Cambridge Pre-U Syllabus

Cambridge International Level 3 Pre-U Certificate in **SPORTS SCIENCE**

For examination in 2013, 2014 and 2015







UNIVERSITY of CAMBRIDGE International Examinations



Sports Science (9793)

Cambridge International Level 3 Pre-U Certificate in Sports Science (Principal)

For examination in 2013, 2014 and 2015

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Cambridge International Level 3 Pre-U Certificate

Sports Science

9793

Contents	
	Page
Introduction	4
Aims	5
Scheme of assessment	6
Assessment objectives	6
Relationship between scheme of assessment and assessment objectives	7
Description of components	7
Curriculum content	8
Appendix 1: Alternative assessment routes	26
Appendix 2: Criteria for the assessment of practical performance	29
Appendix 3: Criteria for the assessment of performance portfolio	33
Appendix 4: Criteria for the assessment of performance case study	40
Appendix 5: Performance assessment tables	47
Appendix 6: Suggested resources	54
Appendix 7: Grade descriptors	57
Appendix 8: Additional information	59

Introduction

Cambridge Pre-U syllabuses aim to equip candidates with the skills required to make a success of their subsequent studies at university, involving not only a solid grounding in each specialist subject at an appropriate level, but also the ability to undertake independent and self-directed learning and to think laterally, critically and creatively. The Cambridge Pre-U curriculum is underpinned by a core set of educational principles:

- A programme of study which supports the development of well-informed, open and independentminded individuals capable of applying their skills to meet the demands of the world as they will find it and over which they may have influence.
- A curriculum which retains the integrity of subject specialisms and which can be efficiently, effectively and reliably assessed, graded and reported to meet the needs of universities.
- A curriculum which is designed to recognise a wide range of individual talents, interests and abilities and which provides the depth and rigour required for a university degree course.
- A curriculum which encourages the acquisition of specific skills and abilities, in particular the skills of problem solving, creativity, critical thinking, team working and effective communication.
- The encouragement of 'deep understanding' in learning where that deep understanding is likely to involve higher order cognitive activities.
- The development of a perspective which equips young people to understand a range of different cultures and ideas and to respond successfully to the opportunity for international mobility.

All Cambridge Pre-U Principal Subject syllabuses are linear. A candidate taking a Principal Subject must take all the components together at the end of the course in one examination session.

This syllabus examines the scientific and sociological backgrounds to modern day sport in a manner applied to practical performance. It provides the opportunity to include up-to-date material and research across all units. There is no option in the theoretical units as each area must be studied. There are options for the candidate in the coursework in terms of the route for assessment.

Studying the science of sport involves:

- investigating the human body in relation to the performance of sport
- understanding how skills are learned and performed
- understanding how psychological concepts and applications are related to sports performance
- having the ability to apply theoretical concepts to the practical situation
- understanding social sciences and how they relate to sport
- being able to use this knowledge to facilitate the improvement of sports performance

Prior knowledge and progression

The syllabus builds on the knowledge, understanding and skills typically gained by candidates taking Level 2 qualifications. It is recommended that candidates have attained communication and literacy skills at a level equivalent to IGCSE/GCSE Grade C in English.

The syllabus provides an excellent grounding for candidates intending to pursue a career in teaching and coaching, sports development, the leisure industry, recreational management, the health and fitness industry and professional sport. The syllabus also provides a thorough and detailed foundation for those candidates who wish to study the subject area at a higher level.

<u>Aims</u>

The Cambridge Pre-U Sports Science course aims to:

- Provide an innovative approach to the academic study of sports performance.
- Develop an understanding of the link between academic theory and practical performance.
- Give equal value and recognition to each part of the study.
- Allow candidates and teachers a degree of autonomy and flexibility in terms of the delivery of the syllabus.
- Prepare candidates thoroughly for the study of sports science in higher education.
- Provide the tools and knowledge for candidates to develop an active and analytical interest in current sports performance.
- Stimulate interest that prompts further independent study of concepts covered in each component.

Scheme of assessment

For the Principal Pre-U qualification in Sports Science, candidates take all components together at the end of the course in the same session.

Component	Component name	Duration	Weighting (%)	Type of assessment
1	Sport Physiology	2 hours	25	Written examination, externally set and marked
2	Psychology of Sport Learning and Performance	2 hours	25	Written examination, externally set and marked
3	Sociological Perspectives in Sport	2 hours	25	Written examination, externally set and marked
4*	Performer in Action Part A: Practical Part B: Portfolio	_	10 15	Internally assessed and externally moderated
5*	Performance Case Study	_	25	Internally assessed and externally moderated

*Candidates take either Component 4 or Component 5.

Assessment objectives

The examination will assess a candidate's knowledge and understanding of a range of concepts in relationship to the development of sport and sport performance. They will be expected to show an understanding of the link between theory and practice and will need to demonstrate a knowledge and understanding of how improvement in performance can be achieved. To that end the assessment objectives are as follows:

AO1	Candidates will be required to demonstrate knowledge and understanding of key theoretical facts and concepts.
AO2	Candidates will be required to apply this knowledge and understanding to practical situations.
AO3	Candidates will be required to apply this knowledge and understanding to facilitate improvement in performance.

Relationship between scheme of assessment and assessment objectives

Assessment objective	Component 1 (marks)	Component 2 (marks)	Component 3 (marks)	Component 4 (marks)	Component 5 (marks)	Weighting (%)
1	55	51	51			39
2	45	49	49			36
3				100	100	25
Total	100	100	100	100*	100*	400 100

The weightings indicated in the table below are approximate.

*Candidates take either Component 4 or Component 5.

Description of components

Candidates will be required to sit three examinations. Within each examination candidates will answer questions in three sections: A, B and C. Sections A and B will cover year 1 work for a particular subject area. Section C will test the candidate's depth of knowledge in the year 2 work of that subject area.

Candidates will be required to enter for one of two options. Option A will enable candidates to take the practical performance route, where they will take components 1, 2, 3 and 4. Option B will enable candidates to take a more theoretical route and will take components 1, 2, 3 and 5.

Curriculum content

Component 1: Sport Physiology

Year 1: Functional anatomy and physiology

This study area will enable candidates to gain an in-depth knowledge and understanding of the anatomical location, structures and functions of the musculo-skeletal and cardio-respiratory systems. The teaching of this area should be applied to practical activity performance wherever possible. This will help candidates to link theoretical knowledge to practical performance.

The anatomy and physiology of the skeletal system

The skeleton

- functions of the skeleton
- basic structure of compact and cancellous bone
- types of bones and their function
 - long, short, flat, irregular, sesamoid, wormian, sutural
- bony features and their role
 - fossae, prominence, tubercles, tuberosities, processes, grooves, ridges
- location of bones
 - the axial skeleton
 - the appendicular skeleton
 - the spinal column
- connective tissue
 - cartilage, ligament and tendons

Joints

- · definitions and examples of fibrous, cartilaginous and synovial joints
- characteristics of a synovial joint
- types and examples of synovial joints
 - hinge, ball and socket, condyloid, gliding, pivot
- anatomical positions
- orientation and directional terminology
- joints in action
- levers, classes 1, 2, 3
- movement terminology
- analysis of the structure of the knee, shoulder, hip, elbow, ankle and spinal column with sporting application
- effects of exercise on the skeletal system

The anatomy and physiology of the muscular system

- the functions of the muscular system
- the differing shapes, lengths and sizes of muscles in relation to function and performance
- structure of muscle
 - endomysium, perimysium, epimysium, fascicles, myofibrils, myofilaments, sarcomere, actin, myosin
- types of muscle contraction
 - isotonic, isometric, isokinetic
- muscle contractions Sliding Filament Theory (introduction to the basic role of ATP)
- muscle fibre innervation, the all or none law
- control of muscular contractions
- muscle fibre types
 - type I muscle fibres (slow twitch/red fibres)
 - type IIa (fast twitch/white fibres)
 - type IIb fast twitch fibres (FTG fibres) fast twitch glycolytic
- prime movers, fixators, synergists
- antagonistic pairing
- location and action of muscles
- function, origin and insertion of muscles with particular relation to shoulder, elbow, spine, hip, knee, ankle
- movement analysis
- effect of training on the muscular system, hypertrophy, hyperplasia

The anatomy and physiology of the circulatory system

- the functions of the circulatory system
- the structure and function of the heart
- cardiac cycle
- control of heart rate
- the conduction system
- regulation of the heart rate
- the autonomic nervous system
- sensory control of the heart
- hormonal control of the heart
- blood pressure and the vasomotor centre
- the immediate effects of exercise
 - blood flow, blood velocity, blood pressure
 - shunting
 - venous return
 - cardiac output, stroke volume, heart rate inter-relationships, diastolic and systolic volume, wall thickness
- long-term adaptation of the heart to exercise

Arteries, arterioles, veins, venules, capillaries

- the structure of blood vessels
- gaseous exchange
- oxygen dissociation, Bohr Effect
- the role of myoglobin/haemoglobin
- adaptations to the circulatory system as a result of training, with links to cardiac and muscle adaptations

The anatomy and physiology of the respiratory system

- the functions of the respiratory system
- the anatomy of the respiratory system
- breathing mechanics at rest
- the breathing mechanism during exercise
- control of ventilation at rest and during exercise
- definitions of respiratory volumes, values and measures
- gaseous exchange
- partial pressure of gases
- differences between
 - inspired and expired air
 - alveolar air and pulmonary blood
 - arterio venous blood with link to CV system
- the effects of asthma upon athletic performance
- respiratory adaptation to training

Year 2: Exercise physiology

In Year 2 candidates develop an in-depth understanding of exercise physiology. Candidates have the opportunity to study the physiological principles applied to sporting activity.

Exercise physiology

- energy chemical, potential, kinetic
- role of ATP
- factors affecting VO2 Max: aerobic capacity; anaerobic capacity
- modes of energy regeneration, ATP/PC, lactic, aerobic
- energy continuum, thresholds
- food fuels, diet, nutrition, ergogenic aids and the elite performer
- metabolism and metabolic adaptations
- hormonal regulation of exercise
- fatigue and recovery processes, DOMS, EPOC
- age and sex considerations: growth, maturation, obesity, hypertension, diabetes, asthma, heart disease
- legal and illegal ergogenic aids: EPO; nutritional, physiological, pharmacological, psychological, biomechanical

Component 2: The Psychology of Sport Learning and Performance

Year 1: Skill acquisition in sport

Defining movement skills

- definition and characteristics of abilities:
 - characteristics: innate, underlying and enduring traits
 - gross motor and psychomotor abilities with examples
 - Fleishman's Proficiency abilities
- definition and characteristics of motor and perceptual skills
- characteristics of a skilful performance:
 - learned, efficient, directed, controlled, follows technical model, aesthetically pleasing
- classification of skills:
 - placement of skills on continua to include: gross and fine; open and closed; discrete, serial and continuous; external and internally paced; simple or complex; high and low organisation; with examples
 - task analysis
- theories related to motor and executive programmes:
 - definition as a generalised series of movements; creation of programmes in the long-term memory
 - awareness of the major programmes/sub-routines of a range of motor skills

Acquiring and developing movement skills

- learning:
 - definition of learning
 - measuring and testing of learning
 - categories of learning (Gagne)
- motor skill development:
 - knowledge of the progression from motor abilities to fundamental motor skills to sport specific skills
 - awareness of influences of early experiences and environmental exposure
- theories of learning movement skills:
 - description of the S/R bond and application of related theories
 - classical conditioning
 - operant conditioning: shaping behaviour, the use of reinforcement, link to trial and error
 - Thorndike's laws of learning
 - associationist theories: linking of the S/R bond
 - cognitive theory: work of the Gestaltists; wholeness and insight learning
 - observational learning: modelling, attention, retention, reproduction
 - learning variables

- phases of learning movement skills:
 - Fitts and Posner's cognitive, associative, autonomous phases of learning: characteristics of each phase and their practical implications
 - learning/performance curves; learning plateaus and strategies to overcome this
- teaching styles:
 - Mosston and Ashworth with a focus on command, reciprocal, guided discovery and problem solving
- Presentation, practice and guidance:
 - different methods of presenting skills to include part-whole, whole-part-whole, progressive part
 - the provision of different practice methods: fixed/varied, massed/distributed and mental
 - the four guidance methods to achieve learning: visual, verbal, mechanical and manual
- feedback:
 - types of feedback to include: intrinsic and extrinsic; terminal and concurrent; positive and negative; knowledge of performance and knowledge of results
 - functions of feedback: motivation, reinforcement, correction, information
 - use of practical examples to show how feedback can be used effectively to improve performance
- reinforcement:
 - definition and examples of positive reinforcement, negative reinforcement and punishment as methods of strengthening or weakening the S/R bond
 - ways of strengthening the S/R bond through repetition, satisfaction/annoyance, and through physical and mental preparedness
- transfer of learning:
 - definition and types of transfer of learning: including positive transfer, its practical application and ways of optimising its effect; negative transfer, its practical application and ways of limiting its effect; proactive and retroactive and bilateral transfer with practical examples

The performance of movement skills

- basic models of information processing:
 - Whiting, Welford
 - display, sensory information, sense organs, perception, decision making, effector mechanism response and feedback
 - use of practical examples to show evidence of understanding
- memory:
 - basic model of the memory process: selective attention; short-term sensory store; short-term memory; long-term memory
 - use of practical examples to show evidence of understanding of the use of memory in the performance of practical skills

- reaction time:
 - definitions of reaction time, movement time and response time
 - importance of a short reaction time
 - factors affecting reaction time including psychological refractory period, anticipation, previous experience, predictability of stimulus, intensity, age, gender in a range of sporting activities
 - Hick's law
 - strategies to improve reaction time
- movement control:
 - open loop control: retrieval of programmes by making one decision, used in quick movements where there is no time for feedback, with examples
 - closed loop control: detection and correction of movements during the performance through the use of feedback, with examples
 - schema theory: a way of modifying the motor programme by the use of schemes or rules of information. Schmidt's sources of information as recall and recognition schema
 - four rules of schema: knowledge of initial conditions; knowledge of response specifications; sensory consequences; movement outcomes; examples of the application of the schema theory in teaching and coaching
- motivation and arousal:
 - distinction between motivation and arousal
 - extrinsic and intrinsic motivation
 - practical examples to show the advantages and disadvantages of both methods
 - effect of extrinsic rewards on intrinsic motivation
 - Drive Theory
 - Drive Reduction Theory
 - optimal arousal

Year 2: The psychology of sport

Individual aspects of sport performance

- personality:
 - knowledge of theories of personality
 - structure of personality (Hollander)
 - trait perspectives (including the characteristics of extroversion/introversion, neuroticism/stability, type A/type B)
 - social learning perspectives
 - interactionist approaches
 - limitations of personality profiling in sport
 - personality tests
 - iceberg profile

- attitudes:
 - knowledge of the nature of attitudes, inconsistencies and prejudice in sporting situations; understand their origins and influences (including the effects of socialisation)
 - identify the components of attitudes (cognitive, affective, behavioural)
 - identify the links between attitudes and behaviour in sporting situations
 - awareness of methods of changing attitudes from negative to positive, including knowledge of the concepts of cognitive dissonance and persuasive communication
 - ways of measuring attitudes
- motivation:
 - knowledge of Atkinson and McClelland's theory of achievement motivation (need to achieve and need to avoid failure)
 - awareness of sport-specific achievement motivation (i.e. competitiveness)
- mental preparation for sport performance:
 - awareness of the use of the NCF's four Cs: commitment, confidence (self), concentration, and control (emotional)
 - commitment:
 - i. knowledge of goal setting
 - ii. understand the importance and relevance to sport (related to anxiety management)
 - iii. identify factors affecting the setting of goals ("SMARTER" principle)
 - iv. the candidate should set a sporting goal(s) and justify the use of short/intermediate/long-term goals and process/performance/product goals to improve performance
- self-confidence:
 - understanding of sports confidence (Vealey) and the concepts of trait sports confidence, competitiveness orientation and state sports confidence
 - knowledge of self-efficacy (Bandura) and the influence of performance accomplishments, vicarious experiences, verbal persuasion, and emotional arousal
- concentration:
 - knowledge of attentional control
 - awareness of cue utilisation (Easterbrook) and its links with arousal
 - knowledge of attentional styles (for example, broad/narrow, internal/external) (Nideffer)
- emotional control:
 - definition of activation and arousal
 - awareness of their relationship to personality, ability level and complexity of task
 - knowledge of the peak flow experience, the zone of optimum functioning theory (Hanin) and the definition of anxiety
 - trait anxiety tests
 - knowledge of the nature and influences of anxiety, including the state/trait distinction (Spielberger), multidimensional theory (cognitive anxiety and somatic anxiety) and sports competition anxiety
 - knowledge of anxiety management to improve performance, including: cognitive techniques (mental rehearsal/imagery, positive self talk, thought stopping, rational/positive thinking) and somatic techniques (progressive muscular relaxation, biofeedback relaxation)

Group dynamics of sport performance

- groups and teams:
 - definition of a group/team (mutual awareness, interaction, common goal)
 - knowledge of Steiner's model of group performance
 - awareness of problems associated with productivity of a group/team, including motivational factors (social loafing) and coordination/co-operation factors (Ringlemann Effect)
 - knowledge of factors affecting the formation and development of a cohesive group/team, cohesiveness and Carron's antecedents
 - cooperation and competition
 - social loafing
- leadership:
 - understanding the importance of effective leadership
 - identify characteristics of leaders, including: autocratic/task-oriented; democratic/social-oriented; laissez-faire
 - Great Man theory v Social Learning theory
 - knowledge of emergent and prescribed leaders
 - knowledge of theories of leadership, including: trait theories; social learning theories; interactionist theories
 - knowledge of Fiedler's contingency model and Chelladurai's multidimensional model of leadership

Competition effects on sport performance

- social facilitation and audience effects:
 - knowledge of the positive (facilitation) and negative (inhibition) effects of others (including an audience and co-actors) on performance
 - awareness of the links with levels of arousal and the heightening of the dominant response (Zajonc)
 - knowledge of the causes and effects of evaluation apprehension (Cottrell)
 - awareness of the distraction effect
 - awareness of the home field advantage phenomenon
 - the use of strategies to combat the effects of social inhibition, particularly with the use of selective attention and mental rehearsal, should be applied to practical activities and justified
- aggression:
 - aggression v assertion
 - definition of channelled/instructional aggression
 - knowledge of the causes of aggressive behaviour
 - knowledge of theories of aggression (in sporting situations) including instinct theories; frustrationaggression hypothesis; aggressive-cue hypothesis (Berkowitz); social learning theories
 - knowledge of methods of eliminating the aggressive tendencies of performers
 - sport as catharsis
 - strategies to control reactive aggression
 - differences between aggressive and assertive behaviour

Consequences of sport performance

- attribution theory:
 - identify reasons for success and failure
 - knowledge of Weiner's model
 - justify the use of attributional retraining
 - awareness of strategies for the promotion of mastery orientation and the avoidance of learned helplessness
 - candidates should also have an awareness of how performance can effect their subsequent performances: (a) as an individual; (b) as a part of a group/team; (c) in their mental preparation for future performance(s); and (d) dealing with ensuing competition effects

Component 3: Sociological Perspectives in Sport

This area of study follows a strand-based approach to the subject rather than the traditional time line approach. This enables each topic to be explored in greater depth and with less compartmentalisation. It also enables comparison to be made more readily at a global level.

