SCOTLAND*on*SUNDAY

HIGHER POWER

Your indispensable
guide to passing
the top 12 subjects

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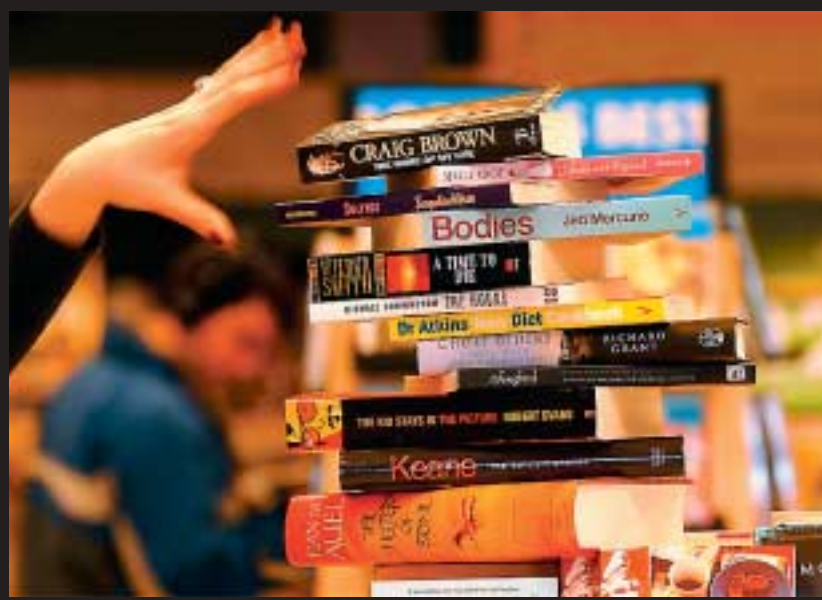

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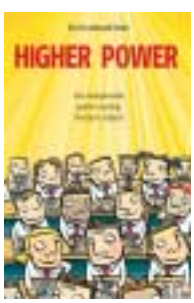
Entries must be received by midday April 14, 2003. Please note: Scotsman Publications Ltd may contact e-mail/text entrants with future offers which may be of interest. The prizes are as stated and there is no cash alternative. Winners will be selected at random from all entries received. Normal Scotland on Sunday rules apply.

We've taken the top 12 Highers, with study tips, exam structures, past papers and a quiz in each subject ... everything you need to help you do your absolute best in May



exam guide
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Special thanks to everyone at SQA for their kind assistance

features

art & design

YOUR critical faculties will be put to the test when you sit your Art & Design examinations. You should have a broad knowledge of the history of art and design and be familiar with the work of the artists and designers you have studied during the year.

You will also be expected to be able to evaluate unseen works of art and design, so you should be familiar with critical and technical terms. If you're still shaky about some of the terminology then there's still plenty of time to look it up in The Oxford Dictionary of Art or a similar reference book.

In design you should be able to talk about form and function, the use of photography and graphic design, the use of natural sources for inspiration, the designer's use of materials and treatment of form, sense of unity, and colour, line and shape.

In the evaluation of expressive art you should be comfortable discussing use of colour and tone, the treatment of light, the success and methods an artist uses to convey mood, movement, ideas and feelings. You should be able to talk about shape, colour, choice of media, and composition. With reference to sculptures you should be able to discuss scale, choice of material, the significance of the title of the piece, and the sculptor's response to the natural environment.

You will also have studied elements of history of design and fine art from 1750 to the present. You should review periods you have studied by reading art books.

A site that will give you access to virtually all that you will need to cover the historical area is www.artchive.com. Your school and local library might also have multimedia CDs.

It is important to remember as much factual information as possible: names of artists and designers; when they were working; who they were working with; what was important about their work; why it was different to the work of the time; whether the artist or designer set new standards and why.

To give yourself a historical perspective to your study there are movements in fine art and design that

Remember, remember: When did Gaugin work and who did he work with?

will cover most of the areas of study. These include fine art movements such as: Impressionism, Post-Impressionism, Neo-classicism, Expressionism, the Surrealists, the Cubists, and design movements such as Neo-classical Design, Arts and Crafts Movement, Bauhaus, International Modernism, Utility. Artists to know could include David, Ingres, Rossetti, Hunt, Turner, Constable, Van Gogh, Cezanne, Renoir, Rembrandt, Vermeer, Dali, Alison Watt, Jenny Saville. Important designers include William Morris, Charles Rennie Mackintosh, Le Corbusier, Coco Chanel, Susie Cooper, James Dyson, Charles and Ray Eames, Philippe Starck and Alessi.

ART STUDIES

In fine art it would be good practice to study two different movements and the artists associated with them e.g. Post-Impressionism and the Colourists.

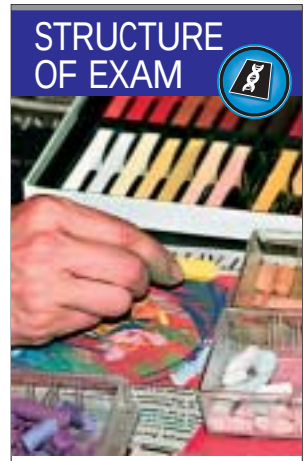
These movements include all the main subject areas like still life, portraiture, the environment, and figure compositions. The only one that is not included in these movement is Fantasy and Imagination. For anyone who is studying this subject it would be a good idea to replace one of the movements with the study of Surrealism.

ART CRITICAL

- LINE can be seen as decoration or in brushstrokes showing direction or made to suggest form or texture
- SHAPE positive shapes (objects or people) and negative shapes, spaces between them
- TONE is used to form, making things look round or three-dimensional. Dark and light tone next to each other shows contrast
- COLOUR can be realistic or give an impression of weather, time of day or year, mood or feeling. Colour can be bold, subtle, realistic, abstract, bright, dull
- TEXTURE is used to show the differences between objects and materials – particularly important in sculpture
- COMPOSITION Is the format portrait (tall) or landscape (wide)? Are there areas more detailed than others? Is there a focal point? From what point of view are you seeing the work and how has the artist looked at the work. Has the artist tried to suggest distance and if so how?

DESIGN STUDIES

You should study a couple of relevant movements such as Art Nouveau or Art Deco. A good book to look at would be Dorling Kindersley's The Look of The Century. This



HIGHER

There's a two-hour written examination question paper worth 80 marks. There are two parts to the paper: visual arts and design.

The questions are centred around a visual stimulus and require extended response. Each question is split into two areas: personal evaluation and analysis of techniques etc employed; the second part is historical, referring to artists or designers you have chosen to study.

You answer one full question and one part question in each section. You will also be assessed on practical work submitted separately in the form of two folios, one of expressive arts and the other of design.

The final part is a three-hour practical assignment in an exam room situation. This is where you develop ideas from either of your folios.

ADVANCED HIGHER

The advanced higher consists entirely of producing a folio based on a theme e.g. people in the city or the working city. The folio can consist of design and/or expressive work and includes a written component.

There is no sit-down examination

PAST PAPERS

2000: The visual stimulus in the visual arts section were works by Peter Howson, Edgar Degas, Juan Gris, Andy Goldsworthy, Fernand Leger, Salvador Dali. The Design section included the following works: a church by Alexander 'Greek' Thomson, The Schroder House by Gerrit Rietveld, a World War II poster, Philippe Starck's lemon squeezer, a Peter Chang bracelet, Zandra Rhode's punk jersey dresses 1977.

2001: The Table of Silence and Seats by Constantin Brancusi 1937-38 and Commando Memorial by Scott Sutherland 1952; an Eames Storage Unit 1949-50; Robo-Stacker designed by 'Jam' in 1994; Crystal Palace 1851 by architect Joseph Paxton; Millennium Dome 2000 by architects Richard Rogers Partnership.

2002: The visual stimulus was Ingres' portrait of 'Madame Moitessier' (1856), figure composition was a sculpture by George Segal, 'Bus Riders' (1964); Jack Knox's painting 'Summer Sundae' (1974); Ferdinand Hodler's 'Lake Thun' (1905); Richard Estes' 'Holland Hotel' (1984); Calum Colvin's computer generated image 'Mundus Subterraneus I' (1996); designs for biscuits by Design Team; Product Design; a recyclable corrugated cardboard baby cot by Andrew Stafford (2001); Granada Cinema foyer, Tooting, London (1931); Casa Batlló apartment façade, Barcelona (1904-1907) by Gaudí; 1920s chrome and bakelite necklaces; Japanese 1990s street fashion.

Don't Dali: Anyone stuging Fantasy and Imagination should look to Surrealism

book covers all areas of design except textiles and has enough information to allow all students to get full marks for this element if studied thoroughly. For those studying textiles, every art department has notes on the history of textile design.

DESIGN CRITICAL

■ FUNCTION What is its purpose or function? How well does it serve the purpose? Can anything be done to improve how it serves its purpose?

■ CLIENT Who would buy it? Why would they buy it? Would you buy it? Why? Is it aimed at a particular group of people? How would you describe the client group – male, female, young, old, rich, poor etc. How do you know this?

■ CONSTRUCTION How has it been made (handmade, machine, factory, workshop)? What materials has it been made with? Are they modern or traditional materials? Why choose them? Could other materials have been chosen? Do the materials affect the cost?

■ AESTHETICS What has been done to make the design more attractive? Think about colour, texture, line

■ GENERAL Has the design changed over the years and why? How has technology changed the design? Will it change in the next five years and if so how?

EXAMTHURSDAY, 5 JUNE, 1300

QUIZ

Q1. What is action painting and who was its most famous American practitioner?

Q2. Who painted the Mona Lisa, where is it displayed, and what is the painting also known as?

Q3. A cartoon can be a comic drawing, but what do art historians mean by a cartoon?

Q4. What came first, Art deco or Art nouveau? Can you roughly date the two movements?

Q5. What is Dadaism? Name some of its foremost exponents

Q6. Monet, Renoir, Degas and Manet are all associated with which art movement?

