth the risk. [5]
- (ii)** 5 marks for 5 of:
1. stricter punishments/life bans
  2. stricter more rigorous testing/throughout the year
  3. more money for research/testing
  4. educate athletes as to dangers/risks to health/campaigns
  5. provide positive role models
  6. unify policies throughout all sports/stricter laws
  7. enforce laws/legislation
  8. enforce/educate on spirit of sport. [5]



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(c) 5 marks for 5 of:

1. to promote a nation through sporting success/shop window effect
2. nation building/respect of other countries/promote positive relations with other countries/pride
3. use as a political weapon/statement about activities in other countries
4. to express political ideologies
5. economic/more money/tourism/increase investment
6. to improve fitness/health
7. create infrastructure/sports facilities/transport/housing/regional regeneration
8. gain popularity/votes/unify states
9. opportunity for citizens to fulfil potential
10. feel good factor
11. increased participation.

[5]

(d) 8 marks for 8 of:

must have explanation – list not acceptable

1. (Socio-economic status)	amount of disposable income/employment
2. (Class)	still class structure in sport
2. (Gender)	men more likely to participate than women
	stereotyping of women
	female appropriate sports
3. (Age)	is there provision for over 60's/young people?
4. (Race/religion/culture/discrimination)	some ethnic groups still discriminate
	religion may inhibit e.g. dress code
	stereotyping e.g. black athletes may be sprinters
	self discrimination
5. (Ability)	talent ID/pathways in place
6. (Disability)	less access/self esteem/sport not for them
7. (Family/peers/friends)	influences can be positive or negative/level of support
8. (Previous experience)	enjoyed-disliked PE/previous success/self esteem/self confidence
9. (Geography)	where you live may limit opportunity
10. (Government attitudes)	policies/political influences in country
11. (Role models)	presence/influence

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12. (Media)	amount of exposure to different sports how media treats sports people
13. (Job)	because sport is your job

[8]

**[Total: 30]**