

MARK SCHEME for the October/November 2007 question paper

8666 PHYSICAL EDUCATION

8666/01

Paper 1 (Theory), maximum raw mark 100

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.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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

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Section A: Applied Anatomy and Physiology

- 1 (a) (i)** Total 5 marks: one mark for each of
A: Ball and Socket
B: (Head of) Femur
C: Acetabulum (of the pelvic girdle)/pelvis
D: Abduction
E: Gluteus medius **or** gluteus minimus
- B and C** can be switched
- (ii)** (accept first two answers only)
2 marks for 2 of: Flexion, extension, adduction, outward rotation, inward rotation, horizontal flexion, horizontal extension, circumduction
- (b)** 4 marks total
Submax 2 (stability)
1. Head of bone articulates with cup-like socket
 2. Deep socket stabilises
 3. Surrounded by ligaments/stabilise
 4. Strong muscles/large number of muscles cross the joint
 5. Femur has a large rounded head and a neck
- Submax 2 (flexibility)
6. Movement in all directions/socket structure allows a range of movement
 7. (Articular/hyaline) cartilage covers the ends of the bone
 8. No bony protrusions limit movement
- (c)** 2 marks: must have example from sport
1. Muscle shortens (under tension)
 2. Occurs in agonist muscle
 3. E.g. biceps curl: biceps brachii during upward phase of movement
- (d)** 6 marks total
3 marks for 3 of
1. Diastole/relaxation phase
 2. Lasts 0.5 seconds
 3. Both atria fill with blood
 4. AV valves are closed
 5. Atrial BP rises above ventricular BP
 6. Rising BP forces AV valves open
 7. Blood passes into ventricles
 8. Semilunar valves closed
- 3 marks for 3 of
9. Systole/contraction phase
 10. Both atria contract forcing blood into ventricles
 11. AV valves open
 12. Semilunar valves closed
 13. Aortic/pulmonary valves forced open
 14. AV valves closed
 15. Both ventricles contract
 16. Blood forced into aorta
 17. Blood forced into pulmonary artery
 18. Semilunar valves close preventing back flow
 19. Lasts 0.3 seconds

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- (e) 2 marks for 2 of
1. Alveoli are air sacs
 2. Form a vast surface area
 3. Have a single layer of cells/thin
 4. Short diffusion pathway
 5. Moist lining/to dissolve O₂
- (f) 1 mark for
1. Velocity is slower through the capillaries to allow for exchange of gases, (nutrients and waste products)
 2. Marathon runner needs more O₂ to muscles being used.

3 marks for

3. Cross sectional area of vessels.
4. Travels through aorta at (40cm/s)/velocity large
5. Velocity decreases as travels through arteries and arterioles
6. Because there are so many of them.
7. Because cross sectional area is comparatively small
8. Biggest cross sectional area is in capillaries
9. Velocity is (0.1cm/s)/significantly smaller
10. Venules and veins have less total cross section
11. Therefore velocity increases

2 (a) Preparation phase

3 marks for

- A** (Dorsi) flexion
B Tibialis anterior
C Concentric

Main action

1 mark for

- D** Plantar flexion/extension

(b) Feature must match the function

Features: (2 marks for 2 of)	Function: (2 marks for 2 of)
1. Articular capsule	9. Encases the joint
2. Synovial membrane	10. Lines the capsule/secretes synovial fluid
3. (Articular/hyaline) cartilage	11. Reduces friction/protects bones from wear and tear
4. Synovial fluid	12. Lubricates the (articular/hyaline) cartilage
5. Ligaments	13. Join bone to bone/stabilise
6. Bursa	14. Help to reduce friction
7. Discs of cartilage	15. Absorb shock
8. Pads of fat	16. Protect bones from wear and tear

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(c) 3 marks for 3 of

1. Motor unit is a motor neurone and the muscle fibres which it stimulates
2. When a motor unit receives a stimulus (of sufficient intensity)
3. All fibres in the motor unit will contract at the same time
4. And to the maximum possible extent
5. If the stimulus is not of sufficient strength the muscle fibres do not respond
6. No contraction takes place

(d) 4 marks total

2 marks max for each description
(valves)

1. One way
2. Prevent back flow
3. Direct blood towards the heart

(skeletal muscle pump)

4. Veins lie between the muscles
5. Muscles contract and relax
6. This action pushes blood towards the heart

(respiratory pump)

