

**MARK SCHEME for the October/November 2010 question paper  
for the guidance of teachers**

**9396 PHYSICAL EDUCATION**

**9396/12**

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.

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## Section A

### Anatomy and Physiology

1 (a) (i) 6 marks for (table and one word answers acceptable)

- 1 ankle joint type hinge
- 2 ankle movement plantarflexion/extension
- 3 ankle working muscle soleus/gastrocnemius/plantar
- 4 hip joint type ball and socket
- 5 hip movement extension
- 6 hip working muscle gluteus maximus/semitendinosus/Semimembranosus/biceps femoris (not gluteals or hamstrings) [6]

(ii) 4 marks from

- 1 Works with the agonist muscle to control action.
- 2 Performs an eccentric muscle action/contraction.
- 3 they lengthen under tension;
- 4 Act to control the movement of the body/act as a brake/stabilise landing.
- 5 as the body performs negative work/lowers body against gravity;
- 6 the force exerted is less than the resistance. [4]

(b) 5 marks in total

sub max 4 marks from

- 1 arterioles supplying blood to muscle tissue vasodilate/open;
- 2 arterioles supplying blood to non essential organs vasoconstrict/closed;
- 3 pre-capillary sphincters dilate in capillary beds in muscle tissue/open;
- 4 pre-capillary sphincters constrict in capillary beds in non essential organs/close.

sub max 1 mark for

- 5 there is proportionally more smooth muscle in the arteriole walls than any other vessel aiding vasodilation/vasoconstriction. [5]

(c) 4 marks in total

sub max 3 marks from

(accept correctly annotated diagram)

- 1 Velocity is high as blood is pumped out of the heart (under pressure)/arteries.
- 2 Velocity slows down as blood travels through the arterioles.
- 3 Velocity is at its lowest as blood travels through the capillary bed.
- 4 Velocity increases as blood travels back through the venules and veins.

sub max 1 mark from

- 5 Velocity slows as the total cross sectional area of the blood vessel increases.
- 6 Velocity increases as the total cross sectional area of the blood vessels decreases.
- 7 Velocity needs to be at its lowest through the capillary beds to enable exchange of gases, nutrients and waste products.
- 8 Venous return mechanism/muscle pump/smooth muscle/valves to stop back flow/respiratory pump. [4]

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(d) 6 marks from

- 1 the cardiac control centre (CCC) is located in the medulla/oblongata (brain stem) (brain stem accepted).
- 2 chemoreceptors detect changes in CO<sub>2</sub>/lactic acid (and send stimulus to the cardiac control centre in the medulla oblongata).
- 3 proprioceptors detect changes in movement (and send stimulus to the CCC)/mechanoreceptors.
- 4 baroreceptors detect changes in blood pressure (and send stimulus to the CCC).
- 5 in response the CCC decreases stimulation to the parasympathetic nerve.
- 6 and the CCC increases stimulation of the sympathetic nerve.
- 7 the sympathetic nerve acts on the sinatrial node/SA node/pacemaker.
- 8 adrenalin (secreted by adrenal glands) stimulates SA node (to increase heart rate).
- 9 increase in body temperature speeds up nerve impulses.
- 10 venous return increases on exercise (stretching cardiac muscle, increasing heart rate).

[6]

(e) 5 marks from

- 1 the partial pressure (pp) of oxygen is lower at altitude/less O<sub>2</sub> in air.
- 2 this lowers the diffusion gradient of oxygen between the alveoli and capillary/site of external respiration.
- 3 the lower pp of oxygen means that Hb in RBC/blood is not fully saturated with oxygen/ reduces oxygen carrying capacity of the RBC/blood.
- 4 this lowers the diffusion gradient of oxygen between the capillaries and the muscle tissue/site of internal respiration.
- 5 therefore less oxygen diffuses into the muscle tissue.
- 6 overall reducing the aerobic capacity/aerobic respiration of the performer (not performance)
- 7 increased reliance on anaerobic respiration also contributes to fatigue.
- 8 the air is much drier which can lead to dehydration.
- 9 breathing rate/heart rate are elevated above their normal response to set work loads. [5]

[Total:30]

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## Section B

### Acquiring, Developing and Performing Movement Skills

2 (a) 2 marks for:

Submax 1

1 Gross motor abilities relate to actual movement that is physical movement, e.g. strength.

Submax 1

2 Psychomotor abilities relate to the processing of information/initiation of movement (rather than actual movement) that is cognitive ability/decision making. [2]

(b) 6 marks for:

(2 marks max for each phase)

(Cognitive)

- 1 Cognitive phase/stage/initial phase/1<sup>st</sup> phase.
- 2 This is when the performer understands what needs to be done.
- 3 A mental picture is created/mental practice/rehearsal/use of demonstration.
- 4 Some trial and error.
- 5 V little feedback is acted upon/all feedback is extrinsic.

