

ISC Class 12 Physical Education Specimen Paper 1

Written by the Future Topper subject team on the CISCE examination pattern. Not an official CISCE paper.

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Maximum Marks: 70 | Time Allowed: Three hours | Reading Time: 15 minutes

Part I is compulsory. From Part II attempt any five questions. This paper carries 70 marks, the remaining 30 being for the practical work.

General Instructions

Write your answers on the separate answer paper provided. The first 15 minutes are for reading the paper, and you may not write during that time. Part I is compulsory and must be attempted in full. From Part II you must attempt any five of the eight questions, and no credit is given for a sixth. Marks for each question, or part of a question, are shown in brackets. Answers should be in your own words and of a length suited to the marks offered, a one-mark part needing no more than a sentence and a four-mark part needing a short developed answer. Illustrate general statements with examples from games and athletics wherever you can. No printed figures, charts or photographs are supplied with this paper, and where a question asks for a diagram, a court marking or a fixture chart you are expected to draw it yourself in pencil and label it. Questions on nutrition are to be answered in terms of food groups and general principles, and questions on injury are to be answered in terms of general first aid, since neither a diet nor a course of treatment for a named individual can be set out in an examination answer. This paper carries 70 of the 100 marks for the subject, the remaining 30 being for the practical work.

PART I (20 Marks)

Attempt all parts of Question 1 and all parts of Question 2.

Question 1 [12]

Each part carries 1 mark. For the parts that offer four choices, write only the option you choose. For the rest, answer in a single sentence or give the single word, name or term asked for.

- (i) The component of physical fitness that allows the heart, the lungs and the blood vessels to supply working muscles with oxygen over a long period of activity is:
 - (a) muscular strength (b) flexibility
 - (c) cardiorespiratory endurance (d) agility
- (ii) Name the kind of muscular contraction in which the muscle develops tension but does not change in length, as when a wrestler holds a position against an opponent.
- (iii) The chief function of carbohydrate in the diet of a sportsperson is to:
 - (a) build new muscle tissue (b) supply energy for work
 - (c) carry the fat soluble vitamins (d) regulate the balance of fluid
- (iv) Name the practice of breath control that forms one of the eight limbs of yoga as set out by Patanjali.
- (v) In the classification of events for athletes with a disability, the purpose of a classification system is to:
 - (a) decide the order of the heats (b) group together athletes of similar functional ability
 - (c) fix the prize money (d) decide which coach is appointed
- (vi) Name the overuse injury of the lower leg in which pain is felt along the front of the shin after repeated running on a hard surface.
- (vii) The point about which a lever turns is called the:
 - (a) fulcrum (b) resistance
 - (c) effort (d) moment
- (viii) State in one sentence what is meant by the centre of gravity of a body.

- (ix) The kind of motivation that comes from the satisfaction of the activity itself, rather than from a prize or from praise, is called:
- (a) extrinsic motivation (b) negative motivation
(c) social motivation (d) intrinsic motivation
- (x) Name the principle of training which states that the body improves only when it is asked to work against a load greater than the one it is accustomed to.
- (xi) A competition in which every team plays every other team once is drawn up as a:
- (a) single knock out tournament (b) round robin or league tournament
(c) consolation tournament (d) challenge tournament
- (xii) Name the test item, commonly used in school fitness batteries, in which the subject runs between two lines a fixed distance apart, picking up and replacing blocks, in order to measure agility.

Question 2 [8]

Each part carries 2 marks. Answer each part in two or three sentences.

- (i) State two differences between physical fitness and wellness. [2]
- (ii) State two reasons why fluid replacement matters to a player during a long match in hot weather. [2]
- (iii) Distinguish between a sprain and a strain. [2]
- (iv) State two purposes served by a warming up period before training or competition. [2]

PART II (50 Marks)

Attempt any five questions from this Part. Each question carries 10 marks.

Question 3 [10]

- (a) Name the components of health related physical fitness, and explain any one of them. [3]
- (b) Explain what is meant by a sedentary lifestyle, and describe three of its effects on health. [3]
- (c) Explain what is meant by posture. Describe two common postural deformities, stating how each may be recognised, and explain why a corrective programme for a particular person must be prescribed by a qualified physiotherapist. [4]

Question 4 [10]

- (a) Name the classes of nutrients the body requires, and state the chief function of any two of them. [3]
- (b) Explain, in terms of food groups and general principles only, how the diet of a person in heavy training differs in emphasis from that of a person who is not in training. [3]
- (c) Explain what is meant by a food supplement. Discuss the risks a sportsperson runs in taking supplements without advice, and explain why any plan of eating for a particular athlete should be drawn up by a qualified sports dietitian working with the coach. [4]

Question 5 [10]

- (a) Name the eight limbs of yoga as set out by Patanjali, and explain any one of them. [3]
- (b) Describe three benefits a sportsperson may gain from the regular practice of yoga. [3]
- (c) Explain what is meant by an asana and what is meant by pranayama. Describe the general precautions that should be observed in a yoga session, and state why a person with a medical condition should take up practice only under a qualified teacher with medical clearance. [4]

Question 6 [10]

- (a) Explain what is meant by adapted physical education, and state two of its aims. [3]
- (b) Describe three ways in which a school games lesson may be modified so that a child with a visual impairment can take part with the rest of the class. [3]

- (c) Explain what is meant by inclusion in physical education. Describe the benefits of inclusion for the child with a disability and for the other children in the class, and state two difficulties a school is likely to meet in putting it into practice. [4]

Question 7 [10]

- (a) Explain what is meant by a sports injury, and distinguish between an acute injury and an overuse injury with one example of each. [3]
- (b) Describe three measures that reduce the risk of injury in a school games programme. [3]
- (c) Explain, in general first aid terms, the immediate care of a soft tissue injury on the field. State what should not be done in the first hours after such an injury, and explain why the casualty must be seen by a doctor and why return to play is a medical decision and not the player's own. [4]