7. During exercise breathing becomes deeper/faster
8. Volume of thoracic cavity changes
9. Causes changes in pressure in thorax and abdomen
10. Pressure round abdomen increases, as diaphragm flattens
11. Pressure squeezes veins pushing blood towards the heart

(smooth muscle)

12. Walls of veins are made of smooth muscle
13. This contracts and relaxes
14. Pushes blood towards the heart

(gravity)

15. Blood from above the heart
16. Is assisted by gravity as it descends to the heart

(e) 5 marks total

1 mark for each description

X: Inspiratory reserve volume/IRV

The amount of air which can be forcibly inhaled in addition to tidal volume/normal breath

Y: Expiratory reserve volume/ERV

Amount of air which can be forcibly exhaled from the lungs in addition to the tidal volume/normal breath

3 marks for

1. Tidal volume increases
2. Using both inspiratory reserve and expiratory reserve volumes
3. Inspiratory reserve volume decreases
4. Expiratory reserve volume decreases

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- (f) 5 marks for 5 of
1. Partial pressure (pp) of oxygen influences saturation of Hb with O₂
 2. At tissues pp of O₂ is lower in cells and higher in capillaries
 3. Partial pressure of O₂ drops when blood arrives at tissues/increase in O₂ diffusion gradient during exercise
 4. This causes O₂ to dissociate from Hb and diffuse into cells
 5. During exercise amount of CO₂ produced increases
 6. This increases partial pressure of CO₂/increase in diffusion gradient during exercise
 7. This increases dissociation of O₂ from Hb
 8. Increase of body temperature during exercise allows O₂ to dissociate from Hb more easily
 9. More CO₂ in blood decreases pH level
 10. Drop in pH causes O₂ to dissociate more easily from Hb
 11. Hb has a high affinity to CO₂

3 (a) Total 4 marks

2 marks for 2 of
(fine skill)

1. Use small muscle groups
2. Involve intricate movements
3. Involve accuracy
4. Usually emphasise hand-eye co-ordination

2 marks for 2 of
(gross skill)

5. Involve large muscle group movements
6. Usually whole body actions
7. Little concern for precision

(b) (i) 2 marks for 2 of

1. It is a scale of characteristics
2. Skills have characteristics to a greater or lesser extent
3. Depending on the situation in which they are performed
4. Skills have elements of all characteristics
5. Difficult to be specific about characteristics
6. Allow comparison between skills

(ii) Total 4 marks

1 mark for each of

Spin bowling in cricket ←————→
 |—————| **X**
 Simple Complex

Sprinting
IX |—————|
 Simple Complex

Shooting in netball ←————→
 |—————| **X**
 Simple Complex

Tennis serve ←————→
 |—————| **X**
 Simple Complex

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(c) 5 marks total

(i) 2 marks for

(S/R bond)

1. Learner links a stimulus from the (environment)
2. To a movement response
3. If the response is successful then a link/connection is formed
4. Response is stored in LTM
5. A learning bond/conditioning bond
6. Automatic response/habitual

(ii) 3 marks for 3 of

(Use tennis as an example)

7. Repetition/practice
8. Hit forehands from a ball fed to that side – feed lots of balls
9. Positive reinforcement/law of effect
10. Coach says well done/extrinsic rewards
11. Negative reinforcement
12. Disapproval on lack of success/withdrawn on success
13. Law of readiness
14. Teach them to concentrate
15. Mental rehearsal

(d) Total 10 marks

(i) 4 marks for

(Importance of feedback)

1. Link between input and output
2. Used to compare movements with model/what we want to do
3. Helps to improve performance
4. By detecting and correcting action
5. Helps motivation
6. Helps goal setting
7. Increases enjoyment/feel good factor
8. Helps beginner to understand kinaesthesia

(ii) Sub max 3 marks for (must use examples)

(Knowledge of results)

9. Feedback about the outcome of our movement
10. Is extrinsic
11. Comes from coaches/teachers/others
12. Seeing the result/video
13. Can be both positive and negative
14. Helps to improve the next movement
15. Feedback allows comparison with others

Sub max 3 marks for (must use examples)

(Knowledge of performance)

16. Concerns quality of movement
17. Can be external/from teacher/coach/others
18. Explains why movement is successful
19. Explains why movement was not good
20. Can be internal/kinaesthetic/how movement feels