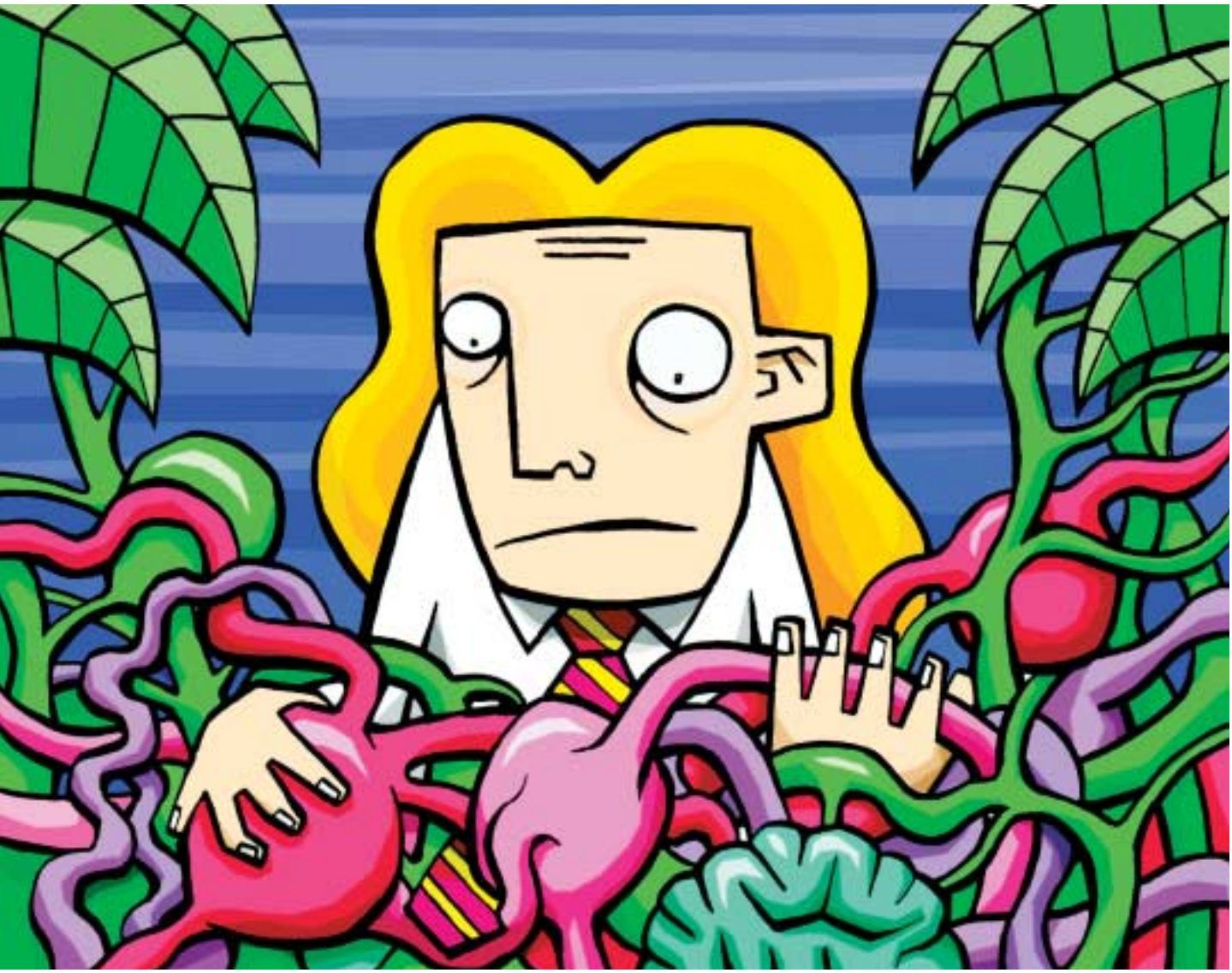
Q7. Name the Primary colours. Why are they called Primary?

Q8. What is the vanishing point?

Q9. Describe Coco Chanel's classic style

Q10. Which architect is synonymous with Barcelona, where his unfinished cathedral, La Sagrada Familia, has become a major tourist attraction?

Answers on pages 46-47



biology

YOU can't be selective when you're revising for the Higher Biology exam – you must learn everything you have been taught on the syllabus in order to do well.

The exam is straightforward and the questions aim to give you the chance to show what you have learnt. It's important to read the question very carefully and make sure you answer it fully. Know the facts, practise questions and be aware of the type of problem-solving tasks you will encounter.

At this stage, when you have nearly completed the course, there are several options open to you to learn these facts: your own notes, your textbook if you have one, and topic summaries.

Reading on its own is not a good way to fix important material in your memory – your mind can wander off too easily. Highlight difficult or important sections and take notes while you read to fix the facts more firmly in your brain.

Tackle a small section at a time and go over it in different ways. You can take notes, or jot down the information in the form of a flow diagram or mind map.

When you have read over the section, try writing a summary of what you have read without looking at the book, then go back to the book and read it again and complete or expand on your summary. Draw diagrams and label the parts without looking, then check and correct them.

When it comes to sitting the exam be aware of the following:

- Don't be too casual about multiple-choice questions – research has shown that pupils finish them far too quickly. The time allowed is so that you can read in detail, not just skim over and choose the most likely answer.
- Read the whole question, especially the bit above a graph or diagram. Important information is often 'hidden' there. Skim read at your peril.
- In the Higher Biology extended response section C the candidates are expected to show a high level of understanding of the facts in the way they select relevant information and in the way they organise and present

PAST PAPERS

2000: respiration & photosynthesis in a plant; organelles, cyanogenesis, cellular defences in plants, cellular defences in animals, respiration in mammalian cell, ATP, cell structure (variety, absorption, cell wall & membrane); the role of light and photosynthetic pigments; DNA & RNA; gene mutation; viruses; meiosis; cross-over; maintaining a water balance; plant growth; plant population changes; animal population changes; temperature & metabolism; glucose & energy needs; insulin production by genetic engineering; somatic fusion in plants; foraging behaviour in animals; social mechanisms in animals.
2001: osmosis; structure of plant cell walls; photosynthesis; DNA; viruses; animal cellular defences; the role of light and photosynthetic pigments; cell membrane structure; anaerobic respiration; ATP; effect of temperature on respiration; RNA; mutation; meiosis; artificial selection; natural selection; maintaining a water balance; coping with dangers; environmental influences on plant growth, tissue's glucose & energy needs; metabolism.
2002: aerobic respiration; factors affecting rate of photosynthesis; carbon fixation; role of light in growth and development; selective ion uptake; importance of potassium in plant cells; meiosis; recombination frequencies; dihybrid cross; isolating mechanisms and adaptive radiation; indicator species and monitoring populations; genetic engineering; temperature regulation; effect of IAA on shoots; stomatal mechanism; osmoregulation in salmon; water conservation in the desert rat; lateral meristems in plants; structure of plasma membrane and cell wall; phagocytosis; mRNA and protein synthesis; lactose metabolism in E coli; effects of IAA and GA in plants.

this information. One extended response question is worth a straight 10 marks for knowledge. The second has an allocation of one mark each for coherence and relevance. So it is important that candidates' responses are presented in a logical and progressive way and structured so that related factual information is grouped together under headings. The actual wording of the extended response question suggests obvious headings.

To do well in the Biology exam you must understand the whole syllabus. The Higher Biology syllabus is divided into three units: Cell Biology, Genetics and Adaptation, Control and Regulation.

UNIT 1: CELL BIOLOGY

Cell structure in relation to function
- Cell variety: variety in structure, unicellular organisms, structure & function
- Absorption and secretion of materials: diffusion & osmosis, cell wall & plasma membrane

Photosynthesis
- The role of light and photosynthetic pigments
- The light dependent stage and carbon fixation

Energy release
- The role and production of ATP: glycolysis, Krebs, CO^2 and hydrogen, cytochrome system, mitochondrion structure, aerobic and anaerobic phases

Synthesis and release of proteins
- Variety and function of proteins, RNA, DNA, organelles

Cellular response in animals and plants
- Viruses
- Cellular defence in animals (phagocytes, antibodies)
- Cellular defence in animals (resin, tannins, cyanide, nicotine)

UNIT 2: GENETICS AND ADAPTATION VARIATION

- Meiosis and dihybrid cross
- Linkage and crossing over
- Mutation

Selection and speciation
- Natural selection
- Artificial selection

Animal and plant adaptations
- Maintaining a water balance
- Obtaining food
- Coping with dangers

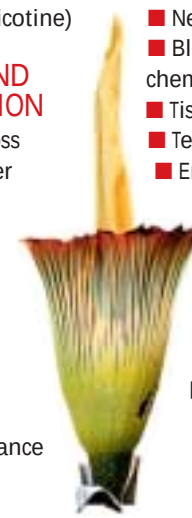
Learn your stripes: If you thought a

UNIT 3: CONTROL AND REGULATION

Control of growth and development
- Growth differences between plants and animals
- Genetic control
- Hormonal influences
- Environmental influences

Physiological homeostasis
- Need to maintain conditions
- Blood's water content & cell chemicals
- Tissue's glucose & energy needs
- Temperature & metabolism
- Endotherms & ectotherms

Population dynamics
- Population fluctuations
- Factors influencing change
- Monitoring populations
- Succession & climax in plant populations



Under control: What are the growth differences between plants and animals?

zebra was just a horse with its own barcode, get back to the books

The ADVANCED HIGHER syllabus has three mandatory units (cell and molecular biology; environmental biology; biology investigation) and one optional unit from a choice of three units (biotechnology; animal behaviour; physiology, health and exercise).

STRUCTURE OF EXAM

HIGHER

A single paper which takes two-and-a-half hours and is split into three sections.

Section A is 30 multiple choice questions with four possible responses for each item. Each answer is worth one mark.

Section B is 80 marks worth of short answer questions.

Section C asks you to do two pieces of extended writing for 10 marks each. For one 'essay' there are eight marks for knowledge, one for coherence and one for relevance.

ADVANCED HIGHER

A single paper that takes two-and-a-half hours and is split into four sections. Section A, worth 25 marks consists of 25 multiple choice questions.

Section B (30 marks), consists of two data handling questions worth 15 marks based on the mandatory units, both of which should be attempted.

Section C (30 marks), two essay questions based on the mandatory unit worth 15 marks each.