Question 8 [10]

- (a) Explain what is meant by a lever, name its three classes and give one example of each in the human body. [3]
- (b) Explain what is meant by equilibrium in sport, and describe three ways in which a player may increase stability. [3]
- (c) State Newton's three laws of motion. Explain, with one example from a game or an athletic event for each, how each law applies to movement in sport. [4]

Question 9 [10]

- (a) Explain what is meant by motivation in sport, and distinguish between intrinsic and extrinsic motivation. [3]
- (b) Explain what is meant by anxiety before competition, and describe two methods by which a player may be helped to manage it. [3]
- (c) Explain what is meant by personality. Describe the ways in which taking part in team games may influence the development of a young player's personality, and state one reason why a coach should be careful of labelling a child by personality type. [4]

Question 10 [10]

- (a) Name the principles of sports training, and explain any one of them. [3]
- (b) Explain what is meant by periodisation, and name its main phases with the chief aim of each. [3]
- (c) Explain the purpose of tests and measurement in physical education. Describe what is meant by the reliability and the validity of a test, and explain how a school may use the results of a fitness test without discouraging the weaker pupils. [4]

ANSWER KEY AND MARKING SCHEME

The answers printed here are models and not the only acceptable wording. Accept any answer that is accurate, relevant and expressed in the candidate's own words, and accept a correct example from any game or event in place of the one given. Marks shown in the marking lines are the step marks an examiner would award. In the questions on nutrition, no credit is to be given for an answer that sets out calorie figures, quantities in grams or a meal by meal plan for a named person, and in the questions on injury no credit is to be given for an answer that reads as a course of treatment to be carried out on an actual casualty, since the syllabus asks for general principles and general first aid only.

Question 1 [12]

- (i) (c) cardiorespiratory endurance. It is the ability of the heart, the lungs and the circulation to take in oxygen and deliver it to the working muscles, and to clear the waste away, so that moderate work can be continued for a long time.
- (ii) Isometric contraction, in which tension rises but the length of the muscle and the angle at the joint do not alter.
- (iii) (b) supply energy for work. Carbohydrate is the body's most readily available fuel and the one the muscles draw on most heavily during hard exercise, being stored as glycogen in the muscles and the liver.
- (iv) Pranayama, the fourth of the eight limbs.
- (v) (b) group together athletes of similar functional ability. Classification exists so that the result turns on skill, training and tactics rather than on the degree of impairment, which is why athletes are grouped by what they can functionally do.
- (vi) Shin splints, also recorded as medial tibial stress syndrome.
- (vii) (a) fulcrum. It is the fixed point about which the lever rotates, and in the body it is formed by the joint.
- (viii) The centre of gravity of a body is the single point at which the whole weight of the body may be taken to act, so that the body balances about it in every direction, and in the human body it shifts as the limbs are moved.
- (ix) (d) intrinsic motivation. The drive comes from within, from the enjoyment of the activity, the interest of the skill and the satisfaction of improving, and not from any reward given from outside.
- (x) The principle of overload, sometimes called progressive overload when the increase is made in stages.
- (xi) (b) a round robin or league tournament. Every team meets every other team, so the result does not depend on the draw and the strongest team cannot be eliminated by an early defeat.
- (xii) The shuttle run, in which the subject runs repeatedly between two lines, carrying blocks from one to the other, the time taken being the score.

1 mark for each correct part. No mark is deducted for a wrong option, and a one-line answer that carries the correct idea gains the mark even if it is loosely worded.

Question 2 [8]

- (i) Physical fitness is the capacity of the body to carry out physical work, and it is made up of measurable components such as endurance, strength, flexibility and body composition, so it can be tested and expressed as a score. Wellness is a far wider idea. It is a chosen way of living that takes in physical health together with mental and emotional health, social relationships, the handling of stress, nutrition, sleep, the avoidance of tobacco and alcohol, and a sense of purpose, so it cannot be reduced to a test score. A second difference is that fitness is a state at a given moment, which can be gained in weeks and lost as quickly, while wellness is a continuing pattern of behaviour. A person may therefore be very fit and not well, as a highly trained athlete under great stress and sleeping badly may be.

Fitness described as the measurable capacity for physical work 1. Wellness described as a wider way of living taking in several dimensions, with any sound point of contrast 1.

- (ii) Water is lost steadily in sweat, which is how the body sheds the heat that hard work in a hot climate generates, and as that loss mounts the volume of the blood falls, the heart has to work harder for every beat and the body can no longer cool itself well, so the player tires early, the legs grow heavy and the risk of a heat illness rises. The loss also tells on the mind before it tells on the muscles: judgement, concentration and

reaction slow, so that skill and decision making fall off in the later part of a match, and cramp becomes more likely. Replacing fluid steadily, in small amounts taken often rather than in one draught when thirst has become acute, keeps the circulation and the cooling of the body working.

Loss of fluid in sweat leading to reduced blood volume, poorer cooling and a greater risk of heat illness 1. Any second effect, such as early fatigue, cramp or the decline of concentration and skill 1.

- (iii) A sprain is an injury to a ligament, that is to the tough band that joins one bone to another across a joint, and it occurs when the joint is forced beyond its normal range, as when the ankle turns over on uneven ground. The ligament is overstretched or torn, and the signs are pain at the joint, swelling, discoloration and difficulty in taking weight. A strain is an injury to a muscle or to the tendon by which the muscle is attached to bone, and it occurs when the muscle is overstretched or made to contract too violently, as in a sudden sprint start without a warm up. The signs are a sharp pain in the belly of the muscle, tenderness and pain on contracting it or stretching it.

Sprain identified as a ligament injury at a joint, with a cause or sign 1. Strain identified as a muscle or tendon injury, with a cause or sign 1.

