

MARK SCHEME for the October/November 2014 series

9396 PHYSICAL EDUCATION

9396/13

Paper 1, 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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2014 series for most Cambridge IGCSE[®], Cambridge International A and AS Level components and some Cambridge O Level components.

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Section A
Applied Anatomy and Physiology

(a) (i) 5 marks for 5 of:

	type of muscle contraction	type of movement occurring	agonist muscle
knee joint	Isotonic / eccentric	Flexion	Rectus femoris / vastus lateralis / vastus medialis / vastus intermedius
ankle joint		Dorsi-flexion	Gastrocnemius

(ii) 2 marks for 2 of:

1. (Hip Joint) Femur and Pelvis / pelvic girdle
2. (Knee Joint) Femur and Tibia

(iii) 5 marks for 5 of:

(sub-max of 1 mark)

1. Ball and socket joint

(sub-max of 4 marks)

2. Shape of the articular surface – allow bones to move
3. Joint capsule / fibrous capsule – lined with synovial membrane / encloses / supports / eq. joints
4. Synovial membrane – secretes synovial fluid
5. Synovial fluid – provides lubrication
6. Bursae – (sacks of fluid) to reduce friction
7. Hyaline / articular cartilage – prevents friction / stops bone rubbing together
8. Ligaments – attach bone to bone / pull bones to allow movement
9. Pads of fat – absorb shock

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

1. (From RV) ventricular systole / ventricle contracts
2. Blood through semi-lunar / pulmonary valve – prevents back-flow
3. To pulmonary artery – transports deoxygenated blood to the lungs
4. To lungs – gaseous exchange / carbon dioxide removed / fresh oxygen absorbed
5. To pulmonary vein – transports oxygenated blood
6. To left atrium fills with blood / atrial diastole
7. (Left) atria contract / atrial systole + blood forced out of atria / into ventricle
8. Through atrioventricular / bicuspid valves – forced open due to pressure

(ii) 6 marks for 6 of:

(sub-max of 2 marks per section)

Point A

1. Anticipatory rise
2. Caused by release of adrenaline / noradrenaline
3. Causes SA Node to increase heart rate

Point B

4. Sub-maximal exercise
5. Heart rate matches exercise demand / level
6. The oxygen demands of the muscles are being met

Point C

7. Higher / increasing intensity exercise
8. Chemoreceptors detect more carbon dioxide in blood
9. Higher VO_2 / more O_2 being used

(c) (i) 4 marks for 4 of:

1. (Tidal volume) – volume of air inspired or expired / exchanged per breath
2. Increases during exercise
3. (Minute ventilation) – volume of air inspired or expired per minute / tidal volume \times breathing rate
4. (Large) increase during exercise

(ii) 4 marks for 4 of:

1. Carbon dioxide / lactic acid level increases / (blood) acidity increases / ora
2. Changes are detected by chemoreceptors
3. Send information to respiratory control centre / RCC / medulla of brain
4. Nerve impulses sent to diaphragm / intercostal muscles
5. Via the phrenic / sympathetic nerve / sympathetic nervous system / parasympathetic nervous system
6. Causing deeper and faster breathing / ora

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Section B
Acquiring, Developing and Performing Movement Skills

(a) 2 marks for 2 of:

1. (Gross motor ability) – involves large muscle groups in the movement, e.g. running, kicking
2. (Psychomotor ability) – involve both cognitive / information processing and action / movement, e.g. response time / balance / hand-eye coordination

(b) 4 marks for 4 of:

1. Closed – environment is stable / no interference from other performers / environment is predictable / pre-set routine / minimal adjustments need to be made / decisions are pre-planned / few decisions
2. Serial – series of linked subroutines / series of discrete skills / pre-set order for sub-routines to be completed
OR
Discrete – clear beginning and end
3. Internally paced – performer controls the speed of movement / performer decides when to start the movement
4. Low organisation – can be broken down into parts / sub-routines easy to separate from whole movement / sub-routines practised individually to improve whole movement

(c) 6 marks for 6 of:

(sub-max of 4 marks per section)

Principles:

1. Aim to develop / strengthen the S-R bond / stimulus-response bond
2. Trial and error learning
3. Shaping
4. Change the environment / modify the environment to change behaviour
5. Reinforcement strengthens the S-R bond
6. Positive reinforcement – creates positive feelings / praise from coach / reward / observing target being hit, etc.
7. Negative reinforcement – withdrawal of an adverse stimulus / coach stops shouting
8. Punishment / annoyance weakens the S-R bond
9. Physical / mental preparedness strengthens S-R bond

Advantages:

10. Performers develop specific skills through practise
11. Coach can control the training session
12. Specific game related practises can be developed
13. Use of reinforcement to increase motivation
14. Modifying the environment helps success to be achieved

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(d) 4 marks for 4 of:

(sub-max of 1 mark)

1. Autonomous (phase of learning)

(sub-max of 3 marks)

2. Time to practise / massed practice
3. Fine tune specific errors
4. Encourage performer to correct own errors / use intrinsic feedback / kinesthesis
5. Mental rehearsal / imagery / visualisation
6. Verbal / visual guidance
7. Set challenging goals / targets / tasks
8. Reinforce

(e) 2 marks for 2 of:

(need explanation and example for mark)

1. (Intrinsic feedback) kinaesthetic feedback / received from within performer / proprioceptors, e.g. adjust balance when completing a handstand or equiv.
2. (Extrinsic feedback) received from outside the performer, e.g. visual feedback from a coach / verbal – 'well done' or equiv.

(f) 4 marks for 4 of:

(sub-max of 2 marks)

1. (Extrinsic motivation) – rewards from another person / outside the performer
2. Tangible – e.g. certificates / prizes / trophies / money or equiv.
3. Intangible – e.g. praise / feedback / applause / records or equiv.