(Associative)

- 6 Associative stage/phase/2<sup>nd</sup> phase.
- 7 Practice phase.
- 8 Trial and error/correcting mistakes.
- 9 Feedback used/mostly extrinsic/beginning to develop intrinsic.
- 10 Rapid progress.
- 11 Links the mental model/image with the practice.

(Autonomous)

- 12 Autonomous phase/stage/3<sup>rd</sup> phase.
- 13 Movements (almost) automatic/habitual/without having to think.
- 14 Movements carried out with little conscious control.
- 15 Motor programme has been formed.
- 16 Performer must practice/revert to associative phase to remain in this/autonomous phase.
- 17 revert to cognitive to refine skills.
- 18 mostly intrinsic feedback used. [6]

(c) 4 marks for:

(Characteristics of intrinsic) – sub max 2 marks

- 1 Drive from within/internal the performer.
- 2 Feelings of (emotional) enjoyment/satisfaction/feeling good/satisfaction/personal bests/pride/love of activity.
- 3 Muscular sensuousness/enjoying the feeling of movement/kinaesthesia.

(Characteristics of extrinsic) – sub max 2 marks

- 4 Drive by external processes/(tangible) rewards/medals/trophies/money/KR/KP.
- 5 Comparisons/competition.
- 6 Praise/coach/teacher/parent/significant others. [4]

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(d) (Inverted U Theory)

4 marks for:

- 1 graph of theory both axes labelled with title = 1 mark (must have explanatory commentary for additional marks).
- 2 As arousal increases so does performance to an optimum level/moderate arousal.
- 3 If arousal is too high then performance will decrease/if arousal too low, performance suffers.
- 4 Theory is modified depending on personality of performer.
- 5 Theory is modified depending on the ability/skill level of the performer.
- 6 Theory modified depending on the nature of the task.
- 7 Inverted U does not explain sudden decreases in performance (as in catastrophe theory)/nor opportunity to recover. [4]

(e) 5 marks for:

(Motor programmes)

- 1 Programmes formed through repetition/over learning.
- 2 E.g. netball player repeats her pass technique/over and over.
- 3 Programmes formed through association.
- 4 E.g. netball pass associated with b.ball pass/equiv.
- 5 Programmes formed through meaningfulness/need.
- 6 E.g. to achieve success in netball a successful pass is necessary/equiv.
- 7 Programmes formed through novelty/interest/unique presentation.
- 8 E.g. netball passing in a fun practice.
- 9 Programmes formed through emotional intensity/+ve reinforcement.
- 10 E.g. netball pass that is successful gives reward/pleasure/get praise/equiv.
- 11 Programmes formed in long term memory/stores of information.
- 12 Basis for open loop control.
- 13 Sub routines of skills are performed with little conscious control.
- 14 Little conscious control over programmed movement (therefore increased capacity to attend to peripheral stimuli).
- 15 E.g. netball player can pay more attention to movement of other players.
- 16 Executive/hierarchy/sub routines.
- 17 Mental practice/mental rehearsal. [5]

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(f) 4 marks in total

3 marks for:

(closed loop)

- 1 Involves feedback/ one mark for an IP model which includes feedback
- 2 Internal control/feedback is mainly intrinsic/internal/information from proprioceptors/ kinaesthesia.
- 3 This information used to detect/correct errors.
- 4 Information can also be used to reinforce correct actions.
- 5 Movements initiated by a memory trace (Adams' theory)/memory trace triggers response stored in the LTM.
- 6 Memory trace triggers the perceptual trace.
- 7 Performer continuously matches memory trace with perceptual trace to reinforce or correct actions.
- 8 Time/correct slow movement.

(sub max) one mark –

- 9 An appropriate example where performer has to adjust in response to feedback e.g. catching a ball near the boundary in cricket/running back to retrieve a lob in tennis. [4]

(g) 5 Marks for:

At least one example for maximum marks

- 1 Attention – cues to aspects of display important/cueing/demonstration.
- 2 E.g. Watch the arm action of a successful performer's serve in tennis.
- 3 Retention – the observer needs to remember the movements watched.
- 4 Use of mental rehearsal/imagery can be helpful.
- 5 Repetition of the model's movements will aid memory.
- 6 E.g. Imagine the movement of the arm action in a tennis serve.
- 7 Motor reproduction – observer must have the capability to perform the skill/copy.
- 8 Use of feedback during the copying phase may help learning.
- 9 E.g. Coaching points given to learner as the tennis serve is being attempted.
- 10 Motivation – Observer must have drive to copy model.
- 11 Use of praise/positive reinforcement.
- 12 E.g. Coach praises successful copying of the tennis serve.
- 13 Model perceived as high status/use of role model/significant others.
- 14 E.g. Use of a successful tennis player as a model.
- 15 Also imitate other behaviours.
- 16 E.g. The routines/habits of a pro. Player is copied by the learner.
- 17 More likely to copy if behaviour seen as relevant to needs.
- 18 E.g. Player wants to play tennis to make friends.
- 19 More likely to copy if behaviour follows acceptable social norms.
- 20 If observer can identify with model then more likely to copy.
- 21 E.g. The model demonstrating the serve is of the same sex as the learner. [5]

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### Section C

#### Contemporary Studies

No list – must answer in sentences.

