



**Rugby
School**

Sports Science

Sixth Form Examination

Mark Scheme

Section A - Applied Anatomy and Physiology

1. d
2. c
3. c
4. c
5. b

6. 1. (Protection) Bones help to protect vital organs
E.g. Cranium protects the brain in rugby **OR** ribs protect the lungs during collisions / impact / tackles in rugby

2. (Movement) Bones provide a surface for muscles / tendons to attach to **OR** provide lever systems **OR** muscles pull bones when they contract **OR** has joints that allow the body to move
E.g. elbow joint moves to throw a ball in rounders

7. Femur
Pelvis / pelvic girdle / ilium

8. a) Prevent back flow of blood
OR prevents blood from returning to where it came from
OR prevents blood flowing in wrong direction

b) Semi-lunar / aortic / pulmonary (valves)

c) Vena Cava

9. 1. (muscles work together as) an **antagonistic** pair / antagonistically
2. quadriceps is prime mover / agonist
3. hamstrings relax / is antagonist

10. **Three marks sub max heart**

1. Increase size/muscle of heart/hypertrophy/heart is stronger
2. Increase in stroke volume (resting/maximum)/ more blood per beat
3. Increase in (maximum) cardiac output/more blood (per minute)
4. Decrease in (resting) heart rate
5. Decrease in likelihood of CHD or related heart problems/healthier heart

10. Continued...

Three marks sub max lungs

6. Increase in lung volume or capacity/increase in resting lung volume/increase in alveoli/more air or more oxygen
7. Increased capillarisation
8. Increase in (maximum) pulmonary ventilation
9. Increase in minute volume
10. Increase in tidal volume
11. Increase in strength of respiratory muscles
12. Decrease in lung disease/healthier lungs

Section B - Health, Fitness & Well Being

11. d
12. b
13. d
14. a
15. c

16.
 1. Can be made to replicate the demands of the game
 2. Provides variety/ avoids tedium
 3. Easy to adapt to different conditions
 4. Little equipment is needed so low cost
 5. Improves both aerobic and anaerobic systems
 6. Decreases resting heart rate
 7. $\dot{V}O_2$ max increases
 8. Increased muscular endurance
 9. Increased cardiovascular endurance
 10. Rest periods can be adjusted to meet the needs of the performer/ change to intensity can be easily managed.
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17.
 1. (i/d) Levels of satisfaction
 2. (desc/e.g.) You can be with life/your job/contentment
 3. (i/d) Frequency of positive feelings
 4. (desc/e.g.) feeling good/positive /happy/positive mental health or lack of negative feelings.
 5. (i/d) The frequency of activities - how active you are
 6. (desc/e.g.) You get involved in sport/exercise
 7. (i/d) How well you look after yourself
 8. (desc/e.g.) avoiding drugs/alcohol/smoking /having a good diet/following a balanced, healthy lifestyle
 9. (i/d) Self pride/how good you feel about yourself
 10. (desc/e.g.) you value yourself/self esteem/have a place in society
 11. (i/d) Quality of friendships/number of friends you have
 12. (desc/e.g.) How lonely you are/having support of others/socially healthy
 13. (i/d) Health screening aspects
 14. (desc/e.g.) levels of blood pressure/cholesterol/BMI etc
 15. (i/d) Levels of Confidence - levels stress/anxiety
 16. (desc/e.g.) If you feel able to do tasks effectively you will feel better about yourself

17. Continued...

17. (i/d) Fitness tests
18. (desc/e.g.) any desc of fitness tests/indicators eg cardiovascular test for fitness
19. (i/d) Good sleep
20. (desc/e.g.) patterns - getting enough sleep or rest
21. (i/d) Questionnaires/PARQ / medical history
22. (desc/e.g.) to find out your level of fitness or well-being
23. (i/d) Not being poor/in poverty
24. (desc/e.g.) having enough money to look after yourself or to afford to go to the gym/participate in a sports club.
25. (i/d) Environment/access to green space
26. (desc/e.g.) Where you live/your surroundings are conducive to health and well-being.