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4 (a) Total 6 marks

(i) 2 marks for 2 of

1. Enduring traits
2. Are within the performer/in genes/inherited/born with
3. Determine a performer's co-ordination, strength, speed, balance
4. Underpin all skills/can't perform skills without abilities/building blocks
5. Can be improved especially in childhood

**(ii) Sub max 2 marks for
(gross motor ability)**

6. Ability involving actual movement
7. E.g. strength/weight lifting

**Sub max 2 marks for
(psychomotor ability)**

8. Ability to process information then put our decision into action
9. E.g. Reaction time: sprint start

(b) Total 6 marks

**(i) 1 mark for
(reaction time)**

1. Time between the first presentation of a stimulus to the start of the response
2. Time to process information

1 mark for

(movement time)

3. Time between starting and finishing the movement

1 mark for

(response time)

4. Time between the first presentation of the stimulus to movement completion
5. Reaction time + movement time

**(ii) 3 marks for
(improve response time)**

(must apply to e.g.) – sprint start or similar

6. Practice responding to the stimulus, to make response automatic
7. Experience/having done the activity in different settings
8. Being able to anticipate/time between get set and go
9. Improve concentration/ignore crowd/selective attention
10. Improve fitness/training with starting blocks
11. Understand stimulus response compatibility/gun means go
12. Optimum arousal levels to improve reaction times
13. Value of a warm-up

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(c) Total 7 marks

(i) 2 marks for 2 of

(open loop)

1. Explain how we perform very quick actions in sport
2. Especially closed skills
3. Motor programme is run almost automatically
4. As a whole movement
5. Programme stored as complete movement
6. No time for feedback to be involved

2 marks for 2 of

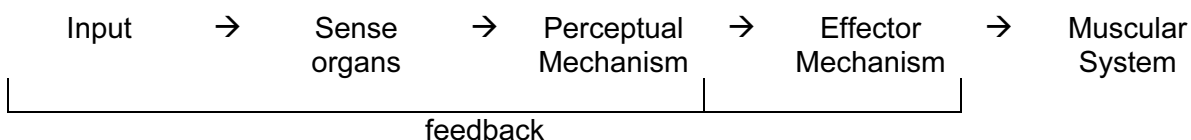
(closed loop)

7. Involves feedback
8. Feedback is internal/kinaesthetic
9. Information received from proprioceptors
10. To detect errors in movements
11. To correct errors in movement
12. Explains how we perform slow actions in sport

(ii) 3 marks for 3 of

Accept diagram with explanation

13. Motor programme for handstand is run
14. Proprioceptors in muscles sense a balance
15. Proprioceptors/hands/legs recognise losing balance/maintenance of balance
16. Message sent via nervous system to brain
17. Brain sends message to perceptual mechanism
18. Movement is adjusted/corrected
19. Done through feedback
20. Balance retained



(d) 2 marks for 2 of

1. Handstand has been rehearsed/is automatic
2. Need to rehearse/practice regularly
3. Coach should keep information simple, when correcting the movement
4. Performer needs to enjoy practice
5. Positive reinforcement/praise/encouragement
6. Avoid interference
7. Use of imagery/provide demonstration/give clear picture of what is required

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- (e) 4 marks total
2 marks for 2 of
(extrinsic)
1. Learning takes place in order to gain rewards
 2. (Tangible) rewards such as badges/trophies/certificates given to the swimmer
 3. (Intangible) rewards such as praise, social status
 4. Need to be used sparingly
 5. Needs to be important or desired by the performer
 6. Needs to be soon after the event
 7. Reward effort – not always results

- 2 marks for 2 of
(intrinsic)
8. Performer will want to take part in swimming for its own sake/self esteem/pride
 9. Needs to enjoy the session
 10. Needs to achieve initial success
 11. Need to be given achievable challenges
 12. Needs to be comfortable socially

- 5 (a) 4 marks for 4 of
1. Stress relief/away from work/life obligations
 2. Health and fitness
 3. Social/make new friends
 4. Enjoyment
 5. Recuperation/relaxation
 6. Self development/new activities
 7. Creativity

- (b) (i) Total 7 marks
3 marks for
1. Appreciate nature
 2. Respect the environment
 3. Escape from urban environment
 4. Feel a sense of adventure
 5. Excitement
 6. Challenge oneself (against nature)/survive in the outdoor environment
 7. Personal achievement
 8. Relaxation

- (ii) Sub max 2 marks for 2 of
(Real risk)
9. Risk of environmental hazard – rock fall
 10. Injury
 11. Danger
 12. No control