Disadvantages

(sub-max of 3 marks)

4. Overuse can decrease its value / importance
5. Performer only participates for reward / not intrinsic motivation reasons / damages intrinsic motivation
6. Over-reliance on rewards to reinforce behaviour
7. Adds pressure / can lead to deviant behaviour / cheating

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(g) 4 marks for 4 of:

Example

(sub-max of 1 mark)

1. Example, any suitable sporting skill that displays an adjustment of movement, e.g. gymnast on balance beam

(sub-max of 3 marks)

2. Memory trace starts the movement
3. Sends motor programme via effector mechanism / nervous system to muscles
4. Involves (intrinsic) feedback
5. Received from muscle spindles / proprioceptors / kinaesthetic awareness
6. Perceptual trace allows comparison
7. Performer able to detect errors and adjust the movement
8. Updates memory trace
9. Memory trace stored in long term memory

(h) 4 marks for 4 of:

1. Relevant practice / overlearn the skill / practise reacting to a stimulus
2. Alter the intensity of the stimulus
3. Improve selective attention / focus on specific cues
4. (Temporal / spatial) anticipation
5. Optimum arousal levels / Zone of Optimal Functioning / motivate performer
6. Mental rehearsal / visualisation
7. Develop fitness levels
8. Complete correct warm-up before competing
9. Transfer from previously learnt skills

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Section C
Contemporary Studies in Physical Education and Sport

(a) (i) 4 marks for 4 of:
(sub-max of 3 marks for aims if no examples given)

1. Physical development / confidence / motor skills / health / fitness, e.g. running / jumping / throwing / use of implements, etc.
2. Learning / thinking / understanding / cognitive development / decision making / tactics, e.g. 'critical performer' / observation / analysis / perceptual skills / learn rules
3. Choreography / creativity, e.g. devise a trampolining routine
4. Values like sportsmanship / fair play / competitive / teamwork / respect authority / character-building, e.g. own up to a foul / shaking hands / etiquette / team work / leadership
5. Develop other roles including officiating / organisation / coaching, e.g. refereeing a match / running a tournament / coaching a performer
6. Safety issues, e.g. spotters on a trampoline / supporting a partner
7. Experience success, e.g. win a football match

(ii) 4 marks for 4 of:
(sub-max of 2 marks per section)

Objective danger	Subjective danger
1. Danger from natural environment / elements, e.g. avalanche / weather 2. Over which performer has little / no control 3. The more skilled you are, the more likely you are to encounter objective danger, e.g. wilderness areas	4. Danger which the performer thinks is going to happen 5. But is controlled / preventable / e.g. planning a route / safety / fitness / a harness 6. Levels of control high at lower levels of experience / ability and decrease as progress made

(iii) 5 marks for 5 of:
(sub-max of 3 marks per concept)

Physical education	Physical recreation
1. Compulsory / moral obligation 2. School time / lessons 3. Formal teaching and learning environment / assessment / serious / National Curriculum 4. Curriculum teacher in authority 5. Foundation level on the participation pyramid 6. Highly structured / pre-planned times / sessions / activities	7. Voluntary / choice / no moral obligation 8. Activity done in leisure time 9. Relaxed / casual 10. Individual may control activity / safety 11. Participation level on the participation pyramid 12. Limited organisational structure

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(b) (i) 6 marks for 6 of:

1. Governments have sport departments / provide funding
2. E.g. Minister for Sport / DCMS / Sport England / UK Sport / equiv.
3. Political situations affect sport, e.g. Soviet invasion of Afghanistan led to Moscow 1980 Olympic boycotts / Apartheid
4. Sporting situation affects politics, e.g. Honduras vs. El Salvador went to war over a football match
5. Legislation, e.g. banning of blood sports / spectator safety / drugs illegal
6. Propaganda, e.g. 1936 Berlin Olympics
7. City bids, e.g. governments have to back a bid due to massive costs
8. Athlete power, e.g. 1968 Black power salute
9. Sport as a vehicle of social control, e.g. Communist regimes / sport as 'character building'
10. Terrorism, e.g. Munich 1972 / Atlanta 1996
11. Government policies – regeneration of 'brown' areas / infrastructure / sport for all
12. Equality – racism / sexism / disability
13. Education - Compulsory PE programmes

(ii) 4 marks for 4 of:

1. More random / out of season testing, N.B. not just testing
2. Longer bans / stricter punishment / harder fines / punish coaches
3. Improvement in testing procedures / technology
4. Use of role models – positive and negative / shaming
5. Education of performers about side effects / awareness of consequences
6. Improved international agreement on punishment of offenders / liaison between organisations / coordinated NGB action
7. Use of biological passports

(c) (i) 2 marks for 2 of:

1. (Equal opportunity) – all people have the same opportunity to take part in sport regardless of gender / age / disability / race / reduction of discrimination
2. (Esteem) – to have respect for a successful athlete / role models / individual's own (self) esteem (value / opinion / attitude)

(ii) 5 marks for 5 of:

1. Raise awareness through advertising / publicity / SDO / YDO / taster / promotional days
2. Facilities – make affordable / accessible / more clubs
3. Develop inner city schemes / deprived areas / rural areas
4. Use sport ambassadors / personalities / role models
5. More scouts / coaches
6. Focus groups / target groups
7. Award schemes / extrinsic motivation
8. Modified / adapted sports
9. Improve links within schools / school-club links
10. Follow government guidelines, e.g. best value / equity policies
11. Change attitudes (prejudice / discrimination, etc.) within the sport
12. Change structural barriers, e.g. membership restrictions