Section D (15 marks), answer one essay question out of six questions.

EXAMMONDAY, 26 MAY, 1300

QUIZ

Q1. Name the two components of the plasma membrane of a cell

Q2. Where exactly in a cell is the cytochrome system located?

Q3. What is an anti-codon?

Q4. What is meant by non-disjunction of chromosomes?

Q5. Name the enzyme which is used to seal new genes into the genome of another organism

Q6. What is a protoplast?

Q7. In the Jacob-Monod hypothesis, if the inducer molecule is absent, will the structural gene be switched ON or OFF?

Q8. During germination of barley grains, where exactly is a-amylase made?

Q9. What is the difference between interspecific and intraspecific competition?

Q10. Name the hormone which stimulates the conversion of glycogen to glucose in liver cells

Answers on pages 46-47

Be prepared, then do your best

If you've taken Scottish Qualification Authority exams before, you'll know what to expect. But if this is your first time, don't worry - stay calm and do your best.

The exams are held to find out how well you've learned the subjects you've been studying, and how well you can apply the knowledge and skills you've gathered. They are not designed to catch you out.

Be as well prepared for each exam as you can be. If you do your best before and during the exams, no-one can ask more of you.

TIMETABLE

The official examination timetable was issued to schools and colleges last year, and you should know the dates and times of your exams. A full list of all Higher and Advanced Higher exam dates and times can be found on page 23 of this guide, and all SQA exams are listed on the authority's website: www.sqa.org.uk. Because schools and colleges are allowed to change the start time of the exam slightly, candidates must double check the details with teachers or lecturers.

Make sure you know which exams you're sitting and where they're going to be held. You will also need to make sure that you know whether you'll be required to bring any equipment with you (pens, pencils, calculator, and so on).

You must also know your Scottish Candidate Number (SCN), which is your personal lifetime candidate number and must be entered on examination answer booklets. If you don't already know your SCN, ask your teacher or lecturer.

COURSEWORK

It is your responsibility to find out from your teacher or lecturer whether your subject involves an oral or practical test, or the submission of coursework such as projects or folios. If there is a test, and you don't take it, or if you don't submit the required coursework, normally you will receive

no marks for that part of the assessment.

The coursework submitted for assessment must be your own. If you submit someone else's work as your own, SQA may cancel awards in all your subjects.

For Art & Design candidates, your Art teacher will tell you when practical examinations are going to be held.

YOUR DETAILS

Make sure that your school or college holds your personal details correctly — including your SCN. Make especially certain that they have a record of your name as you want it to be shown on your Scottish Qualifications Certificate (SQC), and the address to which you want your results to be sent. If you change your permanent address at any time before you receive your certificate, make sure that you tell your school or college immediately.

If you have taken examinations before, make sure that your name is held in exactly the same form as was used previously.

If you change your name in any way ask your centre to send the SQA the revised details.

CHECK LIST

- Don't leave it to the last minute. Leave plenty of time to revise and don't rely on cramming in the few days before the exams
- Draw up a realistic timetable so that you can allocate enough time to each subject – use the pull-out sheet on pages 24 and 25
- The brain works better in the morning, when it is less tired, so study accordingly. Try a three-hour study session in the morning, two hours in the afternoon and one hour in the evening
- Refresh the brain by varying the topic you study at each session - don't spend all day boning up on one thing
- Keep taking short breaks - as soon as you start to lose concentration get some air, walk around, clear your mind
- Experiment with several alternative revision techniques to find the one that works for you
- Try studying with friends, which can make revision less boring and more tolerable
- Go through past exam papers to see the kind of questions that come up
- Once you're familiar with your subjects, practise answering questions in past papers within the allotted time
- If you don't understand something, try a classmate. If that fails, you should seek guidance from your teacher or lecturer
- Take regular, moderate exercise, which will help you concentrate and keep you feeling calm

business management

THERE is no escape from revising the entire syllabus if you want to do well in Business Management.

The questions are devised to span a wide range of topics including marketing, finance, human resources, management and operations.

You'll be expected to know how firms are organised, financed and run and to have a general knowledge of who's who in the business world.

A good tip to help you revise is to read the business pages in a quality newspaper every day in the run-up to the exam – and to take basic notes to help you understand and remember what you've read.

Read about companies and put into practice the theory you've been learning all year by trying to come up with solutions for problems they are facing.

Not only will this give your brain a workout but it will also give you a supply of impressive examples to use in the examination when you're asked to provide them.

Another excellent piece of advice is to play close attention to the wording of a question. For example, if the question asks you to identify and describe, you'll get marks for identifying and marks for describing. But if you're only asked to describe then you won't get any extra marks for identifying, and you'll have wasted valuable time.

Pay attention to words used in questions. IDENTIFY indicates the shortest answers, SUGGEST a little bit more. DESCRIBE requires a fuller answer, but still a fairly straightforward one. ANALYSE and DISCUSS, however, indicate a more sophisticated answer is called for, making use of the pros and cons of an issue. When you're asked to JUSTIFY your answer you should give a reason for the course of action suggested.

It's generally easier to score marks in questions asking you to IDENTIFY or SUGGEST than those asking you to DESCRIBE, and even harder to gain them when you're asked to ANALYSE, DISCUSS or JUSTIFY.

HIGHER

The exam is in two parts and takes two and a half hours so each section should take no longer than one and a quarter hours.

Forward thinking: Section one is based on a fictitious case study business in trouble

Section one is based around a case study of a fictitious business in trouble that you should use as a basis to answer the questions – but you won't be able to answer all the questions directly from the case study. Think of it as more of a stimulus than a case study.

There's normally a question on the problems facing the 'business' and a question on what the business should do to improve the situation. Common mistakes are to suggest solutions in questions asking about problems or to repeat problems in the answers.

Section two is extended response questions. There are more likely to be more marks allotted to questions on big areas such as marketing or business in contemporary society than to those on smaller areas such as finance.

All the questions are 'integrated' i.e. each of them asks about more than one area of the syllabus. Normally they are split into three parts, although sometimes you find a two or four part one.

It's important to read through all of the questions carefully before making your choice – many a candidate has embarked on a great answer to part a) of a question only to realise too late that they know nothing about part c).

A good tip is to begin by defining the terms mentioned in the question e.g. 'a stakeholder is someone who stands to gain or lose from the activities of an organisation'. Marks are often given for such definitions and, even if they're not, beginning your answer in this way helps you to stick to the point.

Short paragraphs are better than long ones – two or three sentences to a paragraph with the first sentence making the point and the second and/or third developing it.

The Higher exam covers the whole syllabus, which covers business enterprise and business decision areas. It's difficult to predict specific questions but the exam sticks broadly with the mainstream topics. Concentrate on the following:

PAST PAPERS

2002: Section 1: concerns of management; competing on international basis with reference to internet; employee protection; recruitment process; quality circles; branding.

Section 2: stock control; product life cycle; interpretation of financial information to help managers make decisions (using relevant ratios); cash flow problem; product innovation; demerging; product distribution; job method of production versus flow production; transport difficulties; how technology improves global communication.

2001: Section 1: social responsibility; reasons for overseas expansion; setting up own companies vs buying existing companies; motivating employees; market segmentation; organisational culture; leadership style.

Section 2: effect of UK joining single European currency; effects on home country of locally-based multinational expanding into Europe; Mintzberg's managerial roles; e-commerce; takeovers; time management; force field analysis; market research techniques; cash flow forecasts; Belbin's team roles.

2000: Section 1: product life cycle; factors leading to company decline (marketing, finance, operations, health and safety etc); operations management; Just in Time Stock Control System; dealing with retailer.

Section 2: fundraising methods for public limited company; cash budget deficit; decision making process; structured decision-making model; use of internet in marketing; misuse of information legislation for computers; bank's stakeholders; bank's strategic objective; compare public limited company with a charity; effect of socio-cultural trends; role of manager; delayering; promotional techniques for a product.

STRUCTURE OF EXAM

HIGHER

The two-and-a-half hour exam is divided into two sections, the first consisting of a case study worth 50 marks, and the second offering a choice of two from five extended response questions, each of which is worth 25 marks. Be careful not to run out of time – each section should take no longer than one and a quarter hours. Allow yourself 35 minutes to do each extended response section.

ADVANCED HIGHER

The examination takes two-and-a-half hours and is similar in structure to the Higher, i.e. in two sections.

Section one is worth 50 marks and comprises a compulsory question on the case study material based on a real company.

Section two, worth a total of 50 marks, offers a choice of two out of four extended response questions, all linked in some way to the case study.

Business Enterprise

- Business in contemporary society: Role of business in society, types of business organisation, role of enterprise and the entrepreneur, stakeholders, factors affecting the operation of business (e.g. source of finance, growth in size of firms), political, environmental, social, technological change and the effects of the competition.
- Information and information technology: Sources, types and value of information, IT hardware and software, their uses in business, their costs and benefits, data protection laws.
- Decision-making in business: Strategic, tactical and operational decisions, structured decision making process, SWOT analysis, problems of structured models.

Business Decision Areas

- Internal organisation: Group activities by function, product, place, technology, line and staff relationships, organisation charts and structures (hierarchical, flat, matrix, entrepreneurial) and changes in them, such as delayering and downsizing, centralised vs decentralised decision making, organisation cultures, management functions.
- Marketing: Importance, marketing mix, differentiated (including segmentation, niche marketing) and undifferentiated marketing, market research – importance and techniques.
- Finance: Purpose, use and interpretation of cash flow statements, balance sheets and profit loss accounts, ratio analysis, use of budgets.
- Human Resource Management: Changing patterns of employment, recruitment and selection, training, employee relations (trade unions, ACAS, works councils), laws affecting employment.
- Operations: Inputs – stock control, purchasing, payments, systems; processes – production systems, job, batch and flow production; outputs – warehousing, transport, scheduling; quality – quality assurance, quality control, quality circles, total quality management, benchmarking.

ADVANCED HIGHER

The syllabus is divided into two parts, The Management Content and Business Investigation. The examinable content of the Business Investigation Unit is based on research into a particular business you have been conducting over the previous months. There is no core text for this unit. Much of it requires knowledge of what you covered in Higher Business Management but there are some additions, such as the section on time management.