- (iv) A warming up raises the temperature of the muscles and of the body generally, which makes the muscles more elastic, speeds the nerve impulses that work them and lets the joints move through their full range, so that the first hard effort does not fall on cold tissue, and the risk of a strain is reduced. It also brings the heart, the lungs and the circulation up gradually, opening the vessels in the working muscles and raising the breathing rate, so the body is ready to supply oxygen when the work begins rather than having to catch up. A third purpose is mental: the rehearsal of the actual movements of the game sharpens coordination and timing, and the routine settles the player and turns the attention to the contest ahead.

Rise in muscle temperature with greater elasticity and range of movement, reducing the risk of injury 1. Any second purpose, such as the gradual raising of the heart rate and circulation, or the mental and skill rehearsal 1.

Question 3 [10]

- (a) The components of health related physical fitness are cardiorespiratory endurance, muscular strength, muscular endurance, flexibility and body composition. Flexibility, taking one of them, is the range through which a joint or a series of joints can be moved freely and without pain. It depends on the structure of the joint itself, which cannot be altered, and on the length and elasticity of the muscles, tendons, ligaments and other soft tissue that cross the joint, which can be. It is specific to the joint, so that a person loose at the shoulder may be tight at the hip, and it is measured at a particular joint by such tests as the sit and reach. It is developed by stretching held steadily at the end of the range, best done when the tissue is warm, and it is lost quickly when training stops and with age and inactivity. It matters because a joint that cannot reach the position a skill demands will be forced there, and the muscle or tendon pays for it.

The five components named 1. The chosen component defined 1. A further point of substance about it, such as its specificity to the joint, how it is measured or how it is developed 1.

- (b) A sedentary lifestyle is one in which very little of the day is spent in physical activity, the greater part of the waking hours being passed sitting, at a desk, in a vehicle or before a screen, so that the body is never asked to work hard enough to maintain itself. Three of its effects are, first, a decline in the working capacity of the heart, the lungs and the circulation, so that the person becomes breathless on a flight of stairs, and over the years the risk of raised blood pressure and of heart disease is increased. Second, a change in body composition, since energy taken in is not spent, fat is laid down, particularly about the abdomen, while muscle is lost through disuse, and the loss of muscle lowers the rate at which energy is used, so the process feeds itself. Third, trouble in the muscles, bones and joints, since the muscles that hold the body upright weaken, the flexors shorten from hours of sitting, bone loses density for want of loading, and the result is postural deformity, backache and neck pain, and a far greater chance of a fracture in later life. A fourth effect worth crediting is the effect on mood and sleep, since inactivity is associated with low mood, anxiety and poor sleep, and a fifth is the raised risk of type 2 diabetes through the body's reduced response to insulin.

Sedentary lifestyle defined 1. First effect 1. Second and third effects 1.

- (c) Posture is the position in which the body is held, whether standing, sitting, lying or moving. Good posture is the alignment in which the parts of the body are so balanced about the line of gravity that the least strain falls

on the muscles, the ligaments and the joints, and the organs within the trunk have room to work, and it is a habit built up over years rather than a position struck for a moment. Two common deformities are kyphosis and flat foot. Kyphosis is an exaggerated backward curve of the thoracic spine, and it is recognised by rounded shoulders, a hollow chest, a head carried forward of the trunk and a visible hump in the upper back when the person bends forward, with the sufferer usually unable to straighten the curve fully even when asked. Flat foot is the loss of the medial longitudinal arch of the foot, and it is recognised by the inner border of the foot resting on the ground, by a footprint on a wet floor that shows the whole sole instead of a curved inner edge, by the heel turning outwards when seen from behind, and by aching in the foot and the calf after standing or walking. Other deformities that may be credited are lordosis, scoliosis, round shoulders, knock knees and bow legs, each with its recognisable sign. A corrective programme for a particular person must nevertheless be prescribed by a qualified physiotherapist, and not taken from a book or a video. The same visible curve may arise from a habit of sitting, from short and tight muscles, from weakness in the opposing group, from a difference in the length of the legs or from a structural change in the bone itself, and the exercise that helps one of these causes may make another worse. A deformity that is structural will not yield to exercise at all, and may need a different kind of treatment altogether, while a programme given to a growing child must be matched to the stage of growth. The physiotherapist examines the person, finds which cause is at work, prescribes accordingly and reviews the result, which is something no general answer can do.

Posture defined, with good posture explained as balanced alignment imposing the least strain 1. First deformity named with how it is recognised 1. Second deformity named with how it is recognised 1. Why the corrective programme must be individually prescribed, with the reason that the same appearance may have different causes 1.

Question 4 [10]

- (a) The classes of nutrients are carbohydrates, proteins, fats, vitamins, minerals and water, to which roughage or dietary fibre is usually added, although it is not absorbed. Carbohydrate is the body's chief and most readily available fuel, broken down to glucose for immediate use and stored as glycogen in the muscles and the liver for work, and it is the fuel the body turns to most heavily when the effort is hard. Protein supplies the material from which the body builds new tissue and repairs what training has broken down, and from which it makes enzymes, many hormones, haemoglobin and antibodies, so it matters to a person in training for recovery rather than as a fuel. Fat is a concentrated store of energy and the fuel of long work at a low intensity, it carries the fat soluble vitamins A, D, E and K, it cushions the organs and insulates the body, and it supplies the essential fatty acids the body cannot make. Vitamins and minerals take no part in supplying energy but are needed in small amounts for the processes that release it and for the building of bone, blood and tissue. Water carries nutrients and waste, takes part in nearly every reaction in the body and is the means by which the body sheds heat.

The classes of nutrients named 1. The chief function of the first chosen nutrient 1. The chief function of the second chosen nutrient 1.