- Sub max 2 marks for 2 of
(Perceived risk)
13. Imagines risk e.g. falling
 14. But situation is safe e.g. equipment, planning
 15. Valuable challenge

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- (c) This answer will vary from country to country
6 marks for
1. Local schemes by local authorities
 2. Schemes by governing bodies/regional bodies
 3. Schemes run through education
 4. Private, voluntary and public body provision
 5. For children/adults
 6. At leisure centres/sports clubs/pools/sports fields
 7. After school/evenings/weekend
 8. Cheap/free
 9. Provision of equipment
 10. Provision of coaching
 11. Campaigns
 12. Aim at disadvantaged/target groups
 13. Providing access for target groups
 14. Advertising/media influence
- (d) Total 4 marks
- (i) 2 marks for
(benefit to performer)
1. Allows full time training/focus
 2. Funds coaching/equipment/travel/living
 3. Eases money worries
 4. Provides financial security after sport
 5. Medical/psychological support
 6. Notoriety
- (ii) 2 marks for 2 of
7. Controls and manipulates performer/intrusion into private life
 8. Expectation to appear in events
 9. Performer becomes reliant on sponsor
 10. Can be withdrawn/ suddenly/or given for limited time
 11. Image given may not be satisfactory
- (e) 4 marks total
Submax 2
Positive
1. Private and corporate business put vast amounts of funding into sport
 2. It gives the business a high profile
 3. Events can happen which normally would not
 4. Top sports stars become very wealthy
 5. Allows high levels of achievement/gold medals/professionalism/ better chance of success
 6. The feeling that anyone can achieve success
 7. Attract more tourism to the country/more likely to host major events
- Sub max 2
Negative
8. Sport is used as a product to be sold/advertised to sell other products
 9. Can introduce "win at all costs" ethic
 10. Lose the true value of sport
 11. Only top performers/top sports benefit
 12. Money determines when/where the sport takes place

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- 6 (a)** Total 5 marks
1. Non serious: done entirely for pleasure
 2. Spontaneous: no predetermined rules
 3. Space does not matter, decided by agreement
 4. Pleasurable activities/immediate pleasure/no ulterior motive
 5. Intrinsic value/done for its own sake
 6. Time does not matter
 7. Freedom to choose
- (b)** 4 marks for 4 of
1. Skill learning
 2. Health and well-being
 3. Knowledge
 4. Relaxation from academic stresses
 5. Preparation for active leisure/opportunity to discover new sports
 6. Social aspects/work with friends
 7. Self realisation/code of behaviour/leadership opportunity
 8. Career preparation
 9. Creative experience
 10. Aesthetic appreciation
- (c)** 5 marks for 5 of
(Achieving excellence)
1. Training venues/facilities
 2. Highly qualified coaches/management
 3. Commitment/motivation/determination
 4. Skill
 5. Sports scientists
 6. Physiotherapists
 7. Psychologists
 8. Sponsorship/funding/kit, travel, living expenses
- (d)** Total 6 marks
- (i)** 3 marks for 3 of
1. Importance of the result
 2. Frustration/disappointment at own level of play
 3. Unfair officiating
 4. Crowd behaviour
 5. Emotional intensity of the game/over arousal
 6. Weapons are part of the game
 7. Provocation
 8. Nature of the game e.g. ice hockey
- (ii)** 3 marks for 3 of
9. Education in fair play/walking away from trouble
 10. Self management
 11. Severe penalties/bans/court cases
 12. Rule changes
 13. Use of technology in officiating
 14. More and improved refereeing
 15. Ethics
 16. Crowd control

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- (e) 5 marks for 5 of
Sub max 2 for each section

(Gender)

1. More men take part than women
2. Women have other commitments
3. Lack of suitable activities
4. Women do not attract the same media coverage/sponsorship

(Socio-economic)

5. Income
6. Employment

(Race/religion)

7. Some ethnic groups have a negative attitude to sport
8. Do not approve of women participating in sport
9. Racist attitude of others

(Stereotyping)

10. Groups in society have supposed characteristics
11. These can limit participation

(Family)

12. Parents/siblings affect your attitude to taking part

(Government/situation)

13. Politics
14. Political unrest

(Friends)

15. Peer group pressure

(School)

16. Negative/positive experiences affect attitudes

(Ability)

17. Disabled provision /facilities/transport/competition
18. Attitudes towards disability sport
19. Lack of role models

(Age)

20. Provision for young and elderly