Unlike the Higher, the case study will be about a real organisation so it's even more important to read the business sections of a broadsheet newspaper such as Scotland on Sunday. Reading company reports will also help you to get used to the language used at this level.

QUIZ

Q1. What does CBI stand for?

Q2. What is the definition of a sole trader?

Q3. Name two advantages of setting up a Public Limited Company

Q4. What does 'SWOT' stand for in SWOT Analysis?

Q5. What are the six stages in a product life-cycle?

Q6. Name three ways to resolve a cash flow problem

Q7. What is collective bargaining?

Q8. What country invented the stock control systems Just in Time (JIT) and Kanban?

Q9. Give two examples of real companies who have identified a niche in a certain market

Q10. What is E-commerce?

Answers on pages 46-47

EXAMTHURSDAY, 22 MAY, 1300

chemistry

TO prepare for Chemistry you must make sure you know every inch of the syllabus as there is no choice of questions in either the Higher or Advanced Higher exam.

It will be helpful to make up a realistic revision timetable splitting up the syllabus into sections, and it is useful to revise with someone else so you can test each other on your knowledge.

But it's not enough just to memorise facts: you should know how to apply your knowledge to solving problems.

Read the question carefully to make sure you are answering it with the relevant information. Time is tight for this exam, so if you come across a question you can't do immediately, leave it and get onto the next question to try to pick up as many marks as possible. Come back to the difficult question later – it's amazing how the mind unconsciously works on the question and you may find you are able to answer it later on in the exam.

In calculations show all your working clearly and try to explain what you are doing at each stage. If you don't know the amount to use in your calculation then guess a value. You will always get marks for the parts of the calculation you got right, even though your final answer will be wrong.

To help you to organise a study and revision timetable it's crucial to know what you have to learn. The Higher chemistry syllabus is divided into three sections: Energy Matters, the World of Carbon and Chemical Reactions.

UNIT 1: ENERGY MATTERS

- Reaction rates: Following the course of a reaction; Factors affecting rate; The idea of excess; Catalysts
- Enthalpy: Potential energy diagrams; Enthalpy changes
- Patterns in the Periodic Table
- Bonding Structures and Properties: Types of Bonding; Intermolecular forces of attraction; Structure; Properties
- The mole: The Avogadro Constant; Molar Volume; Reacting Volumes

PAST PAPERS

2000: reaction rates; enthalpy; ester; the Mole; polymers; proteins; fats & oils; chemical industry; acids; redox reductions; radiation; half-life; carbon compounds; fuel; radiation; catalysts; bonding structures; molar volume; equilibrium; Haber Process; structural formulae; redox titration.

2001: acids; the mole; reaction rates; enthalpy; Periodic Table; bonding structures; oxidation; Avogadro Constant; ester; radiation; amino acids; chemical industry; equilibrium; half-life; Hess's law; pH scale; polymers; structural formulae; redox reaction; redox titration; hydrocarbons; fats & oils.

2002: patterns in the periodic table; reactions of carbon compounds; fats and oils; acids and bases; enthalpy; ester; intermolecular forces of attraction; chemical industry; Haber Process; equilibrium; electrolysis; alternative fuels.

Burning issues: Don't burn the midnight oil revising

UNIT 2: THE WORLD OF CARBON

- Fuels: Petrol; Alternative fuels
- Nomenclature and structural formulae: Hydrocarbons; Substituted alkanes; Esters; Aromatic hydrocarbons
- Reactions of carbon compounds: Addition; Oxidation; Making and breaking down esters; Percentage yields
- Uses of carbon compounds
- Polymers: Early plastics and fibres; Recent developments
- Natural products: Fats and oils; Proteins

UNIT 3: CHEMICAL REACTIONS

- The chemical industry
- Hess's Law
- Equilibrium: The concept of dynamic equilibrium; Shifting the equilibrium position
- Acids and bases: The pH scale; The concept of the strong and weak; The pH of salt solutions
- Redox reductions: Oxidising and reducing agents; Redox titrations; Electrolysis
- Nuclear Chemistry: Types of radiation; Half-lives; Radioisotopes

The ADVANCED HIGHER syllabus consists of four units: Electronic Structure and the Periodic Table; Principles of Chemical Reactions; Organic Chemistry; and an investigation (which is worked on in the classroom and the report sent away to be marked externally). Overleaf is a summary of the three units which will be tested in the single examination paper.

STRUCTURE OF EXAM

HIGHER

A single paper to be undertaken in two hours 30 minutes for a total of 100 marks. The paper is divided into two sections:

Section A, worth 40 marks, comprises 40 multiple-choice questions.

Section B is extended questions worth 60 marks. There are 6 marks allocated to questions based on prescribed practical activities. Sixty per cent of the marks are allocated to knowledge and understanding and 40 per cent to problem solving.

No choice in either paper.

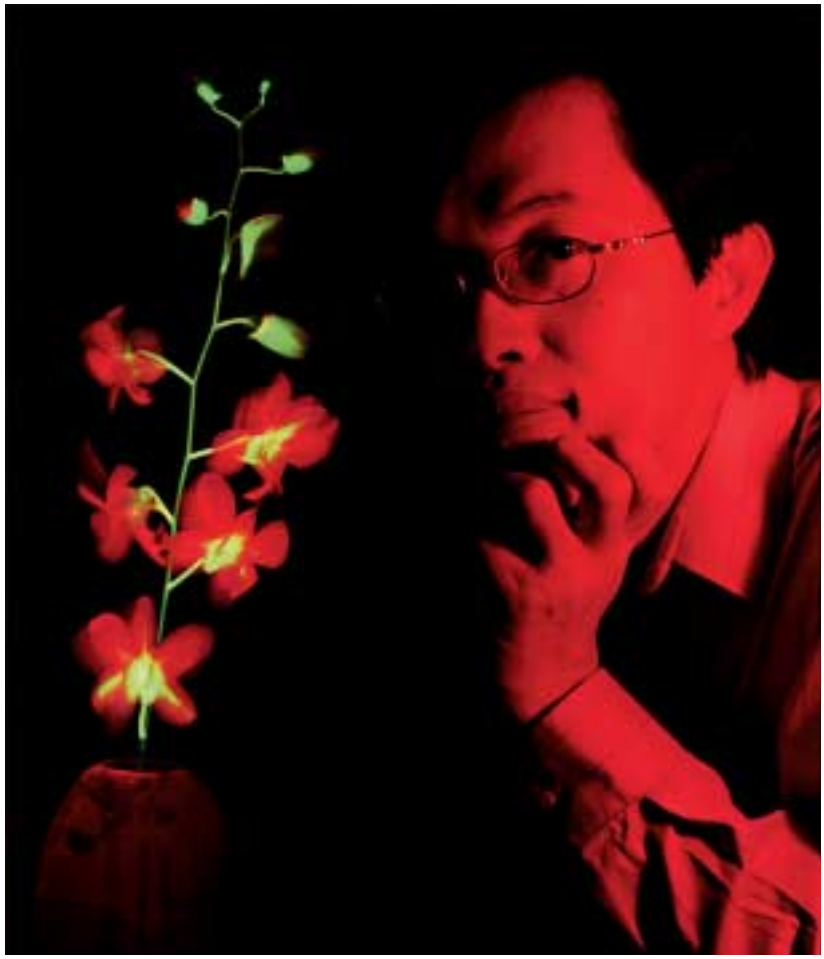
ADVANCED HIGHER

A SINGLE paper over two hours 30 minutes worth 100 marks.

Section A- fixed response questions for 40 marks: 40 multiple choice.

Section B - extended answer questions worth 60 marks. No choice in either paper.

The advanced higher also includes an investigation unit, worth an additional 25 marks, which is marked externally but is carried out at school. The candidate writes a report and that is sent away to be marked by an external examiner



Root to success: Don't think too long on any one question

UNIT 1: ELECTRONIC STRUCTURE AND THE PERIODIC TABLE

- Electronic Structure: Electromagnetic spectrum and associated calculations; Electronic configuration and the Periodic Table; Spectroscopy
- Chemical Bonding: Covalent bonding; shapes of molecules and polyatomicions; Ionic lattices, superconductors and semiconductors
- Some Chemistry of the Periodic Table: the second and third short periods (oxides, chlorides and hydrides); Electronic configuration and oxidation states of transition metals.

UNIT 2: PRINCIPLES OF CHEMICAL REACTIONS

- Stoichiometry
- Chemical equilibrium: reactions at equilibrium; equilibria between different phases; equilibria involving ions
- Thermochemistry: Hess's Law; Bond enthalpies; Hess's Law applied to ionic substances
- Reaction feasibility: Entropy; Free energy
- Electrochemistry
- Kinetics

UNIT 3: ORGANIC CHEMISTRY

- Permeating aspects of organic chemistry: Reaction types; Reaction mechanisms; Physical properties
- Systematic organic chemistry: hydrocarbons and halogenalkanes; Alcohols and ethers; Aldehydes, ketones and carboxylic acids; Amines; Aromatics
- Stereoisomerism
- Structural analysis: elemental microanalysis and mass spectrometry; infra-red and nuclear magnetic resonance spectroscopy and X-ray crystallography
- Medicines

EXAMFRIDAY, 23 MAY, 1300

QUIZ

Q1. Name an element which can exist both as discrete molecules and as a covalent network

Q2. Why is water (H^2O) a liquid, yet H^2S, a larger, heavier molecule is a gas?

Q3. Why does every collision between molecules not result in reaction?

Q4. Name a fuel which can be burned without causing pollution of any kind

Q5. What reagent can be used to convert an alcohol to an acid?

Q6. What happens to the ratio of hydrogen atoms to oxygen atoms in a molecule when it is oxidised?

Q7. What causes an oil to be a liquid as opposed to fats, which are solids?

Q8. What molecular units combine to build up protein molecules?

Q9. What can be said about the concentrations of reactants and products in a chemical equilibrium?

Q10. What nuclear process creates new elements in stars?

Answers on pages 46-47

computing

PRECISE, detailed answers using the correct technical terminology will gain better results in Higher Computing than vague, rambling, irrelevant responses.