- (b) The difference is one of emphasis within the same food groups, and not a different kind of eating. A person in heavy training spends far more energy, so the energy foods carry the main part of the difference, and the cereals, millets, roots and fruits, which supply carbohydrate, are drawn on more freely, since carbohydrate is the fuel hard work uses and the stores of it in the muscles have to be replaced after every session or the next session suffers. The protein foods, the pulses, nuts, milk and milk products and the eggs, fish and meat where these are eaten, are given a firm place at every meal, because training breaks tissue down and the repair is made from protein, although protein is not a fuel and more of it does not build more muscle by itself. The fruits and vegetables take on importance because the vitamins and minerals they carry are needed for the release of energy and for the forming of blood, and because losses in sweat are greater. Fluid matters more than anything else on the list, and has to be taken through the day and not only at training. The spacing of meals also changes, since food is needed before and after a session rather than at the hours the household keeps, and a person training twice a day has to eat more often. A person not in training needs the same groups in the same balance but less of the energy foods, and in particular has less reason to draw on the concentrated fats and sugars. The actual amounts for any individual depend on the sport, the stage of the season, the body and the medical history, and are a matter for a qualified dietitian and not for a general rule.

The energy foods drawn on more freely, with carbohydrate as the fuel of hard work and the replacing of stores 1. The protein foods for repair rather than as fuel, with fruits and vegetables for the micronutrients 1. Fluid and the spacing of meals, with the point that the amounts for an individual are for a dietitian to settle 1.

- (c) A food supplement is a preparation of one or more nutrients or other substances, sold as a powder, tablet, capsule or drink, and taken in addition to ordinary food rather than as food. Protein powders, vitamin and mineral tablets, creatine, caffeine preparations, amino acids and herbal products are all sold in this way. The risks of taking them without advice are serious and of several kinds. First, the supplement may be unnecessary. An athlete already eating a varied diet gains nothing from more of a nutrient he has enough of, and some nutrients do harm in excess, the fat soluble vitamins among them, since the body cannot clear them easily. Second, the supplement may be contaminated or wrongly labelled. The industry is not regulated as medicines are, and products have repeatedly been found to contain substances that were not declared, including anabolic agents and stimulants on the prohibited list, which means an athlete may fail a dope test and be banned although he had no intention of cheating, and the rule of strict liability makes the athlete responsible for whatever is in his body. Third, a supplement may interact with a medicine the athlete is taking or with a condition he has. Fourth, reliance on a supplement draws attention and money away from the things that actually decide performance, which are training, sleep, recovery and ordinary food. For these reasons any plan of eating for a particular athlete should be drawn up by a qualified sports dietitian working with the coach and the team doctor. The dietitian can assess what the athlete actually eats, identify a genuine shortfall and meet it from food first, decide whether any supplement is justified for that individual and choose a product that has been independently tested, while the coach knows the training load, the competition calendar and the travel that the plan has to fit. A plan arrived at in that way is suited to the person, is reviewed as the season goes on, and does not put the athlete's health or eligibility at risk.

Supplement defined as a preparation of nutrients taken in addition to food, with examples 1. The risk of taking what is unnecessary, with the harm possible in excess 1. The risk of contamination and of a failed dope test under strict liability, or of interaction with a medicine or condition 1. The plan left to a qualified sports dietitian with the coach, with what each of them brings to it 1.

Question 5 [10]

- (a) The eight limbs of yoga as set out by Patanjali are yama, niyama, asana, pranayama, pratyahara, dharana, dhyana and samadhi. Yama, taking the first of them, is the group of restraints that govern a person's dealings with the world about him, and it is placed first because the inner practices are held to be of no use while conduct is disordered. It comprises ahimsa, the avoidance of harm to any living being in thought, word or deed; satya, truthfulness; asteya, the refusal to take what belongs to another; brahmacharya, the restraint of the appetites; and aparigraha, freedom from greed and from the wish to accumulate. They are stated as abstentions rather than as duties, and they are to be observed in practice and not merely assented to.

The eight limbs named 1. The chosen limb explained as to what it covers 1. A further point of substance, such as the five yamas listed or the reason the limb is placed where it is 1.

- (b) First, yoga improves flexibility and the range of movement at the joints, since the asanas take the body into positions held steadily at the end of the range, and a player who can reach the position a skill demands rather than force his way into it is less likely to strain a muscle and can produce the stroke or the stride more fully. Second, it improves the control of breathing and, with it, the ability to settle the mind. The pranayama practices teach a slow, deep and even breath, which lowers the heart rate and the sense of arousal, so a player can bring himself down between points, before a penalty or on the night before a final, where he would otherwise be left with his nerves. Third, it develops postural strength, balance and body awareness, since many asanas are held against gravity and require the deep muscles of the trunk to work, and a player with a stable trunk and a clear sense of where his limbs are placed moves more economically and lands and turns more safely. Other benefits worth crediting are improved concentration and the ability to hold attention on one thing, which transfers directly to competition; a use for recovery and active rest between hard sessions; and relief of the low grade stiffness and minor aches that accumulate in a long season.

First benefit, flexibility and range of movement, with its effect in the game 1. Second benefit, breath control and the settling of the mind 1. Third benefit, such as postural strength and balance, or concentration 1.

- (c) An asana is a posture of the body held steadily and with ease. Patanjali's definition is a seat that is firm and comfortable, so an asana is not a stretch forced to its limit nor a position of strain, and the holding of it, with the breath quiet and the attention within it, is as much the practice as the shape itself. Pranayama is the regulation of the breath, the lengthening, evening and voluntary control of the inhalation, the exhalation and the retention between them, and it is placed after asana because the breath can only be worked with once the body can sit still. The general precautions for a session are these. Practise on an empty stomach, with some hours since a full meal, and empty the bladder and bowel first. Practise in a clean, airy, quiet place on a mat, in loose clothing, with nothing on the feet. Begin with easier practices and progress slowly over weeks, and do not copy a difficult posture seen elsewhere. Warm the body with light loosening movements before the asanas and finish with a period of rest in shavasana. Move into and out of each posture slowly, never with a jerk or a bounce, and never force a joint. Work within your own range and do not compete with anyone else in the room, since bodies differ in structure. Keep breathing through the posture, and come out of it at once if there is pain, giddiness, breathlessness or numbness. Leave the strong pranayama and the breath retentions alone except under a teacher. Do not practise in a fever, in acute illness, immediately after an injury or soon after surgery, and women should take advice about practice during pregnancy and menstruation. A person with a medical condition should take up practice only under a qualified teacher and with the clearance of his own doctor, because particular postures are contraindicated in particular conditions. An inversion may be unsafe where blood pressure is raised or the eyes are affected, a deep forward bend may be unsafe where a disc is damaged, a strong twist may be unsafe after abdominal surgery, and a vigorous breath retention may be unsafe in heart or respiratory disease. Only a doctor can say what the condition will allow, and only a qualified teacher can adapt the practice and watch the person doing it, so that yoga becomes part of the treatment rather than an addition to the injury.