18. 1. Carbo-loading on the days before the event

2. Eat/ drink small amounts throughout the day
3. Drink water to stay hydrated
4. Eat carbohydrates between matches to replace energy stores
5. Eat/ drink sugars to provide immediate energy
6. Drink protein shakes/ eat protein to begin muscle repair
7. Eat small amounts of suitable fat to replenish long term energy stores
8. Avoid large amounts of fat as difficult to absorb

19. a) The range of movement at a joint.

- b) • A games player can increase their stride length/ to get into position quicker/ to receive a pass.
- A back crawl swimmer will have a longer pull/ to go faster/ to win a race.
 - A gymnast can perform a difficult move with style/ to gain more marks/ to win a competition.

20. FITT

- Frequency - how often a person exercises
Intensity - how hard a person will exercise
Time - how long a person will exercise for
Training - the type of exercise that a person uses to achieve their goal

(i) Male aged 40 programme should show:

Frequency

- Starting with one or two sessions per week and increasing only slightly during the programme, plan sessions so that there are rest periods, do not train on consecutive days, needs to be convenient to do.

20. Continued...

Intensity

- Programme should be progressive using sub-maximal weights, low impact aerobic exercises, programme should start at an easy level to ensure the individual does not become demotivated, both repetitions and exercise periods should slowly increase, ensure rest period to avoid distress.

Time

- In the early stages sessions should last about 30/ 40 minutes but increase as the programme develops.

Training activity

- Identify the training need of the individual, areas to improve, in the early stages 20mins of aerobic activity and 15mins muscle training - increasing, ensure variety of exercise, include activities such as swimming, walking to ensure generalized conditioning.

Section C - Social Cultural Issues & Sports Psychology

- 21. c
- 22. b
- 23. a
- 24. a
- 25. c

- 26. 1. Relaxing (mentally) or Practical example, eg controlling anxiety in a tennis game
- 2. Keeping calm/'chilled'/deep or slow breathing/lowering arousal/controlling arousal or time-outs eg calming down before performing/getting in the zone
- 3. positive thinking/self-talk or setting goals or Practical example, eg thinking that you can complete a somersault in trampolining
- 4. Therefore not getting carried away/over-excited/controlling anger/channelling emotions or Practical example, eg trying to be less angry when someone fouls you in hockey
- 5. Try to be more confident/believe in yourself/familiarise yourself with your surroundings or Practical examples, eg a cricket captain can set a field calmly and effectively
- 6. Don't make inflammatory comments/avoid criticising others or Practical example, eg no back-chat to ref in football
- 7. Be able to see other people's point of view/weigh things up more rationally or Practical examples, eg can see why another player in netball is angry because you have fouled them

26. Continued...

8. Focus/ignore/block out the crowd or Practical example, eg being focused in basketball will enable you to react quickly to referee decisions
9. Use mental rehearsal/imagery/imagine success/visualisation
10. Practical example a gymnast imagines a successful floor routine.
11. Use music to calm you down or psych you up

27. (i) Traditional values - woman's place is in the house, look after the family, physical activities were seen as unfeminine, lack of time and opportunity, lack of money, society's attitude towards women, lack of sponsorship, lack of media support for women based activities, lack of child care, transport difficulties, fewer coaches, lack of structure within many sports that promote women's activities. Health - too strenuous activities, women were not strong enough. 3

(ii) Increase in the number of role models, increase in the range of activities available, society's view of fitness has changed, increase in the range of opportunities available, women have greater earning opportunities, specific activities for women, schemes to encourage women to participate, equal opportunities legislation, increase in activities covered in girls' PE programmes in school, increase in media coverage of women's sports, recognition that events are not too difficult/demanding for women. 4

- 28.
- By showing the sport at key times it will gain in popularity
 - Show highlights programmes to prevent any boring aspects of a game being shown
 - By slow motions replays and analysis they can improve peoples' understanding of the sport
 - Can deliberately sensationalise a sport to increase interest
 - Introduce minority sports to create interest
 - Coverage can create excitement – replays, camera positions and angles, split screens
 - Sport is available at all times so sport can be shown from all parts of the world
 - People understanding of sport improves as analysis of matches games etc. are available
 - Creates role models and stars that generates interest
 - Helps to change rules that generates interest