**3 (a) (i)** An economic product  
2 marks for 2 of:

- 1 Leisure closely identified with socio-economic status/upper classes with money.
- 2 Leisured class/play polo/right to leisure/requires money.
- 3 Working class/leisure is a privilege.
- 4 Leisure activities are becoming more universal but there are still class differences.
- 5 Ensures efficient work force. [2]

**(ii)** A form of social control  
2 marks for 2 of:

- 5 Leisure has the purpose of creating contented/healthy citizens.
- 6 Prevalent in authoritarian/socialist countries.
- 7 keeps people busy/out of trouble.
- 8 Creates a fit army ready to defend nation. [2]

**(iii)** A basis of self realisation  
2 marks for 2 of:

- 9 Satisfaction from leisure pursuits/confidence.
- 10 Enjoyment of being creative.
- 11 Quality of life/away from work/relaxes/recuperates.
- 12 Enjoying social interaction.
- 13 Discover themselves/talents. [2]

**(b) (i)** 4 marks for 4 of:

- 1 Strenuous physical activity.
- 2 Involves competition/winning and losing.
- 3 Involves fear of losing and anticipation of winning.
- 4 Highly structured/NGBs, leagues, formal rules/organisation.
- 5 Contains strategies of play/tactics/codes of conduct.
- 6 Involves commitment/dedication/training.
- 7 Contains sportsmanship and fair play.
- 8 Involves skilful activity.
- 9 Amateur + professional codes.
- 10 Combination of extrinsic/intrinsic. [4]

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(ii) 4 marks in total

Functional/desirable aspects

Sub max 2 marks for:

- 1 Play in the true spirit of the game/sportsmanship/fair play.
- 2 Abide by the rules of play.
- 3 Accept the decisions of the umpire/referee.
- 4 Value the opponent/not involved in sledging.
- 5 Work hard to reach optimum level of performance.
- 6 Gives participants future/career.
- 7 Health and fitness.

Dysfunctional/undesirable aspects

Sub max 2 marks for 2 of:

- 8 Time wasting in the game/gamesmanship/sledging.
- 9 Reluctance to accept decision made by officials/lack of respect.
- 10 Argue with the umpire/referee.
- 11 Retaliate to foul play/violence against other players.
- 12 Cheating/drug/match fixing.
- 13 Hooliganism/bad behaviour.

[4]

(c) 5 marks for 5 of:

- 1 Can be withdrawn from the performer/insecurity in difficult economic climate.
- 2 Can give a bad image to sport if the product is undesirable.
- 3 Sponsor can control and manipulate the performer/exploit the performer/pressure and leads onto deviancy.
- 4 Sponsor can control the sport/demand changes to the sport/manipulate events.
- 5 Sponsorship is only available to the very best/favours able bodied/men.
- 6 Can reflect badly on the sponsor if performer behaves badly/drugs/lifestyle.
- 7 Can reflect badly on the sponsor if the team plays badly/performer.

[5]

(d) 6 marks for 6 of:

No example = max 5

- 1 Encouragement through schemes/active sport or eq./campaigns.
- 2 Support through funding i.e., lottery or e.g. government.
- 3 Target groups such as ethnic minorities, elderly.
- 4 Provision of facilities by private, voluntary, public sector or eq.
- 5 Making facilities accessible to all/local facilities/transport/disabled.
- 6 Give people opportunities to take part/provision of free activity/crèche/cheap membership.
- 7 Provision of organisers/helpers/coaches/volunteers.
- 8 Breaking down of stereotyping.
- 9 Breaking down of stacking/dominant groups in society/discrimination.
- 10 Teach/educate/raise awareness/advertise/role models.

[6]



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(e) 5 marks for 5 of:

- 1 Fair play as a moral contract to play within the letter and spirit of the game.
- 2 Increase in the "win at all costs" ethic/only winners matter.
- 3 Increase because high rewards of winning/wealth of winning.
- 4 Sponsorship of individuals and clubs/important to keep.
- 5 Media coverage/importance of winning to retain sponsorship deals by media.
- 6 The need to win encouraging cheating/drug misuse/corruption.
- 7 Pressure from governments to win gold medals.
- 8 No longer relevant in modern day sport.
- 9 Professional code now more dominant.
- 10 Television action replays showing foul play.

[5]

[Total: 30]