Asana defined as a posture held firmly and with ease, not as a forced stretch 1. Pranayama defined as the regulation of the breath 1. Four or more general precautions for a session 1. The need for a qualified teacher and medical clearance where there is a condition, with an example of a posture contraindicated 1.

Question 6 [10]

- (a) Adapted physical education is physical education that has been modified in its activities, its rules, its equipment, its space or its teaching method so that a child with a disability can take part in it meaningfully, safely and successfully alongside his classmates. The subject is adapted to the child rather than the child being excluded from the subject, and the aim is always the fullest participation the child's condition allows and not a separate and lesser programme. Two of its aims are, first, to develop the child's own physical capacity, that is strength, endurance, flexibility, balance, posture and motor skill, within what the condition permits, so that the child becomes as fit and as independent in movement as he can be. Second, to develop the child socially and emotionally, by giving him the experience of playing in a group, of contributing to a side, of winning and losing, and of being seen by his classmates as a participant, which builds self respect and lessens isolation. A third aim worth crediting is the teaching of skills and of an interest in activity that the child can carry into adult life for his own recreation and health, and a fourth is the education of the other children, who learn to play with and value a classmate whose body works differently from theirs.

Adapted physical education defined as the modification of the activity to suit the child 1. First aim 1. Second aim 1.

- (b) First, make the activity audible and tactile instead of visual. A ball fitted with a bell or containing a rattle, as in goalball, lets the child track it by sound; a whistle, a clap or a called name can replace a visual signal; boundaries can be marked with a change of surface, a rope laid on the ground or a mat the child can feel underfoot; and a rail or a guide rope can be run along a lane so that the child can run freely without the fear of straying. Second, change the rules and the conditions so that the child can act within them. Allow an extra bounce or an extra touch, let the child be told where the ball is before it is sent, require that the ball be rolled or passed along the ground rather than thrown through the air, reduce the space so that less has to be tracked, and quieten the hall at the moment of play, since noise is the child's chief obstacle. Third, use a sighted guide or a partner system, in which a classmate runs beside the child, calls the direction and takes the turns with him, and give the child time before the lesson to walk the space and handle the equipment, so that the layout is known rather than discovered during play. Other modifications worth crediting are brightly contrasting

equipment and markings for a child with partial sight rather than total blindness, verbal and hand over hand teaching of a new skill in place of demonstration, and the choice of activities such as athletics, swimming, judo and goalball in which vision matters least.

First modification, making the activity audible or tactile 1. Second modification, changing the rules or the conditions of play 1. Third modification, such as a sighted guide or familiarisation with the space beforehand 1.

- (c) Inclusion in physical education means educating the child with a disability in the ordinary class alongside his peers, with the lesson adapted to let him take part, rather than teaching him separately in a special group or excusing him from the subject. It rests on the view that the child belongs in the class as of right, and that it is the lesson and not the child that needs to change. For the child with a disability the gains are considerable. He gets physical activity suited to him, and so the fitness, motor skill and independence that follow from it, which the child kept on the bench loses entirely. He is in the company of children of his own age and learns the give and take of a group among them, which no separate provision supplies. He acquires standing, since being picked for a side, being passed to and being counted in the result place him among his classmates rather than beside them. And he gains in confidence and in the willingness to attempt things, which carries into the rest of his schooling. For the other children the gains are no smaller. They learn to see a classmate as a player rather than as a condition, and the awkwardness and the unkindness that come from unfamiliarity are reduced. They learn to adapt a game so that everyone in the room can play it, which is a real exercise in judgement and fairness, and some of them take on the role of guide or partner and learn patience and responsibility from it. They also learn that a group is strengthened and not weakened by making room for its weakest member, which is a lesson of more value than the game. Two difficulties a school is likely to meet are, first, the teacher's own preparation. Most physical education teachers have had little training in adapting activities to particular conditions, do not know what a given child may safely do, and are therefore anxious about injury and liability, and a teacher left to work it out alone will usually keep the child out to be safe. Second, the resources. Inclusion needs equipment of several kinds, a surface and a space the child can use, time to prepare the lesson and often a second adult in the room, and a school with a large class, a hard uneven ground and no assistant finds it hard in practice however willing it is. Other difficulties worth crediting are the attitudes of the other children and of their parents, the pressure of the examination and the inter school team, which pushes attention towards the able, the absence of medical guidance on what the particular child may do, and the problem of assessing and grading the child fairly.

Inclusion defined as the ordinary class with the lesson adapted, not the child taught separately 1. Benefits for the child with a disability, physical and social 1. Benefits for the other children in the class 1. Two difficulties the school will meet, such as the teacher's preparation and the want of resources 1.

Question 7 [10]

- (a) A sports injury is damage to the tissues of the body sustained during participation in sport or training, whether it arises from a single identifiable incident or from the gradual effect of repeated loading, and whether it keeps the player out of play or merely troubles him. An acute injury is one that occurs at a particular moment, from a single force great enough to damage the tissue, so the player can usually name the moment it happened and there is immediate pain, often with swelling or loss of function. A sprained ankle from landing badly in basketball is an example, as are a fracture from a fall, a dislocated shoulder and a hamstring tear in a sprint. An overuse injury is one that develops gradually from the repetition of a movement, each loading being far too small to cause damage but the tissue never being given time to recover between them, so that the player cannot name a moment and reports instead a pain that came on over weeks and that is worse after play. Shin splints in a runner who has raised his mileage sharply is an example, as are tennis elbow, swimmer's shoulder, stress fracture and jumper's knee.