Year 1

Introduction: Developing the 'sociological imagination' and the understanding of sociology

- Definition of the following terms to understand the language of sociology: sociology, theory, science, social relationships, society, culture.
- Sociology as focusing on the connection between behaviour and the social and cultural context in which the behaviour occurs. Understanding the interaction between the individual and society by situating individuals in society and society in individuals. Understanding the interaction between the individual and society by connecting history, politics, comparison and social criticism.
- Understanding sport and physical culture in the sociological imagination.

Sport as a social institution

- Definition of the term social institution. Sport constituting a distinctive social organisation, a unique form
 of social activity, providing a basis of social identity, linking to other social structures, and acting as an
 agent of social control. A global process by which sport has become organised in a relatively permanent
 and enduring way: e.g. the acceptance of the format of cricket as played in England.
 Examples of social institutions: the family, religion, education, the military, political, legal and economic
 institutions.
- Structural properties of sport as a social institution: Marxist and functionalist perspectives. Guttman's text "From Ritual to Record". Identification of the seven characteristics that can be used to make sense of the development of modern sport: secularism, equality of opportunity to compete and in the conditions of competition, specialisation of roles, rationalisation, bureaucratic organisation, quantification.
- From the sports field to the shop floor: sport as embedded in other institutions; for example: factories and companies, armed forces, education, vocational, family.
- The institutional function of sport as a carrier of social and cultural values of capitalism; conformity to rules, punctuality, competition, accepting orders and hierarchical, accepting defeat and subordination, accepting arbitration.

Sport and physical culture in education

 Physical education and school sport as the site of construction and transmission of valued social and cultural values. The origins of the Victorian cult of athleticism and muscular Christianity. The public school system and sport in the Victorian era. Thomas Arnold 1828-42. Sport and Education at Rugby School. Thomas Hughes (1856): (*Tom Brown's Schooldays as a key illustrative text*). The rapid spread of athleticism and muscular Christianity throughout public school system, higher education and institutions across the British Empire. • The Victorian cult of athleticism and muscular Christianity as a collection of ideas: "Mens sana incorpore sano" or healthy mind in a healthy body as fundamental ideology. This was developed into the cult of athleticism in which sport and sporting disciplines such as football became vehicles for the socialisation of a whole series of values, such as: physical-hygienist, moral, spiritual and social to boys who were to become social leaders. The notion of the amateur ideal, which elevated fair play, playing according to the rules and accepting the referee's decision unquestioningly. The various qualities of team work and leadership that participation in team games fostered.

Precedence of participation and fair play over the outcome of the game or winning.

The codification of sport

The example of Football and Rugby Union. The social history of the codification of these sports as illustrated in the class struggle that was present in sport at the time of its emergence as an organised social institution.

Competing values in sport

The amateur ethic versus professionalism. Sport for all versus elite sport. Individualism and meritocracy.

The body and identity

- The 'social construction' of the body. Exploring the relationship between nature and nurture. The importance of the body for self and social identity. Sport socialising the body, mind and the identity.
- The cult of youth and beauty in sport and physical culture. The rise of the fitness industry. Fitness
 and body image critical relationships. Fitness and body image as separate things that are presented
 as important to be a 'good' person. Fitness and health critical relationships. Fitness and health as
 separate things. (Not all top athletes are 'healthy' and not all people who are 'unfit' are unhealthy.) The
 conflation of these ideas is used by the fitness industry to sell services and products.
- The body as a machine metaphor in sport and physical culture. The dominance of the concept of bodymind dualism 'cogito ergo sum' (I think therefore I am). The modification of the body for performance purposes.
- Sports science drawing heavily on body-as-a-machine metaphor. Using the body as a series of systems to be broken down in analysis in order to improve efficiency of machine.
- Drug taking as body enhancement technology. Mechanical prosthetics for replacing body function (for example, limb prosthetics and specialised wheelchairs for disabled athletes). Enhancing body function (for example, ergonomic trainers, swimming suits etc.)
- The consequence of the body as a machine metaphor. The way in which athletes, coaches and others begin to see their bodies and other bodies in very dissociated ways. The impact upon the way in which people treat their own and others' bodies. For example, inflicting pain or injury upon oneself or others in order to succeed or win. Training or participating while injured.
- The alternative body-mind relationships in sport and physical culture. Eastern movement forms (for example, Yoga and Tai Chi practice). Ideas of body-mind holism (for example the Alexander Technique).

Sport and sub-cultures

Understand the problems arising at a sub-cultural level, as they concern gender, race, ability and disability. Equity in sport. The need for constructive policies and strategies to act as a reformative process in solving existing problems in sport.

Sport, sub-culture and gender

- The gendered social history of sport. The historical role of women in society. Sport traditionally creating men out of boys. Sports institutions being predominately constructed by men, for men.
- The physiological differences between males and females being the source of sexual stereotyping. The development of this stereotyping coinciding with emergence of modern sport, resulting in a dominance by men. The justification of social inequality on biological grounds. The perception of males as the physically stronger and females as the physically weaker sex.
- The support of society for women's participation in dance and aerobics, but opposing their participation in activities such as rugby and weightlifting. Ways in which females have been educated differently from males in relation to sport.
- Reformative. Suggestions of reform procedures. Education of the sporting audience to appreciate aesthetic aspects and technical brilliance of women's sport as opposed to the power, speed and dynamism of traditional male sports. The effect of the media. The creation of role models. Sex discrimination laws. Equal funding. Creation of opportunities for women in sport. Participation in the Olympics as a barometer for change.

Sport, sub-culture, race and ethnicity

- Race as the physical characteristic of an individual. Ethnicity as the belonging to a particular group in society. Britain as a multi-cultural, multi-racial society. The effect of this on the sporting needs of the nation.
- Racism in sport stemming from prejudice linked with the power of one ethnic group over another. Racism in sport, seen as stacking, which is the disproportionate concentration of ethnic minorities in certain positions in a sports team.
- Reformative. Suggestions of reform procedures.
- Campaigns to stamp out racism in sport; education of sports people to remove discrimination. Ethnic groups under-represented in coaching, managerial and organisational roles. The creation of role models. Race-awareness training. Increased sporting opportunities for ethnic minority people. Implementation of race discrimination laws.

Sport, sub-culture, ability and disability

- The awareness that sport and physical recreation concerns the whole of society not just the able-bodied. Barriers created by society on disabled people, on the provision of facilities, on funding, coaching, and access. Main sources of discrimination coming from organisations created by able-bodied.
- Disability viewed from a medical perspective. People with disabilities regarded as dependent rather than independent. Not all disabled people have the same needs. Sensory, mental and physical impairment.
- Sports specifically for the disabled. Adapted sports.
- Reformative: funding needs, access, attitudes, adaptation and modification. Sports equity.

Sport, physical culture and social class

- Definition of the three ways of understanding social class: economic, vocational, cultural.
- Participation in sport and physical culture as a sign of class distinction.
- Changing class culture and sport participation. Changing work/leisure patterns. Examples: short working day, mechanisation, increase in part-time work and decline in heavy industry.
- Changing identity construction from vocation to leisure. Individuals increasingly defining themselves through their leisure pursuits rather than their occupational identities.
- Commodification of leisure goods and services.
- From rags to riches: social mobility and sport. Perceptions: nothing to lose and winner takes all. Trends: sport first, everything else second. Social consequences: sustenance of sports industry and class relations. High talent wastage level. Impact on educational attainment.

Year 2

Sport, physical culture and politics

- The international political economy of sport: sport as a metaphorical weapon. This involves beating or conquering another nation in the arena of competitive international sport. This is used to symbolise the superiority of one national state and its beliefs, practices and organisation over another. Examples of this are: the Los Angeles and Moscow Olympics during the "cold war" in which capitalist and communist countries were constantly striving to show their superiority in the sports arena.
- Sport and international diplomacy: sport being regularly used as a "tool" for international diplomacy. Boycotts and sanctions over entry and participation in international sporting associations and events. Examples are the re-entry of South Africa in the 1992 Barcelona Olympics, and boycotts of the Olympics in 1980, 1984, and 1988.
- Sport and the politics of identity: specific protests, manipulation and marketing to focus on a particular identity. Examples such as: Sydney 2000 creating multiculturalism to mask aborigine rights and the black salute in Mexico 1968.
- The politics of mass participation. General health: prevention being cheaper than a cure. Maintaining a healthy workforce. Government intervention in physical education and sport to address public health issues. Sport as an opiate for the masses: sporting spectacles being used to deflect attention from socio-cultural problems of the day. The use of sport as a catharsis to bind societies together.

Sport, physical culture and mass media

- Mass media. The media perform five major functions in society: inform us about events and people; interpret what is going on in the world of sport; educate us about sport; entertain in various ways; advertise. The impact of mass media on sport: sports have been changed to make them more amenable for media coverage.
- Media modified sports examples such as rule changes, changes in the timing of matches to broadcasting primetime, changes to make the sport more entertaining.
- Media constructed reality in sport: elite athletes and the construction of celebrity sporting culture, examples would be David Beckham or Tiger Woods as media constructed celebrities. Are these examples consumer led or media dictated?
- Media being used as a vehicle for a dominant sports culture: modern sports associations need advertisers and sponsors, and look to the media to sustain their infrastructures financially. The media, advertising, sponsorship triad: for example, the constant struggle for television rights in the English Premiership and the Six Nations championship, and the issues and controversies surrounding the advertising of tobacco products in sport.

Sport, capitalism, consumerism and commercialism

- Sport and capitalism. Exploring the relationship: capitalism as an economic system based on free enterprise, which concentrates large investments, technology and human resources in business, in this case, sport. Members of the capitalist class who own major business organisations who also own professional sports clubs.
- From Bannister to Beckham the rise of the commodified athlete worker, as seen in modern professionalism, contracts, sponsorship and advertising. Sports worker rights: the effects of the Bosman ruling in football giving players the right to act as a free agent. The transition from participant to entertainer: examples of sports player migration, players as a mobile workforce.
- Sport and commercial competition: tradition and change the move to a commercial logic, for example, how the United States of America used the 1996 Atlanta Olympic games to signify to the world that the Olympics could be 'better' handled by entirely privately funding profit-making commercial organisations. The use of political influence to try to change the way in which the Olympics were organised as a commercially sponsored rather than a state sponsored model. This model subsequently adopted in future Olympics, is now seen as the norm.
- Enhancing the game for spectators changing rules and statistics.
- The global use of the American model of sport organisation such as closed leagues and franchises:
 - Closed leagues (with a fixed number of teams and no relegation), providing a far less dynamic but more commercially stable structure and, as a consequence, encouraging greater investment.
 - Franchised sport: the closed league collectively owning and selling club franchises. Franchises being
 run under a strict set of rules and regulations that limit autonomy but guarantee in return a share in
 the profits of the league. Examples such as the fully franchised English Basketball league and the
 version of this structure used in Formula One racing.

Sport, physical culture and globalisation

- Definition of globalisation as being the growing interdependence between different peoples, regions and countries of the world (Anthony Giddens).
- The spread of sporting culture: diffusion as the process in which games and sports are transferred from one society to another in contrast to the independent development of similar activities.
 - The spread of sports structures: supra and transnational institutions and competitions. Spreading the sporting message and standardising the structures, for example, the European Union, FIFA and the IOC, the council of Europe policies on sport, global sports tournaments and professional sport 'circuits' (e.g. Formula One, world tennis and golf tours). Control of sport passing to corporate boards and executives of multi-national companies, instead of national government.
- Reasons for the globalisation of commercial sports: new ways to make money for those who control, sponsor and promote sport, and business being able to use sport to introduce products and services to a worldwide audience.
- Consequences of globalisation:
 - The migration of sports talent: the movement of performers, coaches, administrators and sport scientists within and between nations and within and between continents and hemispheres.
 - The blurring of national identity. Corporate sponsorships crossing national boundaries. Professional teams recruiting players from around the world.
 - The possible breaking down of the destructive feeling of nationalism and the possible fostering of global capitalism. The rise of sports tourism: participative and spectator forms of tourism, for example, England cricket's "Barmy army".

Component 4 (Performer in Action) and Component 5 (Performance Case Study)

Candidates take either Component 4 or Component 5.

Using knowledge gained in Components 1–3 and new content taught for Component 4 (or 5), candidates will scientifically analyse performance, plan training programmes and employ strategies to improve performance in their chosen sport. They will also demonstrate an understanding of sociological factors that underpin their chosen sport.

There are **two** possible routes for assessment which can be found in Appendix 1.

The assessment criteria can be found in Appendices 2–5.

Teaching Content

Year 1

- measurement and evaluation of fitness components:
 - issues in testing
 - reasons for testing
 - validity of testing
 - fitness tests
 - types of fitness tests
 - motor fitness tests
 - physical fitness tests
 - tests may be maximal or sub-maximal
- planning of fitness training programmes:
 - immediate effects of exercise
 - stages of a warm-up
 - cool down
- training principles:
 - progressive overload
 - specificity
 - recovery
 - reversibility
 - progression
 - over-training
- components of fitness:
 - definitions
 - health

- fitness
- dimensions of fitness
- physical fitness
- development of different types of strength
- motor fitness
- planning programmes:
 - periodisation
- types of tests and their protocol:
 - testing for strength
 - testing for speed
 - testing for power
 - testing for localised muscular endurance
 - testing for cardiovascular endurance
 - testing for flexibility
 - testing for co-ordination
 - testing for reaction time
 - testing for agility
 - testing for body composition
 - advanced fitness testing
 - the anaerobic capacity test
 - OBLA test (Onset of Blood Lactate Accumulation)
 - maximum oxygen update test (VO2 max test)
- methods of training:
 - continuous
 - fartlek or speed play training
 - interval training
 - long interval training
 - short interval or sprint training
 - reaction drills
 - acceleration drills
 - longer sprints
 - agility sprints
 - technique/skill training
 - circuit training
 - stage training
 - strength training
 - fixed and free weights

- weight training
- plyometrics

Year 2

- psychological research methods:
 - the use of various psychological tools and tests will have been covered in the main teaching content in Paper 2 identified above
- sports psychology in practice:
 - candidates must be able to understand a range of psychological concepts covered in Paper 2 and how the use of various psychological strategies enhances performance
- fundamental applied biomechanics:
 - linear motion position, distance, displacement, speed, velocity, acceleration
 - vectors
 - force, gravity and weight
 - Newton's laws of motion
 - reaction forces, friction and fluid dynamics
 - air resistance, Bernoulli effect
 - momentum
 - impact
 - impulse
 - work, energy, power, torque
 - angular motion, velocity, acceleration
 - rotation generation, inertia, angular momentum

Appendix 1: Alternative assessment routes

Candidates take either Component 4 or Component 5.

Component 4 option: Practical Performance and Performance Portfolio

Part A: Practical performance in one sport selected from the list of available sports. Assessment should be continuous, not only to provide an indication of the progress of the candidate, but also so that in the case of injury, there is some indication of the candidate's standard. Candidates may use external facilities and local clubs, but in the latter case, the centre must retain the responsibility for monitoring the work and for its assessment and standardisation.

The activities within the practical performance place the candidates in physically demanding situations. Centres should ensure that candidates are medically capable of coping with this. Where doubt exists medical help should be sought.

Each of the practical activities offered to candidates should be carried out in accordance with the recommendations for safe practice in Physical Education.

Internal standardisation: Each Centre is required to standardise assessment across different activities by different members of staff to ensure that all candidates have been judged against the same standards and therefore fairly assessed.

Part B: A Performance Portfolio applied to the candidate's performance in the sport selected in Part A.

In this option candidates will analyse their performance in their chosen sport at the beginning of the course and plan training programmes to help improve their performance over the length of the course. They will draw on their knowledge of scientific factors to facilitate this improvement as well as illustrating an understanding of the development of their sport and how sociological factors influence the provision for their chosen sport. Candidates should include at least three separate areas from each of the theoretical disciplines.

The candidate may use appropriate resources which must be identified and properly referenced.