Just like learning a foreign language, you have to know your computer vocabulary and abbreviations. Sticking to the point is all important – you won't get any extra marks for displaying irrelevant knowledge.

Calculators are allowed, but the only calculation you are likely to be asked is working out the memory required for a bit-mapped graphic image.

You must have a solid grounding in the two mandatory units (Computer Systems and Software Development) as 70% of the examination marks are allocated to testing your knowledge and understanding of these areas. There are a lot of facts and concepts and you simply have to learn them. You need to know the following:

COMPUTER SYSTEMS

CPU structure, fetch-execute cycle, two-state machine, stored program concept, interfaces, storage of text, integers, real numbers, bit-mapped and vector graphics, effect of bus width and memory on processor performance, network topologies, peripherals (input and output and storage), types of system software, types and purposes of various programming languages and application packages.

SOFTWARE DEVELOPMENT

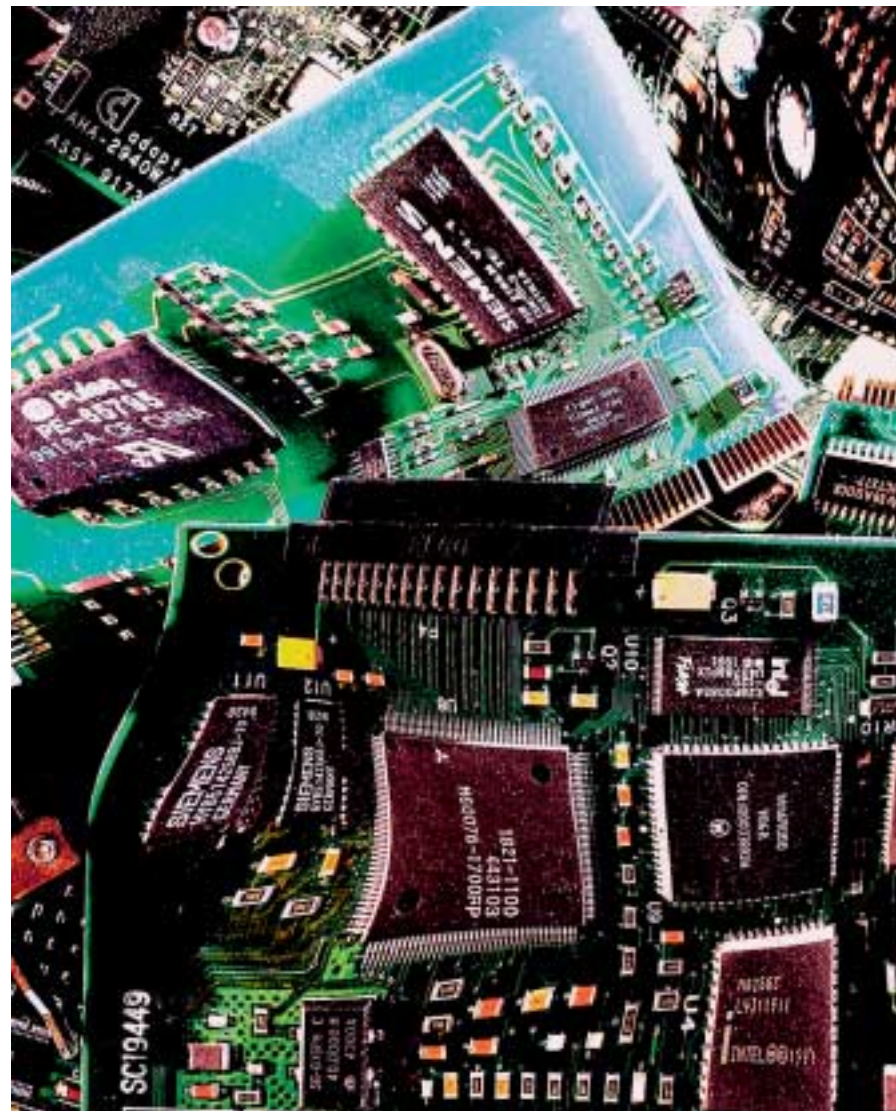
You won't be asked to write program code, although it can sometimes be useful to give an example in an answer. Here is a checklist of some of the words and concepts whose meanings you need to know:

- robustness, reliability, maintainability, readability, portability, modularity and efficiency
- pseudocode and structure diagrams; compilers and interpreters
- syntax, logical and runtime errors; passing parameters by value or by reference
- syntax and semantics

There is a mnemonic to remember the seven stages of the software development process: A Dance in the Dark Every Monday (Analysis Design

PAST PAPERS

2000: program design, data types, software development tools, algorithms, analysis stage of software development, memory, operating system functions, CPU, module libraries, scripting language, storage of pictures and text, output device, application packages, programming languages, stored program concept, binary code, fetch-execute cycle, buses width and memory, test data, portability of software, modular programming.
2001: standard file formats, syntax and semantics, dynamic linkage, control structure, algorithms, programming language, problem definition v problem specification, debugging tool, runtime error, module library, operating system layers, data error – causes and detection, optical media v magnetic media, bus memory, peripheral devices, storage, bitmapped and vector graphics, computed field.
2002: binary numbers; ASCII; stored program concept; system software and application software; hardware characteristics - desktop server versus network server; peripheral device interface; software development process – analysis stage and maintenance; module libraries; structured listing; parameter passing; syntax and logic errors; components of processor; memory read operation; throughput; addressable memory; software development; data standards; input validation; digital camera versus scanner; scripting language; standard operating system; utility program; storage device; modularity; complex condition; user interface; iteration and selection control structures



Chips with everything: Random loss of memory will not be an acceptable

STRUCTURE OF EXAM

HIGHER

A single paper over two hours 30 minutes worth a total of 100 marks. The paper is in three sections. Section I: 30 marks. You must attempt all questions. They are mainly straightforward tests of your knowledge and understanding and require quite short answers.

Section II: 40 marks. You answer four questions out of six. The section includes two compulsory questions. Questions involve problem-solving and are a little bit more involved than the previous section. Read them carefully before choosing which to answer.

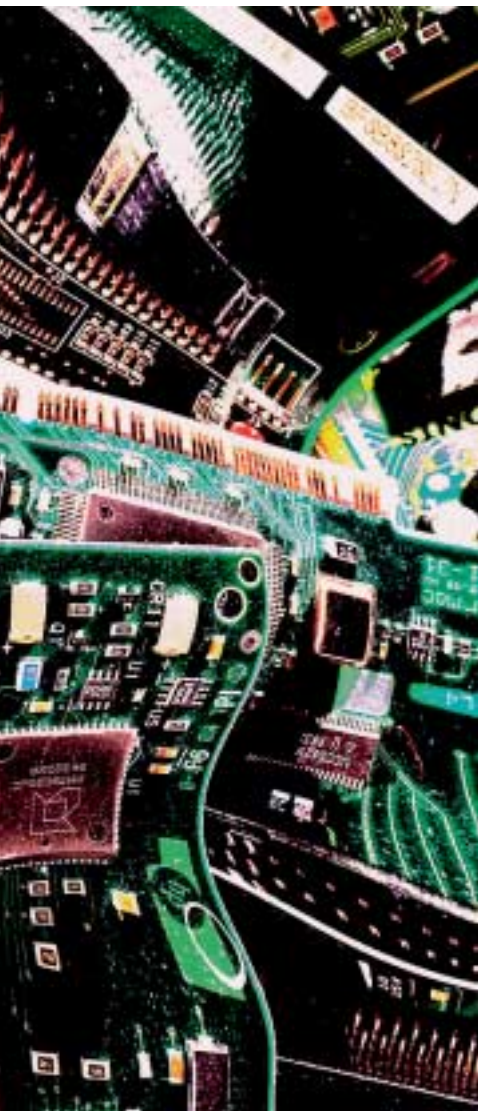
Section III: 30 marks. You must attempt one sub-section out of four. Within each sub-section you answer three questions out of four. There are two compulsory questions. Questions are more complex and involved.

ADVANCED HIGHER

A single two-and-a-half hour paper. The first section is mandatory and is on software development, worth 30 marks. You choose question one or two.

The second section has three optional topics of which you will have studied one: Artificial Intelligence; Data Communication; Computer Systems.

Within your chosen section you have to do one compulsory question (35 marks) and choose one of other two options (35 marks). The questions on this paper are a mixture of short and extended response questions and they involve technical text relating to real life situations. You have to apply your knowledge to real systems



excuse on exam day

Implementation Testing Documentation Evaluation Maintenance). You should be able to write pseudocode for common algorithms – input validation, linear search, counting occurrences, finding max/min.

Section 3 is the optional topic. You will have studied one of the following: Computer Programming, Artificial Intelligence, Computer Networking or Multimedia. Here are a few hints:

PROGRAMMING

There is some overlap with Software Development, but you need much more in-depth knowledge.

- Know your algorithms: binary search, sort, list operations
- Know your data structures: 2-D arrays, records, queues, stacks

ARTIFICIAL INTELLIGENCE

Don't waffle in a question about defining intelligence, or developments in AI. Look at the number of marks and make sure you make that number of clear and distinct points. Use numbered bullet points.

- The 'Prolog' question: show clearly how Prolog arrives at its answer by writing down the number of every clause examined and writing down when a variable is 'instantiated' to a value.
- Expert Systems: be able to write simple rules, and to describe the role of the subject expert and knowledge engineer, and the function of the user interface, knowledge base and inference engine. Be able to describe (using a labelled diagram) depth-first and breadth-first searches.

Know at least two marks' worth about each of these: natural language processing, vision, pattern matching, intelligent robots, heuristics, neural networks and parallel processing. Be able to write four or five marks' worth about one of them.

COMPUTER NETWORKING

Know all the terminology - detailed and precise answers will be required. LAN/WAN, network topologies, Internet/Intranet, client-server/peer-peer, OSI layers, international protocols and standards.

Applications, benefits, ethical and legal implications, economic factors.