Sports injury defined 1. Acute injury defined with an example 1. Overuse injury defined, with the point about repeated loading without recovery, and an example 1.

- (b) First, prepare the player. Every session should begin with a warming up that raises the muscle temperature and rehearses the movements of the game, and end with a cooling down, and training should be built up in stages so that the load rises gradually rather than in a jump, since the commonest cause of injury in school sport is too much too soon after a holiday. Conditioning work for strength, flexibility and balance reduces injury in itself. Second, see to the ground, the equipment and the kit. The playing surface should be inspected before

use and cleared of stones and glass, holes should be filled, the goalposts should be fixed and padded where they can be run into, a clear margin should be kept behind the baseline and the boundary, and the gymnastic apparatus and mats should be checked. Players should wear footwear suited to the surface and in good condition, and the protective equipment the game requires, such as a helmet, pads and a guard for the mouth and the shins, should be worn at practice and not only in a match. Third, see to the supervision and the matching of players. A qualified teacher should be present throughout, the rules should be enforced strictly and dangerous play penalised at once, children should be grouped by size, age and ability rather than by class alone so that a small child is not matched against a much larger one, and a skill should be taught in its correct form and progression before it is attempted at speed. Other measures worth crediting are a first aid kit and a trained person on the ground with a plan for getting a casualty to a hospital, attention to the weather and to fluid in hot conditions, a rule that no player returns from an injury without clearance, and the keeping of a record of injuries so that a recurring cause can be found and removed.

First measure, the preparation of the player, with warming up and gradual progression of load 1. Second measure, the ground, the equipment and the protective kit 1. Third measure, supervision, enforcement of the rules and the matching of players 1.

- (c) The immediate care of a soft tissue injury on the field follows the general first aid approach that is taught for such injuries. The game is stopped and the player is not allowed to run it off, since continuing to play on a fresh injury makes it worse. The scene is made safe, the player is kept still and reassured, and the injured part is supported in the position most comfortable to him. Cold is applied over a cloth rather than directly to the skin, support is given by a firm but not tight bandage, the part is rested and, where it is a limb, raised. The player is watched for the signs that mean more than a soft tissue injury, that is severe pain, a deformed or shortened limb, an inability to take any weight or to move the joint, numbness or pins and needles, a wound, or any loss of consciousness or confusion, and in any of these cases he is kept still and medical help is brought to him. Warmth, massage, rubbing and the manipulation of the part are to be avoided in the first hours, because they increase the bleeding into the tissue and the swelling. Stretching the injured muscle, testing the joint to see how bad it is, and strapping the player up so that he can go back on are all to be avoided for the same reason, and nothing should be given by mouth to a player who may need an anaesthetic. The casualty must in every case be seen by a doctor, because the extent of the damage cannot be judged on the field. A sprain and a fracture look much alike in the first minutes, a tear may be partial or complete, and a head or neck injury may show nothing at all at the time and a great deal an hour later, so what is needed is an examination, and often an X-ray or a scan, which only a hospital can provide. Return to play is for the same reason a medical decision and not the player's own. The player judges by how the part feels, and pain settles long before the tissue has healed or the strength and the control have come back, so a player who returns when it stops hurting is returning to a part that cannot yet take the load, and re-injury at that stage is both more likely and more serious. The decision belongs to the doctor and the physiotherapist, who assess the healing, the strength, the range of movement and the player's ability to perform the movements of the game, and who clear him in stages, with the coach then following that clearance rather than the fixture list. In a suspected head injury the rule is stricter still, and a player who has been concussed is removed for the day and returns only through a graded medical protocol.

The immediate steps, stopping play, keeping the player still, and rest, cold, support and elevation applied in general terms 1. The signs that call for medical help at once, such as deformity, inability to bear weight, numbness or altered consciousness 1. What is to be avoided in the first hours, heat, massage, rubbing and strapping the player back into play 1. Why a doctor must see the casualty and why return to play is a medical decision, with the point that pain settles before healing is complete 1.

Question 8 [10]

- (a) A lever is a rigid bar that turns about a fixed point, called the fulcrum, when an effort is applied to it in order to move a resistance. In the body the bone is the bar, the joint is the fulcrum, the muscle supplies the effort through its tendon and the weight of the part together with anything it carries is the resistance. The three classes are distinguished by which of the three lies between the other two. In a first class lever the fulcrum lies between the effort and the resistance, as at the joint between the skull and the first vertebra, where the neck extensors at the back supply the effort, the joint is the fulcrum and the weight of the face and jaw in front is the

resistance, so that the head is nodded. In a second class lever the resistance lies between the fulcrum and the effort, as in rising on to the toes, where the ball of the foot is the fulcrum, the weight of the body carried at the ankle is the resistance and the calf muscles pulling on the heel supply the effort. In a third class lever the effort lies between the fulcrum and the resistance, as in the curling of the forearm, where the elbow is the fulcrum, the biceps inserts a little way along the forearm to supply the effort and the weight in the hand is the resistance. The third class is much the commonest arrangement in the human body, which is why the body is well suited to producing speed and range of movement at the expense of mechanical advantage.

Lever defined as a rigid bar turning about a fulcrum, with the bone, joint and muscle identified 1. Two classes named with a correct example in the body 1. The third class named with a correct example 1.

