

**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

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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/plantaris
- 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 not 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 explanation/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]

**[Total: 30]**

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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]**