The Performance Portfolio will be approximately 3600 words and will include the following components:

In each of sections 1–4 candidates should draw knowledge from a minimum of three different areas of theoretical work.

1. Sport physiology:

Profiling physiological factors that exist within the performance of their sport and how the candidate can improve their performance through this understanding.

2. Psychology of sport learning and performance:

Analysing factors relating to skill acquisition and sports psychology and employing strategies to help improve the candidate's performance in this area of sport.

3. Sociological perspectives in sport:

The candidate will show an understanding of how their sport has developed and illustrate relevant sociological factors to the provision of their sport.

4. Analysis of performance:

The candidate will identify key areas and provide an in-depth analysis to include some biomechanical work.

5. Training for improvement:

The application of knowledge gained in Component 4 into the planning and executing of training programmes to improve performance.

6. Evaluation of the study:

The candidate will provide an evaluation of their study identifying strengths and weaknesses of the study. They will also give some indication of the next step to enable them to continue to develop as a performer.

Component 5 option: Performance Case Study

In this option candidates will analyse performance in their chosen sport at the beginning of the course and plan training programmes to help improve performance over the length of the course. They will draw on their knowledge of scientific factors to facilitate this improvement as well as illustrating an understanding of the development of their sport and how sociological factors influence the provision for their chosen sport. Candidates should include at least four separate areas from each of the theoretical disciplines.

The candidate will provide an analysis of their case study as part of the improvement and evaluation. The teacher should follow prescribed questions to enable discussion to take place.

The portfolio will be approximately 5,000 words and will include the following components:

In each of sections 1–4 candidates should draw knowledge from a minimum of four different areas of theoretical work.

1. Sport physiology:

Profiling physiological factors that exist within the performance of their sport and how the candidate can improve their performance through this understanding.

2. Psychology of sport learning and performance:

Analysing factors relating to skill acquisition and sports psychology and employing strategies to help improve the candidate's performance in this area of sport.

3. Sociological perspectives in sport:

The candidate will show an understanding of how their sport has developed and illustrate relevant sociological factors to the provision of their sport.

4. Analysis of performance:

The candidate will identify key areas and provide an in-depth analysis to include some biomechanical work.

5. Training for improvement:

The application of knowledge gained in Paper 4 into the planning and executing of training programmes to improve performance.

6. Evaluation of the study:

The candidate will provide a full written evaluation of their study identifying strengths and weaknesses of the study. They would also give some indication of the next step to enable them to continue to develop as a performer.

Moderation

All aspects of the coursework – Sport Performance, Portfolio Performance and the Performance Case Study – will be internally assessed by the Centre staff using the criteria provided in the syllabus. When several teachers in a Centre are involved in internal assessments, arrangements must be made within the centre for all candidates to be assessed to the common standard for each aspect of the coursework.

For candidates following route option A, Centres must retain DVD video evidence of each candidate's assessed performance in their chosen sport as well as their assessed Performance Portfolio document. For candidates following route option B, Centres must retain each candidate's Performance Case Study document. All coursework evidence must be retained by the Centre and be available to the external moderator. The Moderator will select the candidates whose work is to be externally moderated.

Each candidate on the video should be clearly identified by numbers or bibs and the video should clearly indicate what the candidates are performing and link the candidates and their performance to the assessment sheets.

Candidates will need to sign a declaration statement, for the portfolio and case study, to indicate that the work has been carried out solely by the candidate. The teacher responsible for assessment will be required to countersign the statement when it is submitted for external moderation. The statement must appear on the title page of the document. Teachers should supervise candidates undertaking the analysis of performance and monitor all other aspects of the portfolio and case study. All other aspects of the portfolio and case study will be related to the practical sport and the analysis of the performance. This will allow the teacher to authenticate the coursework and to sign the statement of authentication with confidence.

Appendix 2: Criteria for the assessment of practical performance

Practical sport performance

By the age of 16 many athletes, especially the elite, have specialised in one sport and therefore only one sport is required for the Pre-U qualification at Principal Level.

Assessment criteria for the practical sport performance can be found below.

Sports must be chosen from the following list and performance must be assessed in the competitive situation or, as in dance and gymnastics, the performance must be assessed in a solo performance situation.

Athletics	Netball
Association Football	Polo
Basketball	Rowing
Badminton	Rugby League
Cricket	Rugby Union
Dance	Squash
Fencing	Swimming
Golf	Tennis
Gymnastics	Table Tennis
Field Hockey	Volleyball
Lacrosse	Water Polo

Performance will be internally assessed and externally moderated.

Practical sport performance assessment criteria

There are three practical sport performance criteria covering the following activity areas of:

Games Athletics/Swimming Dance/Gymnastics

Candidates are assessed on their overall performance in the full competitive situation in all games, athletics and swimming activities. In dance and gymnastics the teacher should assess the candidate in their final performance situation. The teacher should see the candidate performing in their chosen activity throughout the course to ensure consistency of performance. Skills in practice situation, whilst not directly assessed, form a part of the portfolio.

30 marks

Games activities

Assessors should focus on:

- the performance of technical skills
- the decision making of the candidate
- the ability of the candidate to apply tactical considerations

Marks	Description
25–30	Candidates show an excellent level of performance. They will have excellent performance techniques that lead to consistently successful performance in competitive situations. They will have a highly developed perceptual ability that informs correct decision-making. They will have an excellent awareness of tactical concepts and be able to employ them successfully in all situations. Their performance will have very few errors. They will be a very effective performer.
19–24	Candidates show a good level of performance. They will have good performance techniques that lead to successful performance in most competitive situations. They will have good perceptual ability that informs correct decision-making on most occasions. They will have a good awareness of tactical concepts and be able to employ them successfully in most situations. They will be able to recognise and correct their mistakes. They will be an effective performer.
13–18	Candidates show a moderate level of performance. They will have moderate performance techniques that lead to successful performance in some competitive situations. They will have a moderate perceptual ability that informs correct decision-making in some instances. They will have an awareness of tactical concepts and be able to employ them successfully in some situations. They will be able to recognise and correct some of their errors. They will be effective for much of their performance.
7–12	Candidates show a weak level of performance. They will have a basic performance technique that leads to inconsistent performance in competitive situations. They will have a basic perceptual ability that informs correct decision-making in only the simplest situations. They will have a basic grasp of tactical concepts and only be able to employ them in a small number of situations. They will only recognise some mistakes and will be able to correct a few of them. They will be effective on occasions.
0–6	Candidates show a poor level of skill performance. They will have limited performance techniques that restrict successful performance in competitive situations. They will attempt to make decisions that suit the situation with limited success. They will have limited understanding of tactical concepts and will have a limited perception of the requirements of the situation. They will recognise some of their mistakes but not be able to correct them. They will rarely be an effective performer.

Athletics/Swimming

Candidates are assessed in one event in athletics or one swimming stroke. There are two parts to the assessment of these activities:

- 1. Performance of technical skills in the competitive situation.
- 2. Performance measured against performance assessment tables (see Appendix 5).

Assessment is based on the performance of techniques/skills and performance against assessment tables. The criteria for assessing the techniques/skill aspects (out of 30) are based on the criteria below. The performance aspect is assessed using assessment tables found in Appendix 5.

The final activity mark for each event in athletics or swimming stroke is marked out of a total of 30 raw marks, calculated as follows:

performance of technical skills mark (out of 30) + performance assessment mark (out of 60) = mark for activity (out of 90)

The activity mark is then divided by 3 to give a final activity mark out of 30, which is calculated as follows:

mark for athletics event or swimming stroke = final activity mark

3

Marks	Description
25–30	Candidates show an excellent level of performance. They will have excellent performance techniques that lead to consistently successful performances in competitive situations, where accuracy, control and fluency remain despite competitive pressure. The performance will have very few errors. They will be a very effective performer.
19–24	Candidates show a good level of performance. They will have good performance techniques that lead to successful performance in most competitive situations. Under competitive pressure the level of technical accuracy, control and fluency is normally good. They will be able to recognise and correct their mistakes. They will be an effective performer.
13–18	Candidates show a moderate level of performance. They will have moderate performance techniques that lead to successful performance in some competitive situations. Under competitive pressure the accuracy, control and fluency is reliable. They will be able to recognise and correct some of their errors. They will be effective for much of their performance.
7–12	Candidates show a weak level of performance. They will have a basic performance technique that leads to inconsistent performance in competitive situations. Under competitive pressure accuracy, control and fluency is usually achieved. They will only recognise some mistakes and will be able to correct a few of them. They will be effective on occasions.
0–6	Candidates show a limited level of skill performance. They will have limited performance techniques that restrict successful performance in competitive situations. Under pressure there is limited level of accuracy, control and fluency. They will recognise some of their mistakes but not be able to correct them. They will rarely be an effective performer.

Dance/Gymnastics

The assessment phases of shape, form, consistency and control are used in conjunction with the following criteria for a formal choreographed solo dance (dance), or a formal agility sequence (gymnastics).

Marks	Description
25–30	Candidates show an excellent level of performance with an excellent standard of accuracy, control and fluency. There is excellent application of more advanced techniques where accuracy, control and fluency remain despite performance pressures. The candidate shows an excellent understanding of sequence composition and choreography. The performance will have very few errors. The candidate will be a very effective performer.
19–24	Candidates show a good level of performance with a good standard of accuracy, control and fluency. There is good application of more advanced techniques where accuracy, control and fluency remain despite performance pressures. The candidate shows a good understanding of sequence composition and choreography. They will be able to recognise and correct their mistakes. They will be an effective performer.
13–18	Candidates show a moderate level of performance with a moderate standard of accuracy, control and fluency. There is moderate application of more advanced techniques where accuracy, control and fluency remain despite performance pressures. The candidate shows a moderate understanding of sequence composition and choreography. They will be able to recognise and correct some of their errors. They will be effective for much of their performance.
7–12	Candidates show a weak level of performance with a basic standard of accuracy, control and fluency. There is basic application of more advanced techniques where accuracy, control and fluency remain despite performance pressures. The candidate shows a basic understanding of sequence composition and choreography. They will only recognise some mistakes and will be able to correct a few of them. They will be effective on occasions.
0–6	Candidates show a poor level of skill performance. They will have a poor standard of accuracy, control and fluency. They will attempt to apply more advanced techniques where accuracy, control and fluency remain despite performance pressures. The candidate shows a poor understanding of sequence composition and choreography. They will recognise some of their mistakes but not be able to correct them. They will rarely be an effective performer.

Appendix 3: Criteria for the assessment of performance portfolio

(Component 4 option, Part B)

Performance Portfolio	90 marks
The written Performance Portfolio will include the following components:	
Sport physiology Psychology of sport learning and performance Sociological perspectives in sport Analysis of performance (including biomechanical analysis) Training for improvement Evaluation of the study	15 marks 15 marks 15 marks 15 marks 15 marks 15 marks

Performance portfolio assessment criteria

Candidates are assessed on their ability to apply the concepts covered in the theoretical units to performance and to an analysis of their sport. Candidates will also be required to make an evaluation of their project and provide recommendations for further study.

The following tables give the assessment criteria for each of the written sections of the performance portfolio.

	Sport physiology				
Marks	Description				
12–15	• The candidate has used detailed theoretical knowledge from at least three separate strands of the physiological areas of study.				
	• The candidate has demonstrated an excellent understanding of the theoretical factors used and how they influence the performance of sport.				
	• The candidate has demonstrated an excellent ability to apply the theoretical knowledge to the practical situation.				
8–11	• The candidate has used theoretical knowledge from at least three separate strands of the physiological areas of study.				
	• The candidate has demonstrated a good understanding of the theoretical factors used and how they influence the performance of sport.				
	• The candidate has demonstrated a good ability to apply the theoretical knowledge to the practical situation.				
4–7	• The candidate has used some theoretical knowledge from three separate strands of the physiological areas of study.				
	• The candidate has demonstrated a moderate understanding of the theoretical factors used and how they influence the performance of sport.				
	• The candidate has demonstrated a moderate ability to apply the theoretical knowledge to the practical situation.				
0–3	• The candidate has used some theoretical knowledge from less than three separate strands of the physiological areas of study.				
	• The candidate has demonstrated a limited understanding of the theoretical factors used and how they influence the performance of sport.				
	• The candidate has demonstrated a limited ability to apply the theoretical knowledge to the practical situation.				

	Psychology of sport learning and performance	
Marks	Description	
12–15	• The candidate has used detailed theoretical knowledge from at least three separate strands of the psychological areas of study.	
	• The candidate has demonstrated an excellent understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated an excellent ability to apply the theoretical knowledge to the practical situation.	
	• The candidate has used theoretical knowledge from at least three separate strands of the psychological areas of study.	
8–11	• The candidate has demonstrated a good understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a good ability to apply the theoretical knowledge to the practical situation.	
4–7	• The candidate has used some theoretical knowledge from three separate strands of the psychological areas of study.	
	• The candidate has demonstrated a moderate understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a moderate ability to apply the theoretical knowledge to the practical situation.	
0–3	• The candidate has used some theoretical knowledge from less than three separate strands of the psychological areas of study.	
	• The candidate has demonstrated a limited understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a limited ability to apply the theoretical knowledge to the practical situation.	

	Sociological perspectives in sport	
Marks	Description	
12–15	• The candidate has used detailed theoretical knowledge from at least three separate strands of the sociological areas of study.	
	• The candidate has demonstrated an excellent understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated an excellent ability to apply the theoretical knowledge to the practical situation.	
8–11	• The candidate has used theoretical knowledge from at least three separate strands of the sociological areas of study.	
	• The candidate has demonstrated a good understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a good ability to apply the theoretical knowledge to the practical situation.	
4–7	• The candidate has used some theoretical knowledge from three separate strands of the sociological areas of study.	
	• The candidate has demonstrated a moderate understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a moderate ability to apply the theoretical knowledge to the practical situation.	
0–3	• The candidate has used some theoretical knowledge from less than three separate strands of the sociological areas of study.	
	• The candidate has demonstrated a limited understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a limited ability to apply the theoretical knowledge to the practical situation.	

	Analysis of performance	
Marks	Description	
12–15	 The candidate has demonstrated an excellent ability to analyse performance in terms of many of the skills and techniques required for their sport, the strategies and tactics employed and the type of fitness required for their sport. The candidate has shown an excellent grasp of the terminology required for analysis. The candidate has developed an excellent understanding of the performance of 	
	movement.	
8–11	• The candidate has demonstrated a good ability to analyse performance in terms of many of the skills and techniques required for their sport, the strategies and tactics employed and the type of fitness required for their sport.	
	• The candidate has shown a good grasp of the terminology required for analysis.	
	• The candidate has developed a good understanding of the performance of movement.	
	• The candidate has demonstrated a moderate ability to analyse performance in terms of some of the skills and techniques required for their sport, some of the strategies and tactics employed and the type of fitness required for their sport.	
4–7	• The candidate has shown a moderate grasp of the terminology required for analysis.	
	• The candidate has developed a moderate understanding of the performance of movement.	
0–3	• The candidate has demonstrated a limited ability to analyse performance in terms of a limited knowledge of the skills and techniques required for their sport, a limited knowledge of the tactics and strategies employed and a limited understanding of the fitness required for their sport.	
	• The candidate has shown a limited grasp of the terminology required for analysis.	
	• The candidate has developed a limited understanding of the performance of movement.	

	Training for improvement	
Marks	Description	
12–15	 The candidate has shown an excellent understanding of the strengths and weaknesses of the performance. The candidate has shown an excellent understanding of how to plan a training programme to improve the performance. The candidate has set out clear goals, aims and an accurate time-scale. The programme is based upon recognised training principles. The candidate has used appropriate exercises to achieve the physiological goals. The candidate has employed recognised strategies to achieve the psychological goals. 	
	The candidate has used appropriate training techniques to achieve technical goals.	
8–11	 The candidate has shown a good understanding of the strengths and weaknesses of the performance. The candidate has shown a good understanding of how to plan a training programme to improve the performance. The candidate has set out goals, aims and an accurate time-scale. The programme is based upon recognised training principles. The candidate has used exercises that may achieve the physiological goals. The candidate has employed recognised strategies that may achieve the psychological goals. 	
	• The candidate has used appropriate training techniques that may achieve technical goals.	
4–7	 The candidate has shown a moderate understanding of some of the strengths and weaknesses of the performance. The candidate has shown a moderate understanding of how to plan a training programme to improve the performance. The candidate has set out goals, aims and time-scale. Some of the programme is based upon recognised training principles. The candidate has used some exercises that are appropriate to achieving the physiological goals. The candidate has used some exercises that are appropriate to achieving the psychological goals. The candidate has used some exercises that are appropriate to achieving the psychological goals. 	
0–3	 The candidate has shown a limited understanding of the strengths and weaknesses of the performance. The candidate has shown a limited understanding of how to plan a training programme to improve the performance. The candidate has set out vague goals, aims and time-scale. The programme illustrates a limited understanding of training principles. The candidate has used a limited number of exercises to achieve the physiological goals. The candidate has employed a limited number of recognised strategies to achieve the psychological goals. The candidate has used a limited number of appropriate training techniques to achieve technical goals. 	

	Evaluation of the study	
Marks	s Description	
	• The candidate is able to make excellent comment on the success of the portfolio.	
12–15	• The candidate is able to draw together all the different areas of study.	
12-15	• The candidate is able to give reasons for the outcome of the training programme.	
	• The candidate is able to use this knowledge to devise a subsequent programme.	
	• The candidate is able to make good comments on the success of the portfolio.	
8–11	• The candidate is able to make a good attempt to draw together all the different areas of study.	
	• The candidate is able to assess the success or failure of the training programme.	
	• The candidate is able to devise a suitable subsequent programme.	
	• The candidate is able to make some comment on the success of the portfolio.	
	• The candidate is able to draw together some of the areas of study.	
4–7	• The candidate is able to assess some successes and failures of the training programme.	
	• The candidate is able to make some use of their knowledge to plan a subsequent training programme.	
	• The candidate is able to make limited comment on the success of the portfolio.	
0–3	• The candidate is limited in his/her ability to draw together some areas of study.	
	• The candidate may not be accurate in assessing the outcome of the training programme.	
	• The candidate may not be able to use their knowledge to plan a subsequent programme.	