MULTIMEDIA TECHNOLOGY

Technical detail is required of both hardware and software. If a question asks you to 'Describe in technical detail' look at the number of marks and make at least that number of points. Technical detail means actual speed of processor required (3700MHz rather than 'fast'), amount of hard-disk space (320Gb2 rather than 'large hard disk') and so on. Know about standard file formats for graphics, sound and video. Be able to describe the hardware and software requirements for all of graphics, video and sound.

QUIZ

Q1. What is the 4th stage in the software development process?

Q2. Why does an interpreted program run more slowly than a compiled program?

Q3: What are the benefits of using local variables rather than global variables?

Q4: Name three types of test data which should be used when testing a program

Q5: State three factors which could be used to compare storage devices

Q6: Which part of an operating system is responsible for making sure that there is enough RAM for a program to be loaded?

Q7: What are the two parts of a floating point number?

Q8: Which of these techniques should increase the throughput of a computer system: (a) increasing width of address bus, (b) increasing width of data bus, (c) increasing clock speed?

Q9: What type of programming language would usually be used to create a macro?

Q10: Why are standard file formats important?

Answers on pages 46-47

EXAMTHURSDAY, 22 MAY, 1300

english & communication

YOU may think there is little you can do to revise for your English Higher other than re-reading the literary texts you have been studying during the year.

But there are ways to make sure you have the tools you need to help you pass this examination, which seeks to test your understanding and use of language, as well as your appreciation of literature.

Arm yourself with a good working knowledge of grammar, punctuation and spelling as marks for 'technical accuracy' are allocated for correct use of language. If your knowledge of written English lets you down, then it's worth seeking help either from your teacher or a basic grammar book to iron out difficulties. It takes only a few minutes to pin down the correct use of apostrophes, commas, semi-colons and colons. And many grammar books carry lists of frequently mis-spelled words.

The Higher consists of two papers, the first of which is close reading, in which you will be asked questions on two passages. Skim read the passage, read the questions and then re-read the passage before tackling the questions. Be clear about what the questions are asking – some are concerned primarily with the meaning of the passage but others are more focused on how something is being said. These style questions are often badly tackled because students don't respond to the actual question.

The skills being tested in this paper are those of understanding, analysis and evaluation.

The wording of the questions will give you a hint about what they are looking for – understanding is concerned with WHAT is being said, analysis with HOW it's being said, and evaluation with how WELL it has been done.

For analysis style questions you need to focus on the use of language e.g. tone, the use of metaphor or simile and the order of the words within the sentence. The marks on offer indicate the length and complexity of the answer required.

The second paper in the Higher is the critical essay paper, where you must answer two essay questions from five categories. They are divided into

Action: Learn your lines and don't get in a crisis over your drama

three literature options (drama, prose, poetry), a language option or a mass media option.

For the literature questions there are no set texts but it's advisable to use the texts you have been studying in class during the year. Here the examiner will be looking for relevance to the question, technical accuracy (spelling, grammar and punctuation) and how you have structured your essay. It's vital to jot down the points you are going to cover so you have a plan before you start writing, otherwise your essay will meander.

The questions are fairly general but you must answer with relevance – so read the question a couple of times before you set pen to paper.

To prepare for this paper you should read and re-read your chosen literature options until you know the texts inside out, and tackling past exam papers will help you practise your language skills.

However, it's not enough to be able to simply retell the plot or story of a piece of literature – you must be able to adapt what you know about the novel, poem or play and apply that knowledge to the question being asked. The examiner will be looking for a critical approach: you have to be able to analyse and understand the piece of literature under discussion, and to make relevant and thoughtful comments about it.

The skills being tested are: understanding the content of a piece of literature, analysing its style, evaluating its effectiveness, and your own mastery of the English language.

You must also be able to demonstrate that you know how to handle literary and linguistic concepts, techniques and forms, and be able to evaluate a work of literature based on evidence from the text.

If you're writing about poetry, you need to be able to recognise the use of poetic techniques such as alliteration, rhyme, rhythm, metaphor, simile, imagery, sound, structure and development, and appraise how effectively the poet has

EXAM TIPS

HIGHER

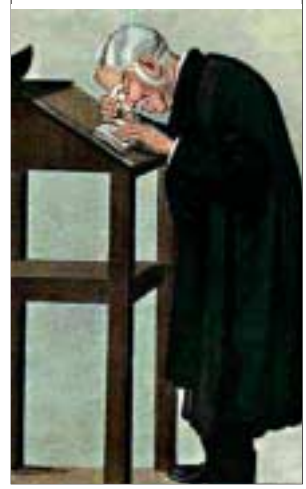
For the literature essay question in Paper 2, you should have studied a range of texts from at least two genres chosen from drama, prose fiction, poetry or mass media, and it is recommended that you study at least one Scottish work of literature, although you don't have to answer a question on that during the examination.

It depends on your school and your own preferences what literary works you study during the year.

As there are no set texts and the questions are general, there's no point in looking up past papers other than working through them for practice.

ADVANCED HIGHER

In the Literature and Scottish Literature categories there will always be a question on the set texts, which are two specified works from each author, so there are no surprises. To prepare for these units you should study two genres in each to give you a choice of question.



used them to convey a theme or mood.

If you are discussing prose fiction you must be familiar with terms such as narrative, atmosphere, plot structure, theme, characterisation, dialogue, point of view, style and imagery. With drama you should be able to discuss terms such as dramatic conflict, catharsis, tragedy, comedy, setting, key scenes and dramatic style.

In addition you should be aware of which literary genre the texts you have studied fall into – are you referring to a novel or an autobiography, a sonnet or an epic poem, a farce or a satire, a tragic or comic play?

If you are hazy about the exact meaning and application of any of these literary terms, it's well worth looking them up in dictionaries of literary terms, which are available at libraries and bookshops, to get them clear in your head.

You should know the names of the main protagonists of a literary text, be able to quote from texts, and be familiar with more than one piece of work by a particular writer. In Higher English the literature questions are much more open than those in Advanced Higher, where the texts are set. To prepare for Higher you should read a range of texts - including at least one Scottish text - from at least two genres from poetry, prose and drama. This gives you a wider range so you can choose the best questions. It would be too risky to study only two texts and hope and pray a relevant question will come up on the day of the exam.

If you choose to answer the question on mass media you need to be familiar with techniques used in radio, film and television such as plot, editing, casting, costume, sound track, mise-en-scene, lighting and use of camera.

Most candidates don't tackle the language option unless they have chosen it for private study during the year. You need to be able to discuss language concepts such as jargon, orthography, register, technical terminology, abbreviations, dialect and accent.

There is a major change in the Higher paper this year – the textual analysis is now assessed internally by your own teacher during the course of study rather than on the day of the examination.

STRUCTURE OF EXAM

HIGHER

There are two papers at Higher, each accounting for 50% of the external assessment. You have one and a half hours to complete each paper.

Paper 1: Close Reading (1hour 30mins)

The first paper is a close reading, marked out of 50. There are two unseen passages of prose non-fiction and you must answer questions on them.

Paper 2: Critical Essay (1hour 30mins)

You must answer two essay questions for 25 marks each and a total of 50 marks. You must answer two essay questions from a choice of five sections (drama, prose, poetry, mass media, language). The questions you choose must be from different sections. You are not allowed to choose two questions from the same section. You should spend around 45 minutes on each question.

The textual analysis section has been removed from this paper and is now examined internally during the course of the school year.

ADVANCED HIGHER

There is a single paper comprising six options: Language, Scottish Language, Literature, Scottish Literature, Textual Analysis, and Reading the Media. You must choose two of the options.

The options of Creative Writing and Oral Communication involve sending work away rather than sitting an exam. The dissertation for Specialist Study, done by all candidates, is also sent away to be marked.

You have a maximum of one and a half hours for each option in the exam paper.

EXAMFRIDAY, 16 MAY, 0900

QUIZ

Q1. What are the correct spellings: aberration/abberation, acommodate/accommodate

Q2. What is the difference between 'complement' and 'compliment'?

Q3. Spot the extra apostrophe in the following phrase: I'd like to try your's

Q4. Which one is correct: whose else, whose else's, who else's?

Q5. What is the past tense of incur?

Q6. When someone transposes the consonants in two words e.g. 'The queer old dean' instead of 'the dear old queen', what is that an example of?

Q7. What is empathy?

Q8. What is the pathetic fallacy?

Q9. Give two examples of Reality TV

Q10. Which newspapers are colloquially known as the 'Red Tops'?

Answers on pages 46-47

Don't be late ... date and time of every Higher exam paper

FRIDAY 16 MAY

English & Communication Higher, Close Reading 0900–1030; English & Communication Higher, Critical Essay 1050–1220; English & Communication Advanced Higher, 1300–1600

MONDAY 19 MAY

Physics Higher, 1300– 1530; Physics Advanced Higher, 1300–1530

TUESDAY 20 MAY

German Higher, Reading and Directed Writing 0900–1040; German Higher, Listening/Writing 1100–1200; German Advanced Higher, Reading and Translation 0900–1020; German Advanced Higher, Listening and Writing 1040–1200; Gaelic (Learners) Higher, Listening Paper 1 (A) 1300–1345; Gaelic (Learners) Higher, Reading Paper 2 (A) 1405–1450; Gaelic (Learners) Higher, Listening Paper 1 (B) 1510–1555; Gaelic (Learners) Higher, Reading Paper 2 (B) 1510–1555; Gaelic (Learners) Advanced Higher, 1300–1430; Gàidhlig Higher, Reading 1300-1345; Gàidhlig Higher, Listening 1400–1440; Gàidhlig Higher, Writing 1455–1555; Gàidhlig Advanced Higher, Writing 1300–1340; Gàidhlig Advanced Higher, Practical Criticism 1355–1450; Gàidhlig Advanced Higher, Reading 1505–1600; History Higher Paper 1, 1300–1420; History Higher Paper 2, 1440–16.05; History Advanced Higher, 1300–1600

WEDNESDAY 21 MAY

Mathematics Higher, Paper 1 (Non-calculator), 0900–1010; Mathematics Higher, Paper 2 1030–1200; Mathematics Advanced Higher, 1300–16.00