- (b) Equilibrium in sport is the state in which the forces and the turning moments acting on a player are balanced, so that the body is not caused to topple or to move unintentionally. Static equilibrium is the balance of a body at rest, as in a headstand or on the beam, and dynamic equilibrium is the balance kept while the body is moving, as in running on a bend or landing from a jump, and stability is the resistance a body offers to having its equilibrium disturbed. A player increases stability first by lowering the centre of gravity, since the lower it is the further the body has to be tipped before the weight passes outside the base, which is why a wrestler, a goalkeeper facing a penalty and a sumo wrestler all crouch. Second, by widening the base of support, since a larger base gives the centre of gravity more room to move before it passes beyond the edge, which is why a player bracing himself places the feet well apart, and widening the base in the direction from which the force is expected is better still. Third, by keeping the line of gravity within the base and, where a force is expected from one side, shifting it towards that side, so that the body already leans into the push. Other means worth crediting are increasing the mass, since a heavier body is harder to move, which is why heavier players are preferred in a scrum; increasing the friction between the base and the ground by studded or rubber soled footwear; and raising the number of points of contact with the ground, as a sprinter in the blocks and a slip fielder on his toes both do in different ways.

Equilibrium in sport defined, with stability or the distinction between static and dynamic balance 1. Two ways of increasing stability with the reason, such as lowering the centre of gravity and widening the base 1. A third way with the reason, such as keeping the line of gravity within the base, adding mass or increasing friction 1.

- (c) Newton's first law, the law of inertia, states that a body continues at rest, or in uniform motion in a straight line, unless an external force acts upon it. The second, the law of acceleration, states that the rate of change of momentum of a body is proportional to the force applied and takes place in the direction of that force, which for a constant mass gives force equal to mass times acceleration. The third, the law of action and reaction, states that to every action there is an equal and opposite reaction. In sport the first law shows itself in the hockey ball that lies still until it is struck and then runs on across the turf until friction and the grass bring it to rest, and in the fact that a sprinter at the start has to overcome his own inertia, which is why the first strides are the slowest and the hardest and why a heavier player is slower to start and slower to stop. The second law shows itself in the difference between a push and a drive at the same ball: the harder the force applied by the stick or the bat, the greater the acceleration the ball receives and the faster it leaves, and the same law explains why the same force sends a tennis ball far faster than a shot put, the mass being so much smaller. The third law shows itself in the sprinter's block start, where the force the athlete drives backwards and downwards into the blocks is returned to him by the ground as an equal force forwards and upwards, which is what moves him; and it shows itself again in the swimmer who pushes the water backwards and is carried forwards, and in the high jumper who presses down on the ground to be lifted from it.

The three laws stated 1. The first law applied to an example from sport 1. The second law applied to an example from sport 1. The third law applied to an example from sport 1.

Question 9 [10]

- (a) Motivation in sport is whatever moves a player to begin an activity, to keep at it and to put effort into it, and it decides the direction of his behaviour, that is what he chooses to do, and its intensity, that is how hard he works at it. It is not a fixed quantity a player has or lacks, but something that rises and falls with the situation, with success and failure, and with the way the coach and the group behave towards him. Intrinsic motivation comes from within the activity itself, from the enjoyment of playing, the interest of a difficult skill, the satisfaction of improving and the sense of competence that follows. The player would do it whether or not

anyone were watching and whether or not there were a prize. Extrinsic motivation comes from outside the activity, from medals, money, selection, marks, a place in the newspaper, the approval of a coach or a parent, or the wish to avoid punishment and criticism. Both drive behaviour, but they behave differently over time. Intrinsic motivation is the more durable, because it does not depend on winning and survives a defeat, while extrinsic motivation works strongly in the short run and fails when the reward stops coming or when the player stops winning, and a heavy and controlling use of rewards may weaken the intrinsic interest a young player began with.

Motivation defined, with direction and intensity of effort 1. Intrinsic motivation defined 1. Extrinsic motivation defined, with a sound point of contrast between the two 1.

- (b)** Anxiety before competition is the unpleasant state of worry and tension a player feels when he doubts his ability to meet what the contest demands and fears the consequences of failing. It has two sides. The cognitive side is the worry itself, the negative expectations, the picturing of failure and the inability to keep the attention on the task. The bodily side is the raised heart rate, the shallow breath, the dry mouth, the sweating palms, the churning stomach, the trembling and the loss of fine control. A little arousal helps performance, but anxiety beyond the player's optimal level narrows the attention, stiffens the muscles and spoils timing and judgement. Two methods of managing it are, first, the control of breathing and the relaxation of the body. Slow, deep and even breathing, with the breath out made longer than the breath in, lowers the heart rate and the sense of arousal within a minute or two, and a progressive relaxation, in which the muscle groups are tensed and released in order, teaches the player to recognise tension and to let it go, so the player gains a means of bringing himself down that he can use in the dressing room or between points. Second, work on what the player is thinking, by replacing the thoughts that feed the anxiety with instructions that direct attention to the task. The player is taught to notice a thought such as I shall let the side down, to set it aside and to substitute a short cue that tells him what to do next, such as watch the ball or follow through, and to use a settled pre-performance routine so that the mind has something ordered to attend to. Mental rehearsal, in which the player sees and feels himself performing the skill well, serves the same end by making the situation familiar. A third method worth crediting is the setting of goals that concern the player's own performance rather than the result, since a player judged on whether he executed his own task can succeed in a match his side loses, which removes much of what he was afraid of.

Anxiety before competition defined, with its cognitive and bodily sides 1. First method, breathing control and relaxation 1. Second method, work on the player's thinking, with cue words, a routine or mental rehearsal 1.