Appendix 4: Criteria for the assessment of performance case study

(Component 5 option)

Case study	150 marks
The written case study will include the following components:	
Sport physiology Psychology of sport learning and performance Sociological perspectives in sport Analysis of performance (including biomechanical analysis) Training for improvement Evaluation of the study	25 marks 25 marks 25 marks 25 marks 25 marks 25 marks

Performance case study assessment criteria

Candidates are assessed on their ability to apply the concepts covered in the theoretical units to performance and to an analysis of their sport. Candidates will also be required to make an evaluation of their project and provide recommendations for further study.

	Sport physiology	
Marks	Description	
20–25	• The candidate has used detailed theoretical knowledge from at least four separate strands of the physiological areas of study.	
	• The candidate has demonstrated an excellent understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated an excellent ability to apply the theoretical knowledge to the practical situation.	
13–19	• The candidate has used theoretical knowledge from at least four separate strands of the physiological areas of study.	
	• The candidate has demonstrated a good understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a good ability to apply the theoretical knowledge to the practical situation.	
6–12	• The candidate has used theoretical knowledge from four separate strands of the physiological areas of study.	
	• The candidate has demonstrated a moderate understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a moderate ability to apply the theoretical knowledge to the practical situation.	
	• The candidate has used theoretical knowledge from less than four separate strands of the physiological areas of study.	
0–5	• The candidate has demonstrated a limited understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a limited ability to apply the theoretical knowledge to the practical situation.	

	Psychology of sport learning and performance	
Marks	Description	
20-25	• The candidate has used detailed theoretical knowledge from at least four separate strands of the psychology areas of study.	
	• The candidate has demonstrated an excellent understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated an excellent ability to apply the theoretical knowledge to the practical situation.	
13–19	• The candidate has used theoretical knowledge from at least four separate strands of the psychology areas of study.	
	• The candidate has demonstrated a good understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a good ability to apply the theoretical knowledge to the practical situation.	
6–12	• The candidate has used theoretical knowledge from four separate strands of the psychology areas of study.	
	• The candidate has demonstrated a moderate understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a moderate ability to apply the theoretical knowledge to the practical situation.	
	• The candidate has used theoretical knowledge from less than four separate strands of the psychology areas of study.	
0–5	• The candidate has demonstrated a limited understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a limited ability to apply the theoretical knowledge to the practical situation.	

	Sociological perspectives in sport	
Marks	Description	
20-25	• The candidate has used detailed theoretical knowledge from at least four separate strands of the sociological areas of study.	
	• The candidate has demonstrated an excellent understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated an excellent ability to apply the theoretical knowledge to the practical situation.	
	• The candidate has used theoretical knowledge from at least four separate strands of the sociological areas of study.	
13–19	• The candidate has demonstrated a good understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a good ability to apply the theoretical knowledge to the practical situation.	
6–12	• The candidate has used theoretical knowledge from four separate strands of the sociological areas of study.	
	• The candidate has demonstrated a moderate understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a moderate ability to apply the theoretical knowledge to the practical situation.	
0–5	• The candidate has used theoretical knowledge from less than four separate strands of the sociological areas of study.	
	• The candidate has demonstrated a limited understanding of the theoretical factors used and how they influence the performance of sport.	
	• The candidate has demonstrated a limited ability to apply the theoretical knowledge to the practical situation.	

	Analysis of performance	
Marks	Description	
20-25	• The candidate has demonstrated an excellent ability to analyse performance in terms of the many skills and techniques required for their sport, the strategies and tactics employed and the type of fitness required for their sport.	
	• The candidate has shown an excellent grasp of the terminology required for analysis.	
	• The candidate has developed an excellent understanding of performance.	
13–19	• The candidate has demonstrated a good ability to analyse performance in terms of many of the skills and techniques required for their sport, the strategies and tactics employed and the type of fitness required for their sport.	
	• The candidate has shown a good grasp of the terminology required for analysis.	
	• The candidate has developed a good understanding of performance.	
6–12	• The candidate has demonstrated a moderate ability to analyse performance in terms of the skills and techniques required for their sport, the strategies and tactics employed and the types of fitness required for their sport.	
	• The candidate has shown a moderate grasp of the terminology required for analysis.	
	The candidate has developed a moderate understanding of performance.	
0–5	• The candidate has demonstrated a limited ability to analyse performance in terms of the skills and techniques required for their sport, a limited knowledge of the strategies and tactics employed and a limited knowledge of the types of fitness required for their sport.	
	• The candidate has shown a limited grasp of the terminology required for analysis.	
	The candidate has developed a limited understanding of performance.	

	Training for improvement
Marks	Description
	• The candidate has shown an excellent understanding of the strengths and weaknesses of the performance.
	• The candidate has shown an excellent understanding of how to plan a training programme to improve the performance.
	• The candidate has set out clear goals, aims and an accurate time-scale.
20–25	• The programme is based upon recognised training principles.
	• The candidate has used appropriate exercises to achieve the physiological goals.
	• The candidate has employed recognised strategies to achieve the psychological goals.
	• The candidate has used appropriate training techniques to achieve technical goals.
	• The candidate will be able to discuss fully the programme demonstrating a depth of understanding.

	• The candidate has shown a good understanding of the strengths and weaknesses of the performance.
	 The candidate has shown a good understanding of how to plan a training programme to improve the performance.
	The candidate has set out goals, aims and an accurate time-scale.
13–19	The programme is based upon recognised training principles.
	• The candidate has used exercises that may achieve the physiological goals.
	• The candidate has employed recognised strategies that may achieve the psychological goals.
	• The candidate has used appropriate training techniques that may achieve technical goals.
	• The candidate will be able to discuss the programme to illustrate an understanding.
	• The candidate has shown a moderate understanding of the strengths and weaknesses of the performance.
	• The candidate has shown a moderate understanding of how to plan a training programme to improve the performance.
	• The candidate has set out goals, aims and a time-scale.
	Some of the programme is based upon recognised training principles.
6–12	• The candidate has used some exercises that are appropriate to achieving the physiological goals.
	• The candidate has used some exercises that are appropriate to achieving the psychological goals.
	• The candidate has used some exercises that are appropriate to achieving technical goals.
	• The candidate will be able to discuss the programme demonstrating some understanding.
	• The candidate has shown a limited understanding of the strengths and weaknesses of the performance.
	• The candidate has shown a limited understanding of how to plan a training programme to improve the performance.
	• The candidate has set out vague goals, aims and a time-scale.
0.5	• The programme illustrates a limited understanding of training principles.
0–5	• The candidate has used a limited number of exercises to achieve the physiological goals.
	• The candidate has employed a limited number of recognised strategies to achieve the psychological goals.
	• The candidate has used a limited number of appropriate training techniques to achieve technical goals.
	• The candidate will show a limited understanding of the training programme.

	Evaluation of the study
Marks	Description
	 The candidate is able to make excellent comment on the success of the case study. The candidate is able to draw together all the different areas of study.
20–25	 The candidate is able to give reasons for the outcome of the training programme. The candidate is able to use this knowledge to devise a subsequent programme. The candidate is able to discuss the evaluation accurately by excellent responses to
13–19	 prescribed questions during analysis of their case study. The candidate is able to make good comment on the success of the case study. The candidate is able to make a good attempt to draw together the different areas of study. The candidate is able to assess the success or failure of the training programme. The candidate is able to devise a suitable subsequent programme. The candidate is able to discuss their evaluation and give explanations by good responses to prescribed questions during analysis of their case study.
6–12	 The candidate is able to make some comment on the success of the case study. The candidate is able to draw together some of the areas of study. The candidate is able to assess some successes and failures of the training programme. The candidate is able to make some use of their knowledge to plan a subsequent training programme. The candidate is able to discuss the broader concepts by moderate responses to prescribed questions during analysis of their case study.
0–5	 The candidate is able to make limited comment on the case study. The candidate is limited in his/her ability to draw together the different areas of study. The candidate may not be accurate in assessing the outcome of the training programme. The candidate may not be able to use their knowledge to plan a subsequent programme. The candidate is able to discuss their evaluation in vague terms by limited responses to prescribed questions during analysis of their case study.

Prescribed questions to be asked during analysis of the case study.

You have written a case study on the performance of in (activity).

Describe the elements of the study which you think have been most successful.

Which physiological concepts have you been able to apply to the performer?

Which psychological concepts have you been able to apply to the performer?

Which sociological concepts have you been able to apply to the performer?

You created a training programme for improvement in performance. Was this successful? How would you adjust the programme for future success?

In what ways did the analysis of the performance help with the creation of the training programme? Can you link aspects of the study together?