THURSDAY 22 MAY

Music Higher, Listening Core 0900-10.00; Music Higher, Listening Extension 1015–1115; Music Advanced Higher, Listening Core 0900–1000; Business Management Higher, 1300–1530; Business Management Advanced Higher, 1300–1530; Computing Higher, 1300–1530; Computing Advanced Higher, 1300–1530

FRIDAY 23 MAY

Administration Higher, Paper 1 0900–1030; Administration Higher, Paper 2 1050–1200; Chemistry Higher, 1300–1530; Chemistry Advanced Higher, 1300–1530

MONDAY 26 MAY

Graphic Communication Higher, 0900 –1200; Graphic Communication Advanced Higher, 0900–1200; Biology Higher, 1300–1530; Biology Advanced Higher, 1300–1530; Human Biology Higher, 1300–1530

TUESDAY 27 MAY

Administration Advanced Higher, 0900–1100; Latin Higher, Interpretation 0900–1100; Latin Higher, Translation 1115–1200; Latin Advanced Higher, Interpretation 0900–1030; Latin Advanced Higher, Translation 1040–1205; Drama Higher, Paper 1 1300–1420; Drama Higher, Paper 2 1440–1600; Drama Advanced Higher, 1300–1500; Technological Studies Higher, 1300–1600; Technological Studies Advanced Higher, 1300–1600

WEDNESDAY 28 MAY

Classical Greek Advanced Higher, Interpretation 0900–1030; Classical Greek Advanced Higher, Translation 1040–1205; Modern Studies Higher, Paper 1 0900–1025; Modern Studies Higher, Paper 2 1045–1205; Modern Studies Advanced Higher, 0900–1200; Applied Mathematics Advanced Higher, 1300–1600; Classical Greek Higher, Interpretation 1300–1500; Classical Greek Higher, Translation 1515–1600

THURSDAY 29 MAY

Home Economics: Fashion and Textile Technology Higher, 0900–1100; Home Economics: Fashion and Textile Technology Advanced Higher, 0900–1120; Home Economics: Health and Food Technology Higher, 0900–1100; Home Economics: Health and Food Technology Advanced Higher, 0900–1120; Home Economics: Lifestyle and Consumer Technology Higher, 0900–1100; Home Economics: Lifestyle and Consumer Technology Advanced Higher, 0900–1120; Information Systems Higher, 0900–1130; Information Systems Advanced Higher, 0900–1100

FRIDAY 30 MAY

French Higher, Reading and Directed Writing 0900–1040; French Higher, Listening/Writing 1100–1200; French Advanced Higher, Reading and Translation 0900–1020; French Advanced Higher, Listening and Writing 1040–12.00; Biotechnology Higher, 1300–1530; Craft and Design Higher, 1300–1530; Craft and Design Advanced Higher, 1300–1600

MONDAY 2 JUNE

Geography Higher, Core 0900–1030; Geography Higher, Applications 1050–1205; Geography Advanced Higher, 0900–1100; Accounting and Finance Higher, 1300–1530; Accounting and Finance Advanced Higher, 1300–1600

TUESDAY 3 JUNE

Classical Studies Higher, 0900–1200; Classical Studies Advanced Higher, 0900–1200; Music Higher, Sound Engineering 0900–1000; Music Advanced Higher, MIDI Sequencing 0900–1200; Music Advanced Higher, Sound Engineering 0900–1000; Music Advanced Higher, Training and Directing 0900–1015; Music Higher, MIDI Sequencing 1300–1400; Physical Education Higher, Analysis of Performance 1300–1530; Psychology Higher, 1300–1600; Psychology Advanced Higher, 1300–1600

WEDNESDAY 4 JUNE

Geology Higher, 0900–1130; Religious, Moral and Philosophical Studies Higher, 0900–1115; Religious, Moral and Philosophical Studies Advanced Higher, 0900–1100; Media Studies Higher, 1300–1500; Media Studies Advanced Higher, 1300–1500; Spanish Higher, Reading and Directed Writing 1300–1440; Spanish Higher, Listening/Writing 1500–1600; Spanish Advanced Higher, Reading and Translation 1300–1420; Spanish Advanced Higher, Listening and Writing 1440–1600

THURSDAY 5 JUNE

Italian Higher, Reading and Directed Writing 0900–1040; Italian Higher, Listening/Writing 1100–1200; Italian Advanced Higher, Reading and Translation 0900–1020; Italian Advanced Higher, Listening and Writing 1040–1200; Art and Design Higher, Design Studies 1300–1500; Economics Higher, 1300–1530; Economics Advanced Higher, 1300–1515; Russian Higher, Reading and Directed Writing 1300–1440; Russian Higher, Listening/Writing 1500–1600; Russian Advanced Higher, Reading and Translation 1300–1420; Russian Advanced Higher, Listening and Writing 1440–1600

MONDAY 9 JUNE

Building and Architectural Technology Higher 0900–1200; Building and Architectural Technology Advanced Higher, 0900–1200; Hospitality: Food and Drink Service Higher, 0900–1030; Mechatronics Higher, 1300–1600; Mechatronics Advanced Higher, 1300–1600; Philosophy Higher, 1300–1515; Philosophy Advanced Higher, 1300–1600

TUESDAY 10 JUNE

Construction Higher, 0900–1200; Electrical Engineering Higher 0900–1200; Hospitality: Reception and Accommodation Operations Higher, 0900–1100; Early Years Care and Education Higher, 1300–1545; Manufacturing Higher, 1300–1600; Personal and Social Education Higher 1300–1500; Tourism Higher, 1300–1600; Tourism Advanced Higher, 1300–1600

WEDNESDAY 11 JUNE

Land Use (Built Environment) Higher, 0900–1200; Mechanical Engineering Higher, 0900–1200; Sociology Higher 0900–1200; Sociology Advanced Higher, 0900–1200; Civil Engineering Higher, 1300–1600; Civil Engineering Advanced Higher 1300–1600

THURSDAY 12 JUNE

Care Higher, Paper 1 0900–1050; Care Higher, Paper 2 1110–1200; Fabrication and Welding Engineering Higher, 0900–1200; Hospitality: Professional Cookery Higher, 0900–1030; Automotive Engineering Higher, 1300–1600; Managing Environmental Resources Higher, 1300–1530; Managing Environmental Resources Advanced Higher, 1300–1530

FRIDAY 13 JUNE

Electronics Higher 0900–1200; Electronics Advanced Higher 0900–1200; Politics Higher, Paper 1 0900–1000; Politics Higher, Paper 2 1020–1200; Politics Advanced Higher, 0900–1130; Building Services Higher, 1300–1600

All times for exams were correct before going to press, but please check with your local school for college to confirm the date and location of each exam sitting

Exam countdown – draw up your own stu

SUNDAY	6 april	13	20	27	4
MONDAY	7	14	21	28	5
TUESDAY	8	15	22	29	6
WEDNESDAY	9	16	23	30	7
THURSDAY	10	17	24	1 may	8
FRIDAY	11	18	25	2	9
SATURDAY	12	19	26	3	10

udy guide

11	18	25	1 june	8	
12	19 Physics	26 Graphic Communication Biology Human Biology	2 Geography Accounting and Finance	9	
13	20 German Gaelic Gàidhlig History	27 Administration Latin Drama Technological Studies	3 Classical Studies Music Physical Education Psychology	10 Construction Electrical Engineering Hospitality: Reception and Accommodation Operations Early Years Care and Education Manufacturing Personal and Social Education Tourism	
14	21 Mathematics	28 Classical Greek Modern Studies Applied Mathematics	4 Geology Religious, Moral and Philosophical Studies Media Studies Spanish	11 Land Use (Built Environment) Mechanical Engineering Sociology Civil Engineering	
15	22 Music Business Management Computing	29 HE: Fashion and Textile Technology HE: Health and Food Technology HE: Lifestyle and Consumer Technology Info Systems	5 Italian Art and Design Economics Russian	12 Care Fabrication and Welding Engineering Hospitality: Professional Cookery Automotive Engineering Managing Environmental Resources	
16 English & Communication	23 Administration Chemistry	30 French Biotechnology Craft and Design	6 Building and Architectural Technology Hospitality: Food and Drink Service Mechatronics Philosophy	13 Electronics Politics Building Services	
17	24	31	7	14	

Don't push the panic button

YOU don't want to waste all the good work you've done through the year by making any unnecessary mistakes on the day. Don't be tempted to cram all night beforehand – going into the exam mentally exhausted after a few extra, tired hours in front of your books will do you more harm than good. Get some sleep instead.

Get up in enough time to have a good breakfast and get to the exam hall without rushing. Make sure you have all the equipment you will need, like pens, pencils and a calculator.

You should be ready to enter the examination room about 10 minutes before it starts, although in certain cases you may need to be earlier. Make sure you know this in advance.

If you are late, you must report to the teacher or lecturer in charge, who will decide whether or not you may enter the examination room. If you are not allowed in, the reasons for your lateness will be reported to SQA and may be taken into consideration.

There are a number of things you are not allowed to take into the examination room. Any candidate found in possession of a mobile phone or any other electronic communication device will have their examination entry cancelled.

Other things you must not take into the exam are: a calculator which contains inappropriate data; a calculator case; a spellchecker; a pencil case; books; notes; sketches; paper of any kind; any other unauthorised aid. If you mistakenly take any unauthorised aid into the examination room, you should give it to the invigilator for safe-keeping until after the examination. If you have a bag, ask the invigilator where you may place this.

SITTING THE EXAM

TAKE a deep breath before you start to read the paper and read it thoroughly. First of all, make sure it is the correct paper. If it is not the paper you expected to sit, inform the invigilator.

Read the instructions on the front of each question paper and follow them carefully. Remember to fill in your name, SCN and centre name. Ask an invigilator if you need any extra sheets of paper, and place them inside your answer book.