- (c)** Personality is the organised set of characteristics, dispositions and habitual ways of thinking, feeling and behaving that marks one person off from another and that is reasonably consistent from one situation to another and over time. It is understood as having a core of values and self concept, a middle layer of typical responses and an outer layer of role related behaviour, and it is shaped by inheritance and by everything that happens to the person, so it is neither fixed at birth nor infinitely changeable. Taking part in team games may influence a young player's personality in several ways. It gives repeated practice in cooperating, since the game cannot be played without the others, and in subordinating what the player would like to do to what the side needs, which is the beginning of self discipline. It teaches the handling of success and of failure in public and at close intervals, so that a player learns to take a defeat without collapsing and a win without contempt for the beaten side, and this builds emotional control. It gives experience of leading and of following, of being captained and of captaining, and of accepting a decision gone against him, which develops a sense of fairness and of authority properly used. It builds self concept, since a player who finds he is good at something and is valued by a group for it carries that into other parts of his life, and it tends to increase confidence, persistence and the willingness to attempt difficult things. It also supplies a group and a set of friendships, which matters a great deal in adolescence. None of this is automatic, however, and the influence depends on how the game is conducted, since a team in which only winning is valued, the weaker players are mocked and the coach rules by fear teaches something quite different. A coach should be careful of labelling a child by personality type, because such a label is usually a poor description of what the child will actually do and it changes the way the child is treated and the way the child sees himself. Behaviour in sport depends at least as much on the situation as on the person, so a child who is quiet in the classroom may be forceful on the field and a child called timid may simply be new to the game or badly placed in the side. A label applied at thirteen

also ignores the fact that personality is still forming, and once a coach has decided that a child is lazy, nervous or not a team player, he selects, instructs and encourages accordingly, the child comes to believe it, and the label fulfils itself.

Personality defined as the organised and reasonably consistent set of characteristics distinguishing one person from another 1. Two influences of team games, such as cooperation and self discipline, and the handling of success and failure 1. Two further influences, such as leadership and following, self concept and confidence, with the point that the gain depends on how the game is conducted 1. Why a coach should avoid labelling by type, with the dependence of behaviour on the situation or the self fulfilling effect of the label 1.

Question 10 [10]

- (a) The principles of sports training are the principle of overload, the principle of progression, the principle of specificity, the principle of reversibility, the principle of individual differences, the principle of variety, the principle of recovery and the principle of continuity, to which warming up and cooling down and the general to specific ordering of work are often added. The principle of overload, taking one of them, states that the body adapts only when it is made to work against a demand greater than the one it is accustomed to. Work within the body's present capacity maintains what the body already has but produces no improvement, so the load has to be raised beyond the habitual level, after which the body repairs itself during the recovery that follows and settles at a slightly higher capacity. The load may be raised by increasing the intensity of the work, its duration, its frequency or the density of the work within the session, and in practice only one of these is altered at a time. Overload has limits at both ends: too small an increase produces no adaptation, and too large or too sudden an increase produces injury, staleness and overtraining instead of improvement, which is why the principle is always applied together with progression and recovery.

The principles named 1. The chosen principle explained 1. A further point of substance about it, such as the ways the load may be raised or the consequence of raising it too sharply 1.

- (b) Periodisation is the division of the training year, or of the period leading up to a major competition, into phases of different length, content and intensity, arranged so that the athlete reaches his best form at the time of the most important competition rather than at some accidental moment, and so that heavy loading and recovery are alternated instead of the athlete being trained hard all the year round. The whole period is called the macrocycle, within it come mesocycles of some weeks each, and within those the microcycles of about a week. The main phases are the preparatory phase, the competitive phase and the transition phase. The aim of the preparatory phase, which is the longest, is to build the foundation. Its first part is general, developing endurance, general strength, flexibility and body composition with a large volume of work at a moderate intensity, and its second part becomes specific, turning that base into the particular fitness and the technique the event requires, with volume falling and intensity rising. The aim of the competitive phase is to bring the athlete to peak form and to hold him there. Volume is reduced further, intensity is high, work is specific to the event, tactics and competition practice take the main place, and the training serves the fixture list rather than the reverse. The aim of the transition phase, which follows the last competition, is recovery. Training is light, varied and often in another activity altogether, the purpose being to let injuries settle and the athlete recover in body and mind, while not losing so much condition that the next preparatory phase has to begin from nothing.

Periodisation defined as the division of the year into phases so that form peaks at the chief competition 1. The three phases named 1. The chief aim of each phase 1.

- (c) Tests and measurement in physical education serve several purposes. They establish where a pupil or a team stands at the beginning, so that the programme can be built on fact rather than on impression. They measure progress, by comparing a later score with an earlier one, and so show whether the training is working and allow it to be altered if it is not. They help in classifying pupils into groups of similar ability, so that teaching and competition are fair, and in identifying talent for further coaching. They help to detect weaknesses and postural or medical problems that should be referred elsewhere. They give the pupil knowledge of his own result, which is itself a motivator, and they give the teacher evidence for grading and for reporting to parents, and the school evidence of whether its programme is achieving anything. The reliability of a test is the consistency of what it measures. A reliable test gives nearly the same score when the same pupil is tested again under the same conditions, and when the test is administered or scored by a different teacher, so that a difference in a score can be taken to mean a real difference in the pupil and not the roughness of the

instrument. The validity of a test is whether it measures what it claims to measure. A valid test of cardiorespiratory endurance actually reflects endurance and not, say, body weight or the pupil's willingness to tolerate discomfort, and validity is judged against some accepted criterion. A test may be reliable without being valid, for it may measure the wrong thing consistently, but a test cannot be valid without being reliable. A school may use the results of a fitness test without discouraging its weaker pupils if it is careful on several points. It should report each pupil's score against his own previous score rather than against the class, so that what is praised is improvement, which every pupil can achieve, and not rank, which most cannot. It should give the result privately, and should never read out or display a list in order of merit. It should set each pupil a target of his own, arrived at with him and within his reach, and should recognise the effort and the attendance as well as the figure. It should explain to the pupils at the outset what the test is for, namely to plan the teaching and to show progress, and should make it plain that the score is not a judgement on them as people. And it should use a battery of several items rather than one, so that a pupil weak in one component finds something he does well, and should avoid turning the test into a competition or attaching the marks of the subject to the raw score alone.

Three or more purposes of testing and measurement 1. Reliability defined as consistency on retesting 1. Validity defined as measuring what the test claims to measure, with the relation between the two 1. Three or more ways of using results without discouraging the weaker pupils, such as comparison with the pupil's own earlier score, privacy of results and individual targets 1.