Appendix 5: Performance assessment tables

PERFORMANCE ASSESSMENT	TABLES – ATHLETICS	– FEMALE CANDIDATES
	INDEED MINEENOO	

Ioom 200M 400M Hoom 110H 400H HJ LJ TJ TJ VS Store JAVELIN HAMMER SoooM inina. (min.s) <														4kg	1kg	600gm	4kg	WALK	WALK
60 12.90 26.4 61.5 2.26 50.0 10.48 16.3 68.7 1.57 4.85 9.40 2.51 9.10 30.00 33.00 31.67 30.45 18.29 58 13.00 28.6 63.3 2.27 50.4 11.00 16.5 65.5 15.5 4.79 9.30 2.47 88.2 29.43 33.33 31.34 31.04 31.18 18.29 56 13.10 27.2 64.1 2.29 50.6 11.12 16.7 70.3 15.3 4.76 9.28 2.43 8.83 2.92.6 31.40 30.36 31.15 19.65 54 13.25 27.6 64.9 2.33 51.12 11.24 16.9 71.1 15.1 4.66 91.0 2.39 8.58 2.28 31.04 30.32 2.50 81.31 19.23 18.33 18.51 11.32 17.1 15.1 4.62 91.62 2.37 8.47 2.88 2.33																			3000M
59 12.66 26.6 62.9 2.26 5.02 10.64 16.6 69.5 1.55 479 9.30 2.47 9.20 2.47 32.00 31.67 30.45 18.38 57 13.05 27.0 63.7 2.28 5.06 11.06 16.6 69.9 1.54 4.76 9.20 2.46 8.83 29.13 32.04 31.01 31.18 18.86 56 13.15 27.4 64.5 2.30 5.10 11.12 16.7 7.03 1.53 4.73 9.20 2.48 8.66 28.65 31.40 30.35 31.15 11.8 18.75 2.87 66.3 3.22 5.14 11.30 17.0 7.15 1.40 6.59 2.37 8.47 2.97 30.12 2.903 32.01 19.41 50 13.40 28.4 66.5 2.35 5.20 11.41 17.0 7.14 4.56 8.95 2.33 8.29 27.39 30.12 2.903 33.07 19.41 51 13.35 28.2 66.1 <		(S)	(S)	(S)	(min.s)	(min.s)	(min.s)	(s)	(S)	(IVI)	(IVI)	(IVI)	(IVI)	(IVI)	(IVI)	(IVI)	(IVI)	(min.s)	(min.s)
58 13.00 26.8 63.3 2.27 5.04 11.00 16.5 69.9 15.4 4.76 9.25 2.48 8.33 2.21 3.2.0 3.1.14 31.18 31.18 31.18 31.18 31.18 31.18 31.18 31.18 31.18 31.18 11.18 16.7 70.3 15.3 4.76 9.25 2.43 8.74 28.84 31.17 30.08 31.18 18.87 56 13.15 2.7.6 64.9 2.31 61.1 11.18 16.8 70.7 1.52 4.70 9.15 2.41 8.65 28.26 31.06 30.02 32.08 19.14 51 13.25 2.7.6 66.3 2.32 6.16 11.30 17.0 71.9 1.48 4.56 9.00 2.37 8.47 2.7.9 30.74 2.9.08 32.2.41 19.20 32.01 19.3.2 32.41 19.20 33.41 19.3.2 19.3 30.12 2.9.03 33.07 1.44 4.58 8.90 2.38 8.29 2.13 8.2.2 2.10 2.3.23 <th>60</th> <th>12.90</th> <th>26.4</th> <th>61.5</th> <th>2.25</th> <th>5.00</th> <th>10.48</th> <th>16.3</th> <th>68.7</th> <th>1.57</th> <th>4.85</th> <th>9.40</th> <th>2.51</th> <th>9.10</th> <th>30.00</th> <th>33.00</th> <th>32.00</th> <th>30.29</th> <th>18.20</th>	60	12.90	26.4	61.5	2.25	5.00	10.48	16.3	68.7	1.57	4.85	9.40	2.51	9.10	30.00	33.00	32.00	30.29	18.20
57 13.05 27.0 63.7 2.28 5.06 11.06 16.6 69.9 1.54 4.76 92.0 2.48 83.7 92.14 31.21 31.15 11.8 18.76 56 13.15 2.74 64.45 2.30 5.10 11.18 16.8 70.7 1.52 4.70 92.0 2.48 8.66 28.55 31.40 30.02 32.04 11.91 51 13.25 2.7.8 66.3 2.32 5.14 11.30 17.1 7.15 1.50 4.64 9.05 2.37 8.47 2.7.97 30.76 2.9.68 32.34 19.23 52 13.35 28.2 66.5 2.34 5.16 11.42 17.2 7.2 1.44 4.58 8.05 2.31 8.20 27.10 29.30 32.61 19.44 50 13.40 2.84 66.5 2.36 5.20 11.44 17.7 7.31 1.46 4.46 8.85 2.29 8.11 2.81 2.84 2.87.0 33.40 19.59 33.40 19.59	59	12.95	26.6	62.9		5.02	10.54	16.4	69.1	1.56				9.01	29.71		31.67	30.45	18.29
156 13.10 27.2 64.1 2.29 5.08 11.12 16.7 70.3 15.3 4.73 92.0 2.43 8.74 28.84 31.72 30.68 31.35 18.86 56 13.10 27.46 64.5 2.30 5.10 11.14 16.9 71.1 15.1 16.6 28.56 31.04 30.02 30.08 19.14 51 13.25 27.8 65.3 2.32 5.16 11.36 17.0 71.5 1.50 4.62 9.05 2.37 8.47 27.97 30.76 29.69 32.34 19.32 51 13.35 28.2 66.1 2.34 5.16 11.42 17.2 7.2.3 1.44 4.58 9.00 2.33 8.29 2.7.10 29.48 28.37 33.40 19.50 48 13.65 2.80 67.7 2.38 5.26 12.06 17.6 7.39 1.44 4.38 8.75 2.57 7.93 2.6.52 <th>58</th> <th>13.00</th> <th>26.8</th> <th>63.3</th> <th>2.27</th> <th>5.04</th> <th>11.00</th> <th>16.5</th> <th>69.5</th> <th>1.55</th> <th>4.79</th> <th>9.30</th> <th>2.47</th> <th>8.92</th> <th>29.42</th> <th>32.38</th> <th>31.34</th> <th>31.02</th> <th>18.38</th>	58	13.00	26.8	63.3	2.27	5.04	11.00	16.5	69.5	1.55	4.79	9.30	2.47	8.92	29.42	32.38	31.34	31.02	18.38
55 13.15 27.4 64.5 2.30 5.10 11.18 16.8 70.7 1.52 4.70 9.15 2.41 8.65 28.55 31.40 30.25 31.51 19.05 54 13.20 27.6 64.9 2.31 5.12 11.24 16.9 71.1 15.1 4.66 9.16 2.37 8.47 27.97 30.76 29.69 32.34 19.23 51 13.35 28.0 65.7 2.33 5.16 11.36 17.1 71.9 1.48 4.54 8.90 2.33 8.29 2.7.97 30.76 29.69 32.34 19.23 51 13.34 28.4 66.5 2.35 5.20 11.48 17.3 7.7 1.47 4.50 8.90 2.31 8.20 27.39 30.12 29.00 33.24 19.59 49 13.45 28.6 6.5 2.35 5.20 11.47 7.31 1.44 4.44 8.80 2.27 8.10 2.03 2.63 2.84 2.7.1 3.13.13 2.03 3.20	57	13.05	27.0	63.7	2.28	5.06	11.06	16.6	69.9	1.54	4.76	9.25	2.45	8.83	29.13	32.04	31.01	31.18	18.47
54 13.20 27.6 64.9 2.31 5.12 11.24 16.9 71.1 15.1 66.9 9.10 2.39 8.56 28.26 31.08 30.02 22.08 19.14 52 13.30 28.0 65.7 2.33 5.16 11.36 17.1 71.5 1.50 46.2 9.05 2.37 8.47 27.98 30.12 29.03 32.51 19.32 50 13.40 28.4 66.1 2.35 5.20 11.48 17.3 77.7 1.47 4.50 8.90 2.31 8.20 27.10 29.80 33.40 19.99 49 13.45 28.6 66.9 2.35 5.20 11.44 17.4 73.1 1.46 4.8 8.55 2.29 16.0 28.07 33.40 19.59 49 13.65 29.0 67.7 2.38 5.26 12.00 17.6 73.9 1.44 4.38 8.70 2.23 78.42 2.84 2.37 8.40 2.71 3.43 20.26 45 13.60 29.	56	13.10	27.2	64.1	2.29	5.08	11.12	16.7	70.3	1.53	4.73	9.20	2.43	8.74	28.84	31.72	30.68	31.35	18.56
53 13.26 27.8 65.7 2.33 5.14 11.30 17.0 71.6 1.60 1.62 9.05 2.37 8.47 27.97 30.76 29.69 32.34 19.32 51 13.35 28.2 66.1 2.34 5.18 11.42 17.2 72.3 1.48 45.8 80.0 2.35 82.7 80.012 29.80 28.70 33.24 19.50 49 13.45 28.6 66.5 2.36 5.20 11.64 17.4 73.5 1.46 4.46 8.85 2.29 81.1 26.81 29.40 28.70 33.44 19.50 47 13.55 29.0 67.7 2.38 5.26 1.14 1.47 73.1 1.44 4.48 8.70 2.23 7.84 25.94 28.82 27.38 3.40 13.00 45 13.60 29.4 68.6 2.40 5.30 12.18 17.7 7.43 1.43 4.30 8.70 2.23 7.84 25.94 28.82 27.38 3.40 20.5 2.11 <	55	13.15	27.4	64.5	2.30	5.10	11.18	16.8	70.7	1.52	4.70	9.15	2.41	8.65	28.55	31.40	30.35	31.51	19.05
52 13.30 28.0 65.7 2.33 5.16 11.42 17.1 71.9 1.48 4.58 8.00 2.25 8.38 22.788 30.44 29.36 32.51 19.32 50 13.40 28.4 66.5 2.35 5.20 11.48 17.3 72.7 1.47 4.50 8.90 2.31 8.20 27.10 28.60 28.70 33.44 19.50 49 13.45 28.6 66.5 2.35 5.20 11.44 17.4 73.1 1.46 4.46 68.5 2.29 8.11 26.81 2.94.4 28.37 33.40 19.50 46 13.60 29.2 68.1 2.39 5.28 12.12 17.6 73.9 1.44 4.38 8.75 2.25 7.33 26.43 28.44 2.77.1 34.13 20.16 46 13.60 29.4 68.1 2.39 5.21 12.24 17.9 75.1 1.44 4.30 8.65 2.17 7.57 2.6.67 28.20 27.76 34.46 20.35 2.14	54	13.20	27.6	64.9	2.31	5.12	11.24	16.9	71.1	1.51	4.66	9.10	2.39	8.56	28.26	31.08	30.02	32.08	19.14
51 13.35 28.2 66.1 2.34 5.18 11.42 17.2 72.3 1.48 454 8.95 2.33 8.29 27.39 30.12 29.03 33.07 19.41 50 13.40 28.4 66.5 2.36 5.20 11.48 17.3 72.7 1.47 450 8.90 2.31 8.20 27.10 29.80 28.70 33.44 19.59 48 13.50 28.8 67.3 2.38 5.24 12.00 17.5 73.5 1.44 4.88 57 2.57 7.93 2.65.2 29.16 28.04 33.57 20.08 47 13.65 29.2 68.1 2.39 5.28 12.12 17.7 74.3 1.43 4.34 8.70 2.23 7.84 26.54 27.36 34.30 20.65 41 3.70 29.6 68.9 2.41 5.30 12.24 17.9 75.1 1.44 4.20 8.65 2.217	53	13.25	27.8	65.3	2.32	5.14	11.30	17.0	71.5	1.50	4.62	9.05	2.37	8.47	27.97	30.76	29.69	32.34	19.23
50 13.40 28.4 66.5 2.35 5.20 11.48 17.3 72.7 1.47 450 8.90 2.31 8.20 72.10 29.80 28.70 33.24 19.50 49 13.45 28.6 66.9 2.36 5.22 11.54 17.4 73.1 1.46 4.40 8.80 2.27 8.11 26.81 29.48 28.37 33.40 19.59 47 13.55 29.0 67.7 2.38 5.26 12.00 17.6 73.5 1.44 4.38 8.75 2.25 7.84 25.94 28.52 27.38 4.43 20.26 45 13.65 29.4 68.5 2.40 5.30 12.18 17.8 74.7 1.42 4.30 8.65 2.21 7.75 25.65 28.20 27.05 34.46 20.35 41 13.75 28.8 68.3 2.42 5.34 12.30 14.48 5.01 7.75 25.65 27.78	52	13.30	28.0	65.7	2.33	5.16	11.36	17.1	71.9	1.49	4.58	9.00	2.35	8.38	27.68	30.44	29.36	32.51	19.32
49 13.45 28.6 66.9 2.36 5.22 11.54 17.4 73.1 1.46 4.46 8.85 2.29 8.11 28.81 29.48 28.37 33.40 19.59 46 13.50 29.0 67.7 2.38 5.26 12.00 17.5 73.5 1.44 4.38 8.75 2.25 7.83 28.62 29.16 28.64 27.71 34.13 20.13 46 13.60 29.2 68.1 2.39 5.28 12.12 17.7 74.3 1.44 4.34 8.70 2.25 7.84 25.65 22.0 27.05 34.46 20.25 44 13.70 29.6 68.9 2.44 5.30 12.18 17.8 7.47 1.42 4.30 8.65 2.17 7.5 26.67 27.88 26.72 35.03 20.44 41 13.80 30.0 69.3 2.42 5.34 12.30 18.0 7.5 1.40 8.42 2.15 7.48 2.478 27.24 26.06 25.03 5.52 11.11	51	13.35	28.2	66.1	2.34	5.18	11.42	17.2	72.3	1.48	4.54	8.95	2.33	8.29	27.39	30.12	29.03	33.07	19.41
48 13.50 28.8 67.3 2.37 5.24 12.00 17.5 73.5 1.45 4.42 8.80 2.27 8.02 2.652 29.16 28.04 33.57 20.08 47 13.55 29.0 67.7 2.38 5.26 12.10 17.6 73.9 1.44 4.38 8.75 2.25 7.83 26.32 28.84 27.71 34.13 20.13 46 13.65 29.4 68.5 2.40 5.30 12.18 17.8 74.7 1.42 4.30 8.66 2.21 7.75 25.65 28.20 27.05 34.46 20.35 41 13.85 30.0 69.3 2.42 5.34 12.30 18.0 75.5 1.40 4.22 8.56 2.17 7.57 25.07 27.56 26.39 35.19 20.53 42 13.80 30.0 69.7 2.43 5.36 12.46 18.1 75.9 1.14 8.46 2.11 7.30 24.49 26.92 25.73 35.52 21.11 40 30.8	50	13.40	28.4	66.5	2.35	5.20	11.48	17.3	72.7	1.47	4.50	8.90	2.31	8.20	27.10	29.80	28.70	33.24	19.50
46 13.65 29.0 67.7 2.38 5.26 12.06 17.6 73.9 1.44 4.38 8.75 2.25 7.93 26.23 28.84 27.71 34.13 20.16 45 13.60 29.2 66.1 2.39 5.28 12.12 17.7 74.3 1.43 4.34 8.70 2.23 7.84 25.94 28.52 27.05 34.46 20.35 44 13.70 29.6 68.9 2.44 5.32 12.24 17.9 75.1 1.41 4.26 8.60 2.11 7.76 25.65 28.20 27.05 26.63 35.03 20.44 42 13.80 30.0 69.7 2.43 5.36 12.36 18.1 75.5 1.40 4.28 8.55 2.17 7.57 25.67 26.39 35.19 20.53 42 13.80 30.2 70.1 2.44 5.36 12.36 1.38 4.14 8.45 2.13 7.38 24.49 26.92 25.73 35.52 21.17 40 13.80	49	13.45	28.6	66.9	2.36	5.22	11.54	17.4	73.1	1.46	4.46	8.85	2.29	8.11	26.81	29.48	28.37	33.40	19.59
46 13.60 29.2 68.1 2.39 5.28 12.12 17.7 74.3 1.43 4.34 8.70 2.23 7.84 25.94 28.52 27.38 34.30 20.26 45 13.65 29.4 68.5 2.40 5.30 12.18 17.8 74.7 1.42 4.30 8.65 2.21 7.75 25.65 28.20 27.05 34.46 20.35 44 13.70 29.8 68.3 2.42 5.34 12.30 18.0 75.5 1.40 4.22 8.55 2.17 7.76 25.07 27.56 26.33 35.19 20.53 41 13.85 30.2 70.1 2.44 5.38 12.42 18.2 76.3 1.38 4.14 8.45 2.13 7.39 24.49 26.92 25.73 36.52 21.11 40 13.85 30.4 70.5 2.45 5.40 12.48 18.3 76.7 1.37 4.10 8.40	48	13.50	28.8	67.3	2.37	5.24	12.00	17.5	73.5	1.45	4.42	8.80	2.27	8.02	26.52	29.16	28.04	33.57	20.08
45 13.65 29.4 68.5 2.40 5.30 12.18 17.8 74.7 1.42 4.30 8.65 2.21 7.75 25.65 28.20 27.05 34.46 20.35 44 13.70 29.6 68.9 2.41 5.32 12.24 17.9 75.1 1.41 4.26 8.65 2.17 7.57 25.07 27.56 28.39 35.19 20.43 42 13.80 30.0 69.7 2.43 5.36 12.36 18.1 75.5 1.40 4.22 8.55 2.17 7.75 25.07 27.56 28.39 35.19 20.53 41 13.80 30.0 69.7 2.43 5.38 12.42 18.2 76.3 1.38 4.14 8.45 2.13 7.39 24.49 26.92 25.73 35.52 21.11 40 13.95 30.6 70.9 2.46 5.42 12.54 18.4 77.1 1.36 4.60 8.35 2.09 7.22 23.91 26.28 24.07 36.25 21.29 38	47	13.55	29.0	67.7	2.38	5.26	12.06	17.6	73.9	1.44	4.38	8.75	2.25	7.93	26.23	28.84	27.71	34.13	20.13
44 13.70 29.6 68.9 2.41 5.32 12.24 17.9 75.1 1.41 4.26 8.60 2.19 7.66 25.36 27.88 26.72 35.03 20.44 43 13.75 29.8 69.3 2.42 5.34 12.30 18.0 75.5 1.40 4.22 8.55 2.17 7.57 25.07 27.56 26.06 35.61 21.02 41 13.85 30.2 70.1 2.44 5.38 12.42 18.2 76.3 1.38 4.14 8.45 2.13 7.39 24.49 26.92 25.73 35.52 21.11 40 13.90 30.4 70.5 2.46 5.40 12.48 18.3 76.7 1.37 4.10 8.40 2.11 7.30 24.20 26.60 25.40 36.62 21.29 38 14.00 3.08 71.3 2.47 5.44 13.00 18.5 77.5 1.35 4.20 8.30 2.07 7.14 23.62 2.64 24.41 36.82 2.47 36.42	46	13.60	29.2	68.1	2.39	5.28	12.12	17.7	74.3	1.43	4.34	8.70	2.23	7.84	25.94	28.52	27.38	34.30	20.26
43 13.75 29.8 69.3 2.42 5.34 12.30 18.0 75.5 1.40 4.22 8.55 2.17 7.57 25.07 27.56 26.39 35.19 20.53 42 13.80 30.0 69.7 2.43 5.36 12.36 18.1 75.9 1.39 4.18 8.50 2.15 7.48 24.78 27.24 26.06 35.36 21.01 40 13.90 30.4 70.5 2.45 5.40 12.48 18.3 76.7 1.37 4.10 8.40 2.11 7.30 24.40 26.60 25.40 36.09 21.20 39 13.95 30.6 70.9 2.46 5.42 12.54 18.4 77.1 1.36 4.60 8.35 2.09 7.22 2.31 26.60 25.40 36.02 21.07 38 14.00 30.8 71.7 2.48 5.44 13.00 18.6 77.9 1.34 3.98 8.25 2.05 7.06 23.33 25.64 24.41 36.58 21.47 36 <	45	13.65	29.4	68.5	2.40	5.30	12.18	17.8	74.7	1.42	4.30	8.65	2.21	7.75	25.65	28.20	27.05	34.46	20.35
42 13.80 30.0 69.7 2.43 5.36 12.36 18.1 75.9 1.39 4.18 8.50 2.15 7.48 24.78 27.24 26.06 35.36 21.02 41 13.85 30.2 70.1 2.44 5.38 12.42 18.2 76.3 1.38 4.14 8.45 2.13 7.39 24.49 26.692 25.73 35.52 21.10 39 13.95 30.6 70.9 2.46 5.42 12.54 18.4 77.1 1.36 4.60 8.35 2.09 7.22 23.91 26.28 24.07 36.25 21.29 38 14.00 30.8 71.3 2.47 5.44 13.00 18.5 77.5 1.35 4.20 8.30 2.07 7.14 23.62 25.66 24.74 36.63 21.47 36 14.10 31.2 72.7 2.48 5.46 13.06 18.6 77.9 1.34 3.98 8.20 2.03 6.98 23.04 25.3 24.04 23.75 37.31 22.05	44	13.70	29.6	68.9	2.41	5.32	12.24	17.9	75.1	1.41	4.26	8.60	2.19	7.66	25.36	27.88	26.72	35.03	20.44
41 13.85 30.2 70.1 2.44 5.38 12.42 18.2 76.3 1.38 4.14 8.45 2.13 7.39 24.49 26.92 25.73 35.52 21.11 40 13.90 30.4 70.5 2.45 5.40 12.48 18.3 76.7 1.37 4.10 8.40 2.11 7.30 24.20 26.60 25.40 36.09 21.20 38 14.00 30.8 71.3 2.47 5.44 13.00 18.5 77.5 1.35 4.20 8.30 2.07 7.14 23.62 25.96 24.41 36.58 21.47 36 14.10 31.2 72.1 2.49 5.48 13.12 18.7 78.3 1.33 9.94 8.20 2.05 7.06 23.33 25.64 24.41 36.58 21.47 36 14.10 31.6 72.5 5.50 13.18 18.8 78.7 1.32 3.90 8.15 2.01	43	13.75	29.8	69.3	2.42	5.34	12.30	18.0	75.5	1.40	4.22	8.55	2.17	7.57	25.07	27.56	26.39	35.19	20.53
40 13.90 30.4 70.5 2.45 5.40 12.48 18.3 76.7 1.37 4.10 8.40 2.11 7.30 24.20 26.60 25.40 36.09 21.20 39 13.95 30.6 70.9 2.46 5.42 12.54 18.4 77.1 1.36 4.60 8.35 2.09 7.22 23.91 26.28 24.74 36.25 21.29 38 14.00 30.8 71.3 2.47 5.44 13.00 18.5 77.5 1.35 4.20 8.30 2.07 7.14 23.62 25.96 24.74 36.62 21.47 36 14.10 31.2 72.1 2.49 5.48 13.12 18.7 78.3 1.33 9.94 8.20 2.03 6.98 23.04 25.32 24.08 37.15 21.56 34 14.20 31.6 78.7 1.32 3.90 8.15 2.01 6.90 22.75 25.00 23.74 37.48 22.14 33 14.25 31.8 73.3 2.52 <	42	13.80	30.0	69.7	2.43	5.36	12.36	18.1	75.9	1.39	4.18	8.50	2.15	7.48	24.78	27.24	26.06	35.36	21.02
40 13.90 30.4 70.5 2.45 5.40 12.48 18.3 76.7 1.37 4.10 8.40 2.11 7.30 24.20 26.60 25.40 36.09 21.20 39 13.95 30.6 70.9 2.46 5.42 12.54 18.4 77.1 1.36 4.60 8.35 2.09 7.22 23.91 26.28 24.74 36.25 21.29 38 14.00 30.8 71.3 2.47 5.44 13.00 18.5 77.5 1.35 4.20 8.30 2.07 7.14 23.62 25.96 24.74 36.62 21.47 36 14.10 31.2 72.1 2.49 5.48 13.12 18.7 78.3 1.33 9.94 8.20 2.03 6.98 23.04 25.32 24.08 37.15 21.56 34 14.20 31.6 78.7 1.32 3.90 8.15 2.01 6.90 22.75 25.00 23.74 37.48 22.14 33 14.25 31.8 73.3 2.52 <	41	13.85	30.2	70.1	2.44	5.38	12.42	18.2	76.3	1.38	4.14	8.45	2.13	7.39	24.49	26.92	25.73	35.52	21.11
38 14.00 30.8 71.3 2.47 5.44 13.00 18.5 77.5 1.35 4.20 8.30 2.07 7.14 23.62 25.96 24.74 36.42 21.38 37 14.05 31.0 71.7 2.48 5.46 13.06 18.6 77.9 1.34 3.98 8.25 2.05 7.06 23.33 25.64 24.41 36.58 21.47 36 14.10 31.2 72.1 2.49 5.48 13.12 18.7 78.3 1.33 9.94 8.20 2.03 6.98 23.04 25.32 24.08 37.15 21.56 34 14.20 31.6 72.9 2.51 5.52 13.24 18.9 79.1 1.31 3.86 8.10 1.99 6.82 22.46 24.68 23.42 37.48 22.14 33 14.25 31.8 73.7 2.53 5.56 13.36 19.1 79.9 1.29 3.78 8.00 1.95 6.66 21.88 24.04 22.76 38.21 22.23 31	40	13.90	30.4	70.5	2.45	5.40	12.48	18.3	76.7	1.37	4.10	8.40		7.30	24.20	26.60	25.40	36.09	21.20
38 14.00 30.8 71.3 2.47 5.44 13.00 18.5 77.5 1.35 4.20 8.30 2.07 7.14 23.62 25.96 24.74 36.42 21.38 37 14.05 31.0 71.7 2.48 5.46 13.06 18.6 77.9 1.34 3.98 8.25 2.05 7.06 23.33 25.64 24.41 36.58 21.47 36 14.10 31.2 72.1 2.49 5.48 13.12 18.7 78.3 1.33 9.94 8.20 2.03 6.98 23.04 25.32 24.08 37.15 21.56 34 14.20 31.6 72.9 2.51 5.52 13.24 18.9 79.1 1.31 3.86 8.10 1.99 6.82 22.46 24.68 23.42 37.48 22.14 33 14.25 31.8 73.7 2.53 5.56 13.36 19.1 79.9 1.29 3.78 8.00 1.95 6.66 21.88 24.04 22.76 38.21 22.23 31	39	13.95	30.6	70.9	2.46	5.42	12.54	18.4	77.1	1.36	4.60	8.35	2.09	7.22	23.91	26.28	24.07	36.25	21.29
36 14.10 31.2 72.1 2.49 5.48 13.12 18.7 78.3 1.33 9.94 8.20 2.03 6.98 23.04 25.32 24.08 37.15 21.56 35 14.15 31.4 72.5 2.50 5.50 13.18 18.8 78.7 1.32 3.90 8.15 2.01 6.90 22.75 25.00 23.75 37.31 22.05 34 14.20 31.6 72.9 2.51 5.52 13.24 18.9 79.1 1.31 3.86 8.10 1.99 6.82 22.46 24.68 23.42 37.48 22.14 32 14.30 32.0 73.7 2.53 5.56 13.36 19.1 79.9 1.29 3.78 8.00 1.95 6.66 21.88 24.04 22.76 38.37 22.41 30 14.40 32.4 74.5 2.55 6.00 13.48 19.3 80.7 1.27 3.70 7.90	38	14.00	30.8	71.3	2.47	5.44	13.00	18.5	77.5	1.35	4.20	8.30	2.07	7.14	23.62	25.96	24.74	36.42	21.38
35 14.15 31.4 72.5 2.50 5.50 13.18 18.8 78.7 1.32 3.90 8.15 2.01 6.90 22.75 25.00 23.75 37.31 22.05 34 14.20 31.6 72.9 2.51 5.52 13.24 18.9 79.1 1.31 3.86 8.10 1.99 6.82 22.46 24.68 23.42 37.48 22.14 33 14.25 31.8 73.3 2.52 5.54 13.30 19.0 79.5 1.30 3.82 8.05 1.97 6.74 22.17 24.36 23.09 38.04 22.23 31 14.35 32.2 74.1 2.54 5.58 13.42 19.2 80.3 1.28 3.74 7.95 1.93 6.56 21.88 24.04 22.76 38.54 22.50 29 14.40 32.4 74.5 2.55 6.00 13.48 19.3 80.7 1.27 3.70 7.90 1.91 6.50 21.30 23.40 22.10 38.54 22.50 29	37	14.05	31.0	71.7	2.48	5.46	13.06	18.6	77.9	1.34	3.98	8.25	2.05	7.06	23.33	25.64	24.41	36.58	21.47
35 14.15 31.4 72.5 2.50 5.50 13.18 18.8 78.7 1.32 3.90 8.15 2.01 6.90 22.75 25.00 23.75 37.31 22.05 34 14.20 31.6 72.9 2.51 5.52 13.24 18.9 79.1 1.31 3.86 8.10 1.99 6.82 22.46 24.68 23.42 37.48 22.14 33 14.25 31.8 73.3 2.52 5.54 13.30 19.0 79.5 1.30 3.82 8.05 1.97 6.74 22.17 24.36 23.09 38.04 22.23 31 14.35 32.2 74.1 2.54 5.58 13.42 19.2 80.3 1.28 3.74 7.95 1.93 6.56 21.88 24.04 22.76 38.54 22.50 30 14.40 32.4 74.5 2.55 6.00 13.48 19.3 80.7 1.27 3.70 7.90 1.91 6.50 21.30 23.40 22.10 38.54 22.50 29	36	14.10	31.2	72.1	2.49	5.48	13.12	18.7	78.3	1.33	9.94	8.20	2.03	6.98	23.04	25.32	24.08	37.15	21.56
33 14.25 31.8 73.3 2.52 5.54 13.30 19.0 79.5 1.30 3.82 8.05 1.97 6.74 22.17 24.36 23.09 38.04 22.23 32 14.30 32.0 73.7 2.53 5.56 13.36 19.1 79.9 1.29 3.78 8.00 1.95 6.66 21.88 24.04 22.76 38.21 22.32 31 14.35 32.2 74.1 2.54 5.58 13.42 19.2 80.3 1.28 3.74 7.95 1.93 6.58 21.59 23.72 22.43 38.37 22.41 30 14.40 32.4 74.5 2.55 6.00 13.48 19.3 80.7 1.27 3.70 7.90 1.91 6.50 21.30 23.40 22.10 38.54 22.50 29 14.45 32.6 74.9 2.56 6.02 13.54 19.4 81.5 1.25 3.62 7.80 1.87 6.34 20.74 22.76 21.44 39.27 23.06 27.1	35	14.15	31.4	72.5	2.50	5.50	13.18	18.8	78.7	1.32	3.90	8.15	2.01	6.90	22.75	25.00	23.75	37.31	
32 14.30 32.0 73.7 2.53 5.56 13.36 19.1 79.9 1.29 3.78 8.00 1.95 6.66 21.88 24.04 22.76 38.21 22.32 31 14.35 32.2 74.1 2.54 5.58 13.42 19.2 80.3 1.28 3.74 7.95 1.93 6.58 21.59 23.72 22.43 38.37 22.41 30 14.40 32.4 74.5 2.55 6.00 13.48 19.3 80.7 1.27 3.70 7.90 1.91 6.50 21.30 23.40 22.10 38.54 22.50 29 14.45 32.6 74.9 2.56 6.02 13.54 19.4 81.1 1.26 3.66 7.85 1.89 6.42 21.02 23.08 21.77 39.10 22.59 28 14.50 32.8 75.3 2.57 6.04 14.00 19.5 81.5 1.25 3.62 7.80 1.87 6.34 20.74 22.76 21.44 39.27 23.06 24.14	34	14.20	31.6	72.9	2.51	5.52	13.24	18.9	79.1	1.31	3.86	8.10	1.99	6.82	22.46	24.68	23.42	37.48	22.14
31 14.35 32.2 74.1 2.54 5.58 13.42 19.2 80.3 1.28 3.74 7.95 1.93 6.58 21.59 23.72 22.43 38.37 22.41 30 14.40 32.4 74.5 2.55 6.00 13.48 19.3 80.7 1.27 3.70 7.90 1.91 6.50 21.30 23.40 22.10 38.54 22.50 29 14.45 32.6 74.9 2.56 6.02 13.54 19.4 81.1 1.26 3.66 7.85 1.89 6.42 21.02 23.08 21.77 39.10 22.59 28 14.50 32.8 75.3 2.57 6.04 14.00 19.5 81.5 1.25 3.62 7.80 1.87 6.34 20.74 22.76 21.44 39.27 23.06 27 14.55 33.0 75.7 2.58 6.06 14.06 19.6 81.9 1.24 3.58 7.75	33	14.25	31.8	73.3	2.52	5.54	13.30	19.0	79.5	1.30	3.82	8.05	1.97	6.74	22.17	24.36	23.09	38.04	22.23
3014.4032.474.52.556.0013.4819.380.71.273.707.901.916.5021.3023.4022.1038.5422.502914.4532.674.92.566.0213.5419.481.11.263.667.851.896.4221.0223.0821.7739.1022.592814.5032.875.32.576.0414.0019.581.51.253.627.801.876.3420.7422.7621.4439.2723.062714.5533.075.72.586.0614.0619.681.91.243.587.751.856.2620.4622.4421.1139.4323.152614.6033.276.12.596.0814.1219.782.31.233.547.701.836.1820.1822.1220.7840.0023.242514.6533.476.53.006.1014.1819.882.71.223.507.651.816.1019.9021.8020.4540.1623.332414.7033.676.93.016.1214.2419.983.11.213.467.601.796.0219.6221.4820.1240.3323.422514.7533.877.33.026.1414.3020.083.51.203.427.551.775.9419.3421.16 </th <th>32</th> <th>14.30</th> <th>32.0</th> <th>73.7</th> <th>2.53</th> <th>5.56</th> <th>13.36</th> <th>19.1</th> <th>79.9</th> <th>1.29</th> <th>3.78</th> <th>8.00</th> <th>1.95</th> <th>6.66</th> <th>21.88</th> <th>24.04</th> <th>22.76</th> <th>38.21</th> <th>22.32</th>	32	14.30	32.0	73.7	2.53	5.56	13.36	19.1	79.9	1.29	3.78	8.00	1.95	6.66	21.88	24.04	22.76	38.21	22.32
29 14.45 32.6 74.9 2.56 6.02 13.54 19.4 81.1 1.26 3.66 7.85 1.89 6.42 21.02 23.08 21.77 39.10 22.59 28 14.50 32.8 75.3 2.57 6.04 14.00 19.5 81.5 1.25 3.62 7.80 1.87 6.34 20.74 22.76 21.44 39.27 23.06 27 14.55 33.0 75.7 2.58 6.06 14.06 19.6 81.9 1.24 3.58 7.75 1.85 6.26 20.46 22.44 21.11 39.43 23.15 26 14.60 33.2 76.1 2.59 6.08 14.12 19.7 82.3 1.23 3.54 7.70 1.83 6.18 20.18 22.12 20.78 40.00 23.24 25 14.65 33.4 76.5 3.00 6.10 14.18 19.8 82.7 1.22 3.50 7.65 1.81 6.10 19.90 21.80 20.45 40.16 23.33 24	31	14.35	32.2	74.1	2.54	5.58	13.42	19.2	80.3	1.28	3.74	7.95	1.93	6.58	21.59	23.72	22.43	38.37	22.41
28 14.50 32.8 75.3 2.57 6.04 14.00 19.5 81.5 1.25 3.62 7.80 1.87 6.34 20.74 22.76 21.44 39.27 23.06 27 14.55 33.0 75.7 2.58 6.06 14.06 19.6 81.9 1.24 3.58 7.75 1.85 6.26 20.46 22.44 21.11 39.43 23.15 26 14.60 33.2 76.1 2.59 6.08 14.12 19.7 82.3 1.23 3.54 7.70 1.83 6.18 20.18 22.12 20.78 40.00 23.24 25 14.65 33.4 76.5 3.00 6.10 14.18 19.8 82.7 1.22 3.50 7.65 1.81 6.10 19.90 21.80 20.45 40.16 23.33 24 14.70 33.6 76.9 3.01 6.12 14.24 19.9 83.1 1.21 3.46 7.60 1.79 6.02 19.62 21.48 20.12 40.33 23.42 23.42	30	14.40	32.4	74.5	2.55	6.00	13.48	19.3	80.7	1.27	3.70	7.90	1.91	6.50	21.30	23.40	22.10	38.54	22.50
28 14.50 32.8 75.3 2.57 6.04 14.00 19.5 81.5 1.25 3.62 7.80 1.87 6.34 20.74 22.76 21.44 39.27 23.06 27 14.55 33.0 75.7 2.58 6.06 14.06 19.6 81.9 1.24 3.58 7.75 1.85 6.26 20.46 22.44 21.11 39.43 23.15 26 14.60 33.2 76.1 2.59 6.08 14.12 19.7 82.3 1.23 3.54 7.70 1.83 6.18 20.18 22.12 20.78 40.00 23.24 25 14.65 33.4 76.5 3.00 6.10 14.18 19.8 82.7 1.22 3.50 7.65 1.81 6.10 19.90 21.80 20.45 40.16 23.33 24 14.70 33.6 76.9 3.01 6.12 14.24 19.9 83.1 1.21 3.46 7.60 1.79 6.02 19.62 21.48 20.12 40.33 23.42 23.42	29	14.45	32.6	74.9	2.56	6.02	13.54	19.4	81.1	1.26	3.66	7.85	1.89	6.42	21.02	23.08	21.77	39.10	22.59
27 14.55 33.0 75.7 2.58 6.06 14.06 19.6 81.9 1.24 3.58 7.75 1.85 6.26 20.46 22.44 21.11 39.43 23.15 26 14.60 33.2 76.1 2.59 6.08 14.12 19.7 82.3 1.23 3.54 7.70 1.83 6.18 20.18 22.12 20.78 40.00 23.24 25 14.65 33.4 76.5 3.00 6.10 14.18 19.8 82.7 1.22 3.50 7.65 1.81 6.10 19.90 21.80 20.45 40.16 23.33 24 14.70 33.6 76.9 3.01 6.12 14.24 19.9 83.1 1.21 3.46 7.60 1.79 6.02 19.62 21.48 20.12 40.33 23.42 23 14.75 33.8 77.3 3.02 6.14 14.30 20.0 83.5 1.20 3.42 7.55 1.77 5.94 19.34 21.16 19.79 40.49 23.52	28	14.50		75.3	2.57	6.04			81.5					6.34			21.44	39.27	
25 14.65 33.4 76.5 3.00 6.10 14.18 19.8 82.7 1.22 3.50 7.65 1.81 6.10 19.90 21.80 20.45 40.16 23.33 24 14.70 33.6 76.9 3.01 6.12 14.24 19.9 83.1 1.21 3.46 7.60 1.79 6.02 19.62 21.48 20.12 40.33 23.42 23 14.75 33.8 77.3 3.02 6.14 14.30 20.0 83.5 1.20 3.42 7.55 1.77 5.94 19.34 21.16 19.79 40.49 23.52 24 14.80 34.0 77.7 3.03 6.16 14.36 20.1 83.9 1.19 3.38 7.50 1.75 5.86 19.06 20.84 19.46 41.06 24.01	27	14.55		75.7		6.06		19.6	81.9		3.58		1.85		20.46		21.11		
24 14.70 33.6 76.9 3.01 6.12 14.24 19.9 83.1 1.21 3.46 7.60 1.79 6.02 19.62 21.48 20.12 40.33 23.42 23 14.75 33.8 77.3 3.02 6.14 14.30 20.0 83.5 1.20 3.42 7.55 1.77 5.94 19.34 21.16 19.79 40.49 23.52 22 14.80 34.0 77.7 3.03 6.16 14.36 20.1 83.9 1.19 3.38 7.50 1.75 5.86 19.06 20.84 19.46 41.06 24.01	26	14.60	33.2	76.1	2.59	6.08	14.12	19.7	82.3	1.23	3.54	7.70	1.83	6.18	20.18	22.12	20.78	40.00	23.24
24 14.70 33.6 76.9 3.01 6.12 14.24 19.9 83.1 1.21 3.46 7.60 1.79 6.02 19.62 21.48 20.12 40.33 23.42 23 14.75 33.8 77.3 3.02 6.14 14.30 20.0 83.5 1.20 3.42 7.55 1.77 5.94 19.34 21.16 19.79 40.49 23.52 22 14.80 34.0 77.7 3.03 6.16 14.36 20.1 83.9 1.19 3.38 7.50 1.75 5.86 19.06 20.84 19.46 41.06 24.01	25	14.65	33.4	76.5	3.00	6.10	14.18	19.8	82.7	1.22	3.50	7.65	1.81	6.10	19.90	21.80	20.45	40.16	23.33
22 14.80 34.0 77.7 3.03 6.16 14.36 20.1 83.9 1.19 3.38 7.50 1.75 5.86 19.06 20.84 19.46 41.06 24.01	24	14.70	33.6	76.9	3.01	6.12	14.24	19.9	83.1	1.21	3.46	7.60	1.79	6.02	19.62	21.48	20.12	40.33	23.42
22 14.80 34.0 77.7 3.03 6.16 14.36 20.1 83.9 1.19 3.38 7.50 1.75 5.86 19.06 20.84 19.46 41.06 24.01	23	14.75	33.8	77.3	3.02	6.14	14.30	20.0	83.5	1.20	3.42	7.55	1.77	5.94	19.34	21.16	19.79	40.49	23.52
	22	14.80	34.0	77.7	3.03	6.16	14.36	20.1	83.9	1.19	3.38	7.50	1.75	5.86	19.06	20.84	19.46	41.06	24.01
	21					<u>6.</u> 18		20.2		<u>1.</u> 18		7.45	<u>1.</u> 73	5.78	<u>18</u> .78	20.52	<u>19</u> .13	41.22	

													4kg	1kg	600gm	4kg	WALK	WALK
	100M (s)	200M (s)	400M (s)	800M (min.s)	1500M (min.s)	3000M (min.s)	110H (s)	400H (s)	HJ (M)	LJ (M)	TJ (M)	PV (M)	SHOT (M)	DISCUS (M)	JAVELIN (M)	HAMMER (M)	5000M (min.s)	3000M (min.s)
20	14.90	34.6	78.5	3.05	6.20	14.48	20.3	84.7	1.17	3.30	7.40	1.71	5.70	18.50	20.20	18.80	41.39	24.19
19	14.95	34.8	78.9	3.06	6.22	14.54	20.4	85.1	1.16	3.26	7.35	1.69	5.62	18.22	19.88	18.47	41.55	25.28
18	15.00	35.0	79.3	3.07	6.24	15.00	20.5	85.5	1.15	3.22	7.30	1.67	5.54	17.94	19.56	18.14	42.02	25.37
17	15.05	35.2	79.7	3.08	6.26	15.07	20.6	85.9	1.14	3.18	7.25	1.65	5.46	17.66	19.24	17.81	42.18	25.46
16	15.10	35.4	80.1	3.09	6.28	15.14	20.7	86.3	1.13	3.14	7.20	1.63	5.38	17.38	18.92	17.48	42.35	25.55
15	15.15	35.6	80.5	3.10	6.30	15.21	20.8	86.7	1.12	3.10	7.15	1.61	5.30	17.10	18.60	17.15	42.51	26.04
14	15.20	35.8	80.9	3.11	6.33	15.28	20.9	87.1	1.11	3.06	7.10	1.59	5.22	16.82	18.28	16.80	43.08	26.13
13	15.30	36.0	81.3	3.12	6.36	15.35	21.0	87.5	1.10	3.02	7.05	1.57	5.14	16.54	17.96	16.49	42.15	25.22
12	15.40	36.2	81.7	3.13	6.39	15.42	21.2	87.9	1.09	2.98	7.00	1.55	5.06	16.26	17.64	16.16	42.30	25.31
11	15.50	36.4	82.1	3.14	6.42	15.49	21.4	88.3	1.08	2.94	6.95	1.53	4.96	15.98	17.32	15.83	42.45	25.40
10	15.60	36.7	82.6	3.15	6.45	15.56	21.6	88.7	1.07	2.90	9.90	1.51	4.88	15.70	17.00	15.50	43.00	25.49
9	15.70	37.0	83.1	3.16	6.48	16.03	21.8	89.1	1.06	2.86	6.85	1.49	4.80	15.42	16.68	15.17	43.45	25.58
8	15.80	37.3	83.6	3.17	6.51	16.10	22.0	89.5	1.05	2.82	6.80	1.47	4.72	15.14	16.36	14.84	44.00	26.07
7	15.90	37.6	84.1	3.18	6.54	16.17	22.2	89.9	1.04	2.78	6.75	1.45	4.64	14.86	16.04	14.51	44.15	26.16
6	16.00	37.9	84.6	3.19	6.57	16.24	22.4	90.3	1.03	2.74	6.70	1.43	4.56	14.58	15.72	14.18	44.30	26.25
5	16.10	38.2	85.1	3.20	7.00	16.31	22.6	90.7	1.02	2.70	6.65	1.41	4.46	14.30	15.40	13.85	44.45	26.34
4	16.20	38.5	85.6	3.22	7.03	16.38	22.8	91.1	1.01	2.66	6.60	1.39	4.36	13.80	15.08	13.52	45.00	26.43
3	16.30	38.8	86.1	3.24	7.06	16.45	23.0	91.5	0.99	2.62	6.55	1.37	4.26	13.30	14.76	13.02	45.15	26.52
2	16.40	39.1	86.6	3.26	7.09	16.52	23.2	92.0	0.98	2.58	6.50	1.32	4.16	12.80	14.44	12.52	45.30	27.01
1	16.50	39.4	87.1	3.28	7.12	16.59	23.4	93.0	0.97	2.54	6.45	1.27	4.06	12.30	14.12	12.02	45.45	27.10

PERFORMANCE ASSESSMENT	TABLES – ATHLETICS – MALE CANDIDATES

														6.25kg	1.75kg	800gm	6.25kg	WALK	WALK
	100M	200M	400M	800M	1500M	3000M	110H	400H	2000M	HJ	LJ	TJ	PV	SHOT	DISCUS	JAVELIN	HAMMER	10000M	5000M
	(s)	(s)	(s)	(min.s)	(min.s)	(min.s)	(s)	(s)	(min.s)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(min.s)	(min.s)
60	11.40	23.1	51.5	2.00	4.09	9.06	16.0	59.0	6.23	1.87	6.35	13.05	3.65	11.90	36.00	48.00	41.00	64.30	28.50
59	11.45	23.2	52.0	2.01	4.11	9.11	16.1	59.4	6.26	1.86	6.30	12.96	3.61	11.80	35.65	47.50	40.60	65.00	29.05
58	11.50	23.3	52.5	2.02	4.13	9.16	16.2	59.8	6.29	1.85	6.25	12.87	3.57	11.70	35.30	47.00	40.20	65.30	29.20
57	11.55	23.4	53.0	2.03	4.15	9.21	16.3	60.2	6.32	1.84	6.20	12.78	3.53	11.60	34.95	46.50	38.80	66.00	29.35
56	11.60	23.5	53.5	2.04	4.17	9.26	16.4	60.6	6.35	1.83	6.15	12.69	3.49	11.50	34.60	46.00	39.40	66.30	29.50
55	11.65	23.6	54.0	2.05	4.19	9.31	16.5	61.0	6.38	1.82	6.10	12.60	3.45	11.40	34.25	45.00	39.00	67.00	30.05
54	11.70	23.7	54.5	2.06	4.21	9.36	16.6	61.4	6.41	1.81	6.05	12.51	3.41	11.30	33.90	44.50	38.60	67.30	30.20
53	11.75	23.8	55.0	2.07	4.23	9.41	16.7	61.8	6.44	1.80	6.00	12.42	3.37	11.20	33.55	44.00	38.20	68.00	30.35
52	11.80	23.9	55.5	2.08	4.25	9.46	16.8	62.2	6.47	1.79	5.95	12.33	3.33	11.10	33.20	43.50	37.80	68.30	30.50
51	11.85	24.0	56.0	2.09	4.27	9.51	16.9	62.6	6.50	1.78	5.90	12.24	3.29	11.00	32.85	43.00	37.40	69.00	31.05
50	11.90	24.1	56.5	2.10	4.29	9.56	17.0	63.0	6.53	1.77	5.85	12.15	3.25	10.90	32.50	42.50	37.00	69.30	31.30
49	11.95	24.2	57.0	2.11	4.31	10.01	17.2	63.4	6.56	1.76	5.80	12.06	3.21	10.80	32.05	42.00	36.60	70.00	31.35
48	12.00	24.4	57.5	2.12	4.33	10.06	17.4	63.8	6.59	1.75	5.75	11.97	3.17	10.70	31.70	41.50	36.20	70.30	31.50
47	12.05	24.6	58.0	2.13	4.35	10.11	17.6	64.2	7.02	1.74	5.70	11.88	3.13	10.60	31.35	41.00	35.80	71.00	32.05
46	12.10	24.8	58.5	2.14	4.37	10.16	17.8	64.6	7.05	1.73	5.65	11.79	3.09	10.50	31.00	40.50	35.40	71.30	32.20
45	12.15	25.0	59.0	2.15	4.39	10.21	18.0	65.0	7.08	1.72	5.60	11.70	3.05	10.40	30.65	40.00	35.00	72.00	32.35
44	12.20	25.2	59.5	2.16	4.41	10.26	18.2	65.4	7.11	1.71	5.55	11.61	3.01	10.30	30.30	39.50	34.60	72.30	32.50
43	12.25	25.4	60.0	2.17	4.43	10.31	18.4	65.8	7.14	1.70	5.50	11.52	2.97	10.20	29.95	39.00	34.20	73.00	33.05
42	12.30	25.6	60.5	2.18	4.45	10.36	18.6	66.2	7.17	1.69	5.45	11.43	2.93	10.10	29.60	38.50	33.80	73.30	33.20
41	12.35	25.8	61.0	2.19	4.47	10.41	18.8	66.6	7.20	1.68	5.40	11.34	2.89	10.00	29.25	38.00	33.40	74.00	33.35
40	12.40	26.0	61.5	2.20	4.49	10.46	19.0	67.0	7.23	1.67	5.35	11.25	2.85	9.90	28.90	37.50	33.00	74.30	33.50
39	12.45	26.2	62.0	2.21	4.51	10.51	19.2	67.4	7.26	1.66	5.30	11.16	2.81	9.80	28.55	37.00	32.60	75.00	34.05
38	12.50	26.4	62.5	2.22	4.53	10.56	19.4	67.8	7.29	1.65	5.25	11.07	2.77	9.70	28.20	36.50	32.20	75.30	34.20
37	12.55	26.6	63.0	2.23	4.55	11.01	19.6	68.2	7.32	1.64	5.20	10.98	2.73	9.60	27.85	36.00	31.80	76.00	34.35
36	12.60	26.8	63.5	2.24	4.57	11.06	19.8	68.6	7.35	1.63	5.15	10.89	2.69	9.50	27.50	35.50	31.40	76.30	34.50
35	12.65	27.0	64.0	2.25	4.59	11.11	20.0	69.0	7.38	1.62	5.10	10.80	2.65	9.40	27.15	35.00	31.00	77.00	35.05
34	12.70	27.2	64.5	2.26	5.01	11.16	20.2	69.4	7.41	1.61	5.05	10.71	2.61	9.30	26.80	34.50	30.60	77.30	35.20
33	12.80	27.4	65.0	2.27	5.03	11.21	20.4	69.8	7.44	1.60	5.00	10.62	2.57	9.20	26.45	34.00	30.20	78.00	35.35
32	12.90	27.6	65.5	2.28	5.05	11.26	20.6	70.2	7.47	1.59	4.95	10.53	2.53	9.10	26.10	33.50	29.80	78.30	35.50
31	13.00	27.8	66.0	2.29	5.07	11.31	20.8	70.6	7.50	1.58	4.90	10.44	2.49	9.00	25.75	33.00	29.40	79.00	36.05
30	13.10	28.0	66.5	2.30	5.09	11.36	21.0	71.0	7.53	1.57	4.85	10.35	2.45	8.90	25.40	32.50	29.00	79.30	36.20
29	13.20	28.2	67.0	2.31	5.11	11.41	21.2	71.4	7.56	1.56	4.80	10.26	2.41	8.80	25.05	32.00	28.60	80.00	36.35
28	13.30	28.4	67.5	2.32	5.13	11.46	21.4	71.8	8.00	1.55	4.76	10.18	2.37	8.70	24.70	31.50	28.20	80.30	36.50
27	13.40	28.6	68.0	2.33	5.15	11.51	21.6	72.2	8.04	1.54	4.72	10.10	2.33	8.60	24.35	31.00	27.80	81.00	37.05
26	13.50	28.8	68.5	2.34	5.17	11.56	21.8	72.6	8.08	1.53	4.68	10.02	2.29	8.50	24.00	30.50	27.40	81.30	37.20
25	13.60	29.0	69.0	2.35	5.19	12.01	22.0	73.0	8.12	1.51	4.64	9.94	2.25	8.40	23.65	30.00	27.00	82.00	37.35
24	13.70	29.2	69.5	2.36	5.21	12.07	22.1	73.4	8.16	1.49	4.60	9.86	2.22	8.30	23.30	29.50	26.60	82.30	37.50
23	13.80	29.4	70.0	2.37	5.23	12.13	22.2	73.8	8.20	1.47	4.56	9.78	2.19	8.20	22.95	29.00	26.20	83.00	38.05
22	13.90	29.6	70.5	2.38	5.25	12.19	22.3	74.2	8.24	1.45	4.52	9.70	2.16	8.10	22.60	28.50	25.80	83.30	38.20
21	14.00	29.8	71.0	2.39	5.27	12.25	22.4	74.6	8.28	1.43	4.48	9.62	2.13	8.00	22.25	28.00	25.40	84.00	38.35

														6.25kg	1.75kg	800gm	6.25kg	WALK	WALK
	100M (s)	200M (s)	400M (s)	800M (min.s)	1500M (min.s)	3000M (min.s)	110H (s)	400H (s)	2000M (min.s)	HJ (M)	LJ (M)	TJ (M)	PV (M)	SHOT (M)	DISCUS (M)	JAVELIN (M)	HAMMER (M)	10000M (min.s)	5000M (min.s)
20	14.10	30.0	71.5	2.40	5.29	12.31	22.5	75.0	8.32	1.41	4.44	9.54	2.09	7.85	21.90	27.50	25.00	84.30	38.50
19	14.20	30.3	72.0	2.41	5.31	12.37	22.6	75.4	8.36	1.39	4.40	9.46	2.06	7.70	21.55	26.95	24.60	85.00	39.05
18	14.30	30.6	72.5	2.42	5.33	12.43	22.7	75.8	8.40	1.37	4.36	9.38	2.03	7.55	21.20	26.40	24.20	85.30	39.20
17	14.40	30.9	73.0	2.43	5.35	12.49	22.8	76.2	8.44	1.35	4.32	9.30	2.00	7.40	20.85	25.85	23.80	86.00	39.35
16	14.50	31.2	73.5	2.44	5.37	12.55	22.9	76.6	8.48	1.33	4.28	9.22	1.97	7.25	20.50	25.30	23.70	86.30	39.50
15	14.60	31.5	74.0	2.45	5.39	13.01	23.0	77.0	8.52	1.31	4.24	9.14	1.94	7.10	20.15	24.75	23.00	87.00	40.05
14	14.70	31.8	74.5	2.46	5.41	13.06	23.1	77.4	8.56	1.29	4.20	9.06	1.91	6.95	19.80	24.20	22.60	87.30	40.20
13	14.80	32.1	75.0	2.47	5.43	13.11	23.2	77.8	9.00	1.27	4.16	8.98	1.88	6.80	19.45	23.65	22.20	88.00	40.35
12	14.90	32.4	75.5	2.48	5.45	13.17	23.3	78.2	9.06	1.25	4.12	8.90	1.85	6.65	19.10	23.10	21.80	88.30	40.50
11	15.00	327.	76.0	2.49	5.47	13.23	23.4	78.6	9.12	1.23	4.08	8.82	1.82	6.50	18.75	22.55	21.40	89.00	41.05
10	15.10	33.0	76.5	2.50	5.49	13.24	23.5	79.0	9.18	1.21	4.04	8.74	1.79	6.35	18.40	22.00	21.00	89.30	41.20
9	15.20	33.3	77.0	2.51	5.51	13.35	23.6	79.4	9.24	1.19	4.00	8.66	1.76	6.20	18.05	21.45	20.60	90.00	41.30
8	15.30	33.6	77.5	2.52	5.53	13.41	23.7	79.8	9.30	1.17	3.96	8.58	1.73	6.05	17.70	20.90	20.20	90.30	41.40
7	15.40	33.9	78.0	2.53	5.55	13.47	23.8	80.2	9.36	1.15	3.92	8.50	1.70	5.90	17.35	20.35	19.80	91.00	41.50
6	15.50	34.2	78.5	2.54	5.57	13.53	23.9	80.6	9.42	1.13	3.88	8.42	1.67	5.75	17.00	19.80	19.40	91.30	42.00
5	15.60	34.5	79.0	3.00	5.59	13.59	24.0	81.0	9.48	1.11	3.82	8.34	1.64	5.60	16.65	19.25	19.00	92.00	42.10
4	15.70	34.8	79.5	3.05	6.01	14.05	24.1	81.4	9.54	1.09	3.78	8.28	1.61	5.35	16.30	18.70	18.60	92.30	42.20
3	15.80	35.1	80.0	3.10	6.05	14.15	24.2	81.8	10.00	1.07	3.74	8.20	1.58	5.20	15.95	18.15	18.20	93.00	42.30
2	15.90	35.4	80.5	3.15	6.10	14.22	24.3	82.2	10.15	1.05	3.70	8.12	1.55	5.05	15.60	17.60	17.80	93.30	42.40
1	16.00	35.7	81.0	3.20	6.15	14.30	24.4	82.6	10.30	1.03	3.66	8.04	1.52	4.90	15.25	17.05	17.40	94.00	42.50

PERFORMANCE ASSESSMENT TABLES: SWIMMING (50 metres) – FEMALE CANDIDATES

POINTS	FRONT CRAWL	BREAST STROKE	BACK STROKE	BUTTERFLY
	(secs) 31.0	(secs) 42.0	(secs) 38.0	(secs) 34.0
60				
59	31.2	42.2	38.2	34.2
58	31.4	42.4	38.4	34.4
57	31.6	42.6	38.6	34.6
56	31.8	42.8	38.8	34.8
55	32.0	43.0	39.0	35.0
54	32.2	43.2	39.2	35.2
53	32.4	43.4	39.4	35.4
52	32.6	43.6	39.6	35.6
51	32.8	43.8	39.8	35.8
50	33.0	44.0	40.0	36.0
49	33.5	44.5	40.5	36.5
48	34.0	45.0	41.0	37.0
	34.5	45.5	41.5	37.5
47				
46	35.0	46.0	42.0	38.0
45	35.5	46.5	42.5	38.5
44	36.0	47.0	43.0	39.0
43	36.5	47.5	43.5	39.5
42	37.0	48.0	44.0	40.0
41	37.5	48.5	44.5	40.5
40	38.0	49.0	45.0	41.0
39	38.5	49.5	45.5	41.5
38	39.0	50.0	46.0	42.0
37	39.5	50.5	46.5	42.5
36	40.0	51.0	47.0	43.0
35	40.5	51.5	47.5	43.5
34	41.0	52.0	48.0	44.0
33	41.5	52.5	48.5	44.5
32	42.0	53.0	49.0	45.0
31	42.5	53.5	49.5	45.5
30	43.0	54.0	50.0	46.0
29	43.5	54.5	50.5	46.5
28	44.0	55.0	51.0	47.0
	44.5	55.5	51.5	47.5
27				
26	45.0	56.0	52.0	48.0
25	45.5	56.5	52.5	48.5
24	46.0	57.0	53.0	49.0
23	46.5	57.5	53.5	49.5
22	47.0	58.0	54.0	50.0
21	47.5	58.5	54.5	50.5
20	48.0	59.0	55.0	51.0
19	48.5	59.5	55.5	51.5
18	49.0	60.0	56.0	52.0
17	49.5	60.5	50.5	52.5
16	50.0	61.0	57.0	53.0
15	50.5	61.5	57.5	53.5
14	51.0	62.0	58.0	54.0
13	51.5	62.5	58.5	54.5
12	52.0	63.0	59.0	55.0
11	52.5	63.5	54.5	55.5
10	53.0	64.0	60.0	56.0
9	53.5	64.5	60.5	56.5
8	54.0	65.0	61.0	57.0
7		65.5	61.5	57.5
-	54.5	00.0		
6				58.0
<u>6</u> 5	55.0	66.0	62.0	58.0
5	55.0 55.5	66.0 66.5	62.0 62.5	58.5
5 4	55.0 55.5 56.0	66.0 66.5 67.0	62.0 62.5 63.0	58.5 59.0
5 4 3	55.0 55.5 56.0 56.5	66.0 66.5 67.0 67.5	62.0 62.5 63.0 63.5	58.5 59.0 59.5
5 4	55.0 55.5 56.0	66.0 66.5 67.0	62.0 62.5 63.0	58.5 59.0

PERFORMANCE ASSESSMENT TABLES: SWIMMING (50 metres) – MALE CANDIDATES

60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 <	ONT CRAWL (secs)	BREAST STROKE (secs)	BACK STROKE (secs)	BUTTERFLY (secs)
58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	27.0	36.0	34.0	30.0
57 56 54 53 52 51 50 49 48 47 46 45 44 33 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	27.2	36.2	34.2	30.2
56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	27.4	36.4	34.4	30.4
55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	27.6	36.6	34.6	30.6
54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	27.8	36.8	34.8	30.8
53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	28.0	37.0	35.0	31.0
52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	28.2	37.2	35.2	31.2
52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	28.4	37.4	35.4	31.4
51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	28.6	37.6	35.6	31.6
50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	28.8	37.8	35.8	31.8
49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	29.0	38.0	36.0	32.0
48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	29.5	38.5	36.5	32.5
47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	30.0	39.0	37.0	33.0
46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	30.5	39.5	37.5	33.5
45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 8 7 6	31.0	40.0	38.0	34.0
44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	31.5	40.5	38.5	34.5
43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6				35.0
42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	32.0	41.0	39.0 20 F	
41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	32.5	41.5	39.5	35.5
40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	33.0	42.0	40.0	36.0
39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	33.5	42.5	40.5	36.5
38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	34.0	43.0	41.0	37.0
37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	34.5	43.5	41.5	37.5
36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	35.0	44.0	42.0	38.0
35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	35.5	44.5	42.5	38.5
34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	36.0	45.0	43.0	39.0
33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	36.5	45.5	43.5	39.5
32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	37.0	46.0	44.0	40.0
31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	37.5	46.5	44.5	40.5
30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	38.0	47.0	45.0	41.0
29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	38.5	47.5	45.5	41.5
29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	39.0	48.0	46.0	42.0
27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	39.5	48.5	46.5	42.5
27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	40.0	49.0	47.0	43.0
26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	40.5	49.5	47.5	43.5
25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	41.0	50.0	48.0	44.0
24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	41.5	50.5	48.5	44.5
23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	42.0	51.0	49.0	45.0
22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	42.5	51.5	49.5	45.5
21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	43.0	52.0	50.0	46.0
20 19 18 17 16 15 14 13 12 11 10 9 8 7 6	43.5	52.5	50.5	46.5
19 18 17 16 15 14 13 12 11 10 9 8 7 6		= 0 0	= 4 0	17.0
18 17 16 15 14 13 12 11 10 9 8 7 6	44.0	53.0 52 5	51.0 51.5	47.0
17 16 15 14 13 12 11 10 9 8 7 6	44.5	53.5	51.5	47.5
16 15 14 13 12 11 10 9 8 7 6	45.0	54.0	52.0	48.0
15 14 13 12 11 10 9 8 7 6	45.5	54.5	52.5	48.5
14 13 12 11 10 9 8 7 6	46.0	55.0	53.0	49.0
13 12 11 10 9 8 7 6	46.5	55.5	53.5	49.5
12 11 10 9 8 7 6	47.0	56.0	54.0	50.0
11 10 9 8 7 6	47.5	56.5	54.5	50.5
10 9 8 7 6	48.0	57.0	55.0	51.0
9 8 7 6	48.5	57.5	55.5	51.5
8 7 6	49.0	58.0	56.0	52.0
7 6	49.5	58.5	56.5	52.5
6	50.0	59.0	57.0	53.0
6	50.5	59.5	57.5	53.5
	51.0	60.0	58.0	54.0
5	51.5	60.5	58.5	54.5
4	52.0	61.0	59.0	55.0
3	52.5	61.5	59.5	55.5
2	53.0	62.0	60.0	56.0
1	54.0	63.0	61.0	57.0

Appendix 6: Suggested resources

There are a number of text books currently available that cover the subject content of the syllabus. A selection of suitable resources has been provided for each subject area but there are other equally valid texts. There are also many excellent DVDs, Videos, CD ROMs as well as a very large number of internet sites that are all equally appropriate. It is up to individual teachers to choose the support material that best supports their needs and that of their candidates.

Component 1: Physiology of Sport

- Anshel et al. (1991) Dictionary of the Sport and Exercise Sciences. Human Kinetics
- Beashel and Taylor (1996) Advanced Studies in Physical Education and Sport. Nelson
- Blakey, P. (1998) The Muscle Book (2nd Ed). Stafford: Bibliotek Books
- Davis, B., Bull, R., Roscoe, J. and Roscoe, D. (2000) Physical Education and the Study of Sport (5th Ed). London: Harcourt
- Davis, D., Kimmet, T. and Auty, M. (1990) Physical Education: Theory and Practice. Australia: MacMillan
- Honeybourne, J., Hill, M. and Moors, H. (2006) Physical Education & Sport for A Level (3rd Ed). Cheltenham: Stanley Thornes
- Kapit, W., Macey, R. and Meisami, E. (1987) The Physiology Colouring Book. Harlow: HarperCollins
- McArdle, D., Katch, V. and Katch, F. (2005) Essentials of Exercise Physiology (3rd Ed). Lippincott: Williams & Wilkins
- Webster, S. (1996) Sport Psychology: An A Level Guide for Teachers and Students. Widnes: Roscoe Publications
- Wesson, K., Wiggins-James, N., Thompson, G. and Hartigan, S. (2005) Sport and PE: A Complete Guide to Advanced Level Study (3rd Ed), London: Hodder Arnold

Component 2: The Psychology of Sport Learning and Performance

- Anshel et al. (1991) Dictionary of the Sport and Exercise Sciences. Human Kinetics
- Beashel and Taylor (1996) Advanced Studies in Physical Education and Sport. Nelson
- Biddle (1994) Psychology of Physical Education and Sport: A Practical Guide for Teachers. F.I.T. Systems
- Davis B., Bull R., Roscoe J. and Roscoe D. (2000) Physical Education and the Study of Sport (5th Ed). London: Harcourt
- Davis, D., Kimmet, T. and Auty, M. (1990) Physical Education: Theory and Practice. Australia: MacMillan
- Honeybourne, J., Hill, M. and Moors, H. (2006) Physical Education & Sport for A Level (3rd Ed). Cheltenham: Stanley Thornes
- Schmidt and Wrisberg (2000) Motor Learning and Performance: A Problem Based Learning Approach (2nd Ed). Human Kinetics
- Sharp B. (1992) Acquiring Skill in Sport. Sports Dynamics
- Webster S. (1996) Sport Psychology: An A Level Guide for Teachers and Students. Widnes: Roscoe Publications
- Wesson, K., Wiggins-James, N., Thompson, G. and Hartigan, S.(2005) Sport and PE: A Complete Guide to Advanced Level Study (3rd Ed). London: Hodder Arnold

Component 3: Sociological Perspectives in Sport

The sociology of sport element of the course is reading intensive. Currently there is not one textbook that accommodates all of the themes assembled here. For this reason a number of indicative texts have been suggested below that would provide content for the course at the broadly appropriate level. In addition, a number of more advanced texts have been included for advanced students and for educators to use as more detailed resources. These have been labelled advanced.

- Cashmore, E. (2000) Making Sense of Sport. London: Routledge.
- Coakley, J. and Dunning, E. (2003) Handbook of Sports Studies. London: McGraw Hill Higher Education
- Coakley, J. (1988) Sport in Society: Issues and Controversies. St. Louis: Times Mirror.
- Giddens, A. (2006) Sociology. (5th Ed), Cambridge: Polity Press
- Horne, J., Tomlinson, A., & Whannel, G. (1999) Understanding Sport: An Introduction to the Sociological and Cultural Analysis of Sport. London: E & F Spon Press.
- Holt, R. (1989) Sport and the British: A Modern History. Oxford: Oxford University Press.
- Houlihan, B. (2003) Sport and Society: A Student Introduction. London: Sage Publications
- Guttman, A. (1978) From Ritual to Record: The Nature of Modern Sports. Columbia: University of Columbia Press.
- Jarvie, G. (2006) Sport, Culture and Society: An Introduction. London: Routledge
- Sage, G. (1990) Power and Ideology in American Sport. Leeds: Human Kinetics

Advanced texts

- Andrews, D. and Jackson, S. (2001) Sport Stars: The Cultural Politics of Sporting Celebrity. London: Routledge.
- Brohm, J-M. (1978) Sport: Prison of Measured Time. Worcester: Pluto Press
- Hargeaves, J. (1986) Sport, Power and Culture. Cambridge: Polity Press
- Jarvie, G. (1995) Sport, Racism and Ethnicity. London: Falmer Press
- Houlihan, B. (1994) Sport and International Politics. London: Harvester Wheatsheaf.
- Ingham, A. and Loy, J. (1993) Sport in Social Development: Traditions, Transitions and Transformations. Leeds: Human Kinetics.
- Maguire, J. (1999) Global Sport: Identities, Societies, Civilizations. Cambridge: Polity Press
- Mangan, J. A. (1981) Athleticism in the Victorian and Edwardian Public School: the emergence and consolidation of an educational ideology. Cambridge: Cambridge University Press.
- Mangan, J. P. R. (Ed) (1987) From Fair Sex to Feminism: Sport and the Socialisation of Women in the Industrial and Post Industrial Era's. London: Frank Cass.
- McIntosh, P. (1979) Fair Play: Ethics in Sport and Education. London: Heinemann

Component 4: Performer in Action

- Anshel et al. (1991) Dictionary of the Sport and Exercise Sciences. Human Kinetics
- Beashel and Taylor, (1996) Advanced Studies in Physical Education and Sport. Nelson
- Biddle, (1994) Psychology of Physical Education and Sport: A Practical Guide for Teachers. F.I.T. Systems
- Blakey, P. (1998) The Muscle Book (2nd Ed). Stafford: Bibliotek Books
- Davis, B., Bull, R., Roscoe, J. and Roscoe, D. (2000) Physical Education and the Study of Sport (5th Ed). London: Harcourt
- Davis, D., Kimmet, T. and Auty, M. (1990) Physical Education: Theory and Practice. Australia: MacMillan
- Honeybourne, J., Hill, M. and Moors, H. (2006) Physical Education & Sport for A Level (3rd Ed). Cheltenham: Stanley Thornes
- McArdle, D., Katch, V. and Katch, F. (2005) Essentials of Exercise Physiology (3rd Ed). Lippincott: Williams & Wilkins
- Schmidt and Wrisberg (2000) Motor Learning and Performance: A Problem Based Learning Approach (2nd Ed). Human Kinetics
- Sharp, B. (1992) Acquiring Skill in Sport. Sports Dynamics
- Webster, S. (1996) Sport Psychology: An A Level Guide for Teachers and Students. Widnes: Roscoe Publications
- Wesson, K., Wiggins-James, N., Thompson, G. and Hartigan, S. (2005) Sport and PE: A Complete Guide to Advanced Level Study (3rd Ed). London: Hodder Arnold

Appendix 7: Grade descriptors

The following grade descriptors indicate the level of attainment characteristic of the middle of the given grade. They give a general indication of the required standard at each specified grade. The descriptors should be interpreted in relation to the content outlined in the syllabus; they are not designed to define that content.

The grade awarded will depend in practice upon the extent to which the candidate has met the assessment objectives overall. Shortcomings in some aspects of the examination may be balanced by better performances in others.

Distinction (D2)

Candidates:

- have an excellent command and understanding of a range of technical language and can apply it accurately and effectively
- demonstrate a detailed understanding of physical factors affecting training, exercise and energy systems and their influence on practical performances
- demonstrate a thorough understanding of the development of skilled performances and how these are achieved through learning, practice and the influence of cognitive factors
- demonstrate an intelligent insight into how sociological aspects and wider global issues interact and contribute to the provision of and participation in physical activities
- use a comprehensive range of theoretical principles and concepts and apply these to practical performances at a consistently high level
- demonstrate high order analytical skills clearly matched to underpinning theoretical principles, and use these to refine practical performances
- demonstrate a sophisticated appreciation and understanding of the connections between areas of the subject

Merit (M2)

Candidates:

- show a high level of competency in the range and application of technical language related to all subject areas
- clearly identify physical factors which affect training, exercise and energy systems and influence practical performance
- demonstrate a good understanding of how skilled performances are developed through the interaction of learning, practice and cognitive influences
- demonstrate a good understanding of sociological aspects and global trends and how these interact to affect the provision for and participation in physical activity
- use a good range of theoretical principles and concepts and apply these to practical performances
- demonstrate a good understanding of analysis and evaluation of practical performances using a range of theoretical principles, and through this identify ways of improving performance
- display a clear ability to identify and draw together different areas of subject knowledge

Pass (P2)

Candidates:

- understand and apply a sound range of technical language
- identify basic physical factors affecting training, exercise and energy influencing practical performances
- understand how skilled performances are developed through learning, practice and the effects of cognitive factors
- demonstrate a basic understanding of sociological issues and global trends and their effects on provision for and participation in physical activity
- use a basic range of theoretical principles and concepts and apply these to practical performances
- demonstrate a coherent understanding of analysis and evaluation of practical performances using theoretical principles, and how performances might be improved
- have a basic ability to identify and draw together different areas of subject knowledge

Appendix 8: Additional information

Guided learning hours

It is intended that each Principal Subject should be delivered through 380 hours of guided learning. This is a notional measure of the substance of the qualification. It includes an estimate of the time that might be allocated to direct teaching or instruction, together with other structured learning time such as direct assignments or supported individual study and practice. It excludes learner initiated private study.

Certification title

This qualification is shown on a certificate as:

• Cambridge International Level 3 Cambridge Pre-U Certificate in Sports Science (Principal)

The qualification is accredited at Level 3 of the UK National Qualifications Framework and provides a solid grounding for candidates to pursue a variety of progression pathways.

Entries

For entry information please refer to the UK E3 Booklet.

Grading and reporting

The Cambridge International Level 3 Pre-U Certificates in the Principal Subjects are qualifications in their own right. They are acceptable as an alternative to A Level (or other Level 3 qualifications) for entry into higher education or employment. Each individual Principal Subject is graded separately on a scale of nine grades: Distinction 1, Distinction 2, Distinction 3, Merit 1, Merit 2, Merit 3, Pass 1, Pass 2, Pass 3.

Subjects can also be combined with two core components to meet the requirements for eligibility for the Cambridge International Level 3 Pre-U Diploma. More details about the Diploma requirements and the core components can be found in a separate Diploma syllabus. The results of the individual Principal Subjects are reported on a separate certificate to the Diploma result.

Classification code for UK Centres

In the UK, every syllabus is assigned to a national classification code that indicates the subject area to which it belongs. UK Centres should be aware that candidates who enter for more than one qualification with the same classification code will have only one grade (the highest) counted for the purpose of the School and College Performance Tables.

The classification code for this syllabus is 7210.

Overlap with other qualifications

There is some overlap with the sport psychology option of the Pre-U Psychology syllabus.

Language

This syllabus and the associated assessment materials are currently available in English only.

Procedures and Regulations

This syllabus complies with the CIE Code of Practice and The Statutory Regulation of External Qualifications 2004.

Further information about the administration of Cambridge Pre-U qualifications can be found in the *CIE Handbook for UK Centres* available from CIE Publications or by contacting **international@cie.org.uk**.

Spiritual, moral, ethical, social, legislative, economic and cultural issues

The awareness of the significance of these issues is an important aspect of the syllabus. These issues form an important part in:

- practical performance in terms of fair play and obeying the rules and regulations of sport
- sociological perspectives in sport covers aspects of sport, physical culture, race and ethnicity

Sustainable development, environmental education, health and safety considerations, European dimension and international agreements

Some aspects of these areas are covered in:

Sport, physical culture and globalisation.

The rise of sports tourism and ecological issues as a result of globalisation.

The syllabus provides opportunities to consider the European dimension.

Avoidance of bias

CIE has taken great care in the preparation of this syllabus and assessment materials to avoid bias of any kind.

Key Skills

This syllabus provides opportunities for the development of evidence for the Key Skills of: *Communication, Application of Number, Information Technology, Working with Others, Improving Own Learning and Performance* and *Problem Solving* at Levels 2 and/or 3. However, the extent to which this evidence fulfils the Key Skills criteria at these levels will be totally dependent on the style of teaching and learning adopted for each section.

The Key Skills awarding bodies and the regulatory authorities have produced a suite of example portfolios that will help to give candidates and practitioners a clear understanding of the requirements for the Key Skills portfolio. These are available on the QCDA website (**www.qcda.org.uk/keyskills**). Full details of the requirements for certification can be obtained from the awarding bodies that are approved to offer Key Skills. For further information about Key Skills assessment, please see the document *The Key Skills qualifications standards and guidance* published by the Qualifications and Curriculum Authority 2004 (ISBN 1 85838 548 2).

The following table indicates where opportunities may exist for at least some coverage of the various Key Skills criteria at Levels 2 and/or 3 for each section.

Component	Communication	Application of Number	ІТ	Working with Others	Learning and Performance	Problem Solving
1	\checkmark		~	\checkmark		
2	\checkmark		~	\checkmark		
3	\checkmark		~	~		
4	\checkmark	\checkmark	~	\checkmark	\checkmark	✓
5	\checkmark	\checkmark	~	\checkmark	\checkmark	\checkmark

University of Cambridge International Examinations 1 Hills Road, Cambridge, CB1 2EU, United Kingdom Tel: +44 1223 553554 Fax: +44 1223 553558 Email: international@cie.org.uk Website: www.cie.org.uk

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