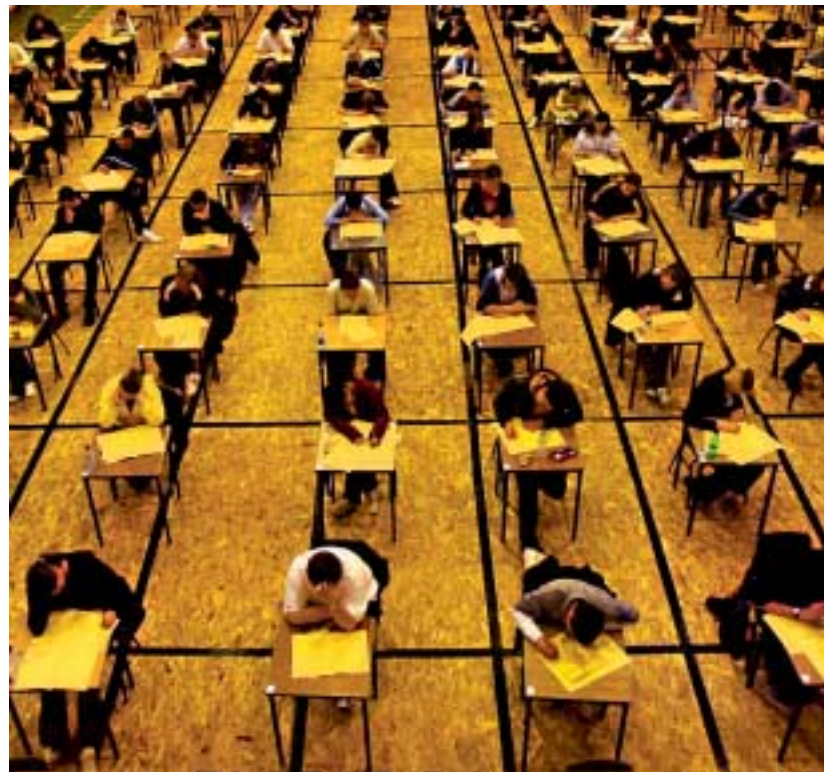
Work out the time allocation for each question, and stick to it. Write a plan for your answers and start with an answer you are confident about.

Use a black or dark blue pen, and write legibly and neatly. In some subjects you may lose marks for untidy or illegible writing, for careless spelling and slack punctuation.

When writing on unruled paper, leave a space of about a centimetre between lines. Use a pencil for diagrams, graphs and rough work.

You will be given booklets of tables or data when they are allowed, but you must not mark them in any way or take them from the room.

Do not use scrap paper — normally all rough work is done in the answer book supplied. Cross out rough work when you have made a final copy.



Sitting comfortably? Be well prepared when it's time to begin

You may use a calculator in certain examinations, but you must not share it with another candidate. It is up to you to find out at which exams you are allowed to use a calculator.

WHAT TO DO IF YOU DON'T MAKE THE EXAM

If you are prevented by illness or any other good reason from sitting the examination, or part of it, you should report this to the teacher or lecturer in charge of SQA exams in your centre as soon as possible.

If you provide a medical certificate, make sure it covers the day of the examination. If you become ill during an examination, you do not need to provide a medical certificate. If you feel unwell or upset during the exam, tell the invigilator who will arrange for you to leave the room.

The SQA will review the school or college estimates and results of absent candidates before exam results are finalised. In certain circumstances, awards may be improved.

french

THE key to doing well in your French Higher is attention to detail – rough translations and seemingly minor errors in spelling and grammar will pull your marks down.

Prepare a list of useful phrases, idioms and words that you can use when writing in French. Commit them to memory and don't be tempted to stray from them on exam day.

Review your grammar, paying particular attention to tenses. All the topics in the writing sections require candidates to use past tenses and often future or conditional tenses too.

To assist you with listening and reading French you should listen to French tapes or watch TV5 on satellite, and read French novels, magazines and newspapers. Many candidates find the listening part of the examination the most difficult – which is why getting your ear attuned to native speakers is important.

When it comes to translation remember to play close attention to the text – it's no good translating approximately as the examiner will be looking for attention to detail and accuracy, including correct tenses, plurals, and even whether a definite or indefinite article has been used.

Watch out for 'les faux amis' – French words which sound similar to English ones but in fact have a different meaning. Examples include:

- Rester means to stay, not to rest. Se reposer means to rest
- Sensible in French means sensitive, not sensible
- Travailler does not mean to travel, it means to work. Voyager is the correct French word for travel

Other tricky phrases that might trip you up include:

- Passer un examen – to sit an exam; réussir à un examen – to pass an exam
- Réaliser – to carry out; se render compte – to realise

You can take a French–English dictionary into the exam, but make sure your dictionary skills are up to scratch as many words have more than one meaning. Read all the alternative definitions and decide which is most suitable. You can be tripped up by words like 'sauf', whose first meaning in the dictionary is 'safe', but normally it means 'except'.

Do your groundwork for the directed

writing section of the exam. Each of the texts relates directly to one of the three themes you will have been studying during the year. Revise the vocabulary and phrases relating to these themes of Lifestyles, Education and Work, and The Wider World.

Useful phrases to memorise to help you with the directed writing, where you will be asked to include specific pieces of information, are the following:

DIRECTED WRITING PHRASES

When you went ...
L'été dernier – last summer; Pendant les vacances de Noël – during the Christmas holidays; Il y a deux ans – two years ago; En juin dernier – last June; à Pâques dernier – last Easter

Where you went and with whom/who came to stay ...
Je suis allé(e) en France – I went to France; Je suis resté(e) dans un petit village – I stayed in a small village; Douze jeunes sont venu(e)s dans notre école en échange scolaire – 12 young people came to our school on an exchange trip; Nous avons loué un gîte dans le Midi – we rented a gîte in the south of France; Une fille est restée chez moi – a girl stayed with me

How you travelled ...
On a pris le ferry de Douvres à Calais – we took the ferry from Dover to Calais; Nous avons voyagé par l'Eurotunnel – we went through the Eurotunnel; J'ai pris l'avion et le bateau – I took the plane and the boat

What you did during the journey ...
Pendant le voyage je me suis endormi(e) – during the journey I fell asleep; J'ai parlé à d'autres voyageurs – I talked to other travellers; J'ai passé mon temps à lire – I spent my time reading

How long you stayed
J'ai passé une semaine à Paris – I spent one week in Paris; On a passé quinze jours en France – we spent a fortnight in France; J'ai travaillé pendant deux mois en France – I worked for two months in France

Where you stayed
L'hôtel se trouvait dans une station de ski – the hotel was in a ski resort; On est resté(e) dans une auberge de jeunesse – we stayed in a youth hostel; On a fait du camping en pleine campagne – we went camping out in the country; Je suis allé(e) chez mon (ma) correspondant(e) – I went to my penfriend's house

Describing your accommodation ...
Il/elle habitait une grande maison – he/she lived in a big house; L'hôtel était moche – the hotel was ugly; J'ai partagé une chambre avec – I shared a room with

Le monde, c'est fou: There's no need

How you got on with people ...
Je ne me suis pas très bien entendu(e) avec ... – I did not get on very well with ...; Je me suis fait des amis – I

STRUCTURE OF EXAM

HIGHER
You may use a French Dictionary. The examination takes three hours and consists of three papers.

Paper 1a) involves reading, comprehension, translation and directed writing. You read a French passage, answer some questions on it in English and translate an underlined portion into English.

Paper 1b) is directed writing. You write a piece in French guided by a stimulus five or six English phrases in the form of bullet points (see recommended phrases for memorising).

Paper 2, Listening and Writing, is in two parts.

2a) You listen to two native speakers talking about a theme from one of the three prescribed themes and answer questions in English.

2b) Another piece of writing in a foreign language linked to what you have listened to. The stimulus is in French this time and you have to write 100–120 words.

The third part of the Higher is the speaking part, which you will already have under taken separately and sent off to the SQA for moderation.

ADVANCED HIGHER
You may use a French dictionary. Paper I (one hour 20 mins) Reading and Translation. Comprehension questions and a translation into English.

Paper II (one hour 40 minutes) Listening and Discursive Writing. Two parts (45 minutes on section one and 55 minutes on section two). Section 1 – worth 40 marks. All questions and answers in English. Listen to a discussion between two speakers linked to a theme. Take notes and write a summary in French of what they heard. Part a) is one speaker eliciting factual information and part b) is a conversation eliciting information relating to opinions.

Section 2 – worth 30 marks. Discursive writing in French. You have five or six statements in French as a stimulus. Write 250–300 words.

There is also a speaking assignment – tested by a visiting moderator – and a writing folio consisting that is internally generated (not under controlled conditions) and externally assessed.

If extended reading/viewing topic studied there are two essays of 500 words in English on either two texts or one text and a series of linked texts or one text and a background topic.

If Language in Work is option studied, one report in English of 1,000 words.

for you to beat about the bush

made friends; Mon chef était très sympa – my boss was very nice

Giving your opinion of your stay ...
Je me suis un peu ennuyé(e) – I got a bit bored; J'avais le mal du pays – I felt homesick; Je me suis fait beaucoup des ami(e)s – I made lots of friends

What you did
Un jour j'ai fait les magasins – one day I went shopping; Un soir on est allé(e)s en boîte de nuit – we went clubbing one night; J'allais souvent dans les cafés – I often went to cafés; Le matin je me bronzais sur la plage – in the morning I sunbathed on the beach; Le soir j'aidais ma mère à préparer les répas – in the evening I helped my mother prepare the meals

Likes and dislikes ...
Je n'ai pas aimé la nourriture – I did not like the food; On a très bien mangé – the food was very good; Ma maison lui plaisait beaucoup – he/she really liked my house

Will you repeat the experience?
J'aimerais retourner à Paris – I'd like to go back to Paris; Je ne repartirais jamais en famille – I'd never go away again with my family; Je préférais ne pas inviter un(e) Français(e) chez moi – I'd prefer not to invite a French person to my home

Give a reason for the your opinion ...
Il faisait trop chaud pour moi – the weather was too hot for me; J'ai dépensé trop d'argent – I spent too much money; J'ai beaucoup profité de mon séjour – I really made the most of my stay

Describe the job you did ...
J'ai travaillé comme serveur/serveus – I worked as a waiter/waitress; Le travail était facile/difficile – the work was easy–hard

Describe the weather
Il faisait beau la plupart du temps – the weather was nice most of the time; Le soir il y avait de l'orage – it was stormy in the evening

PAST PAPERS

2000: directed writing about working in a hotel in France; listening to native speakers talking about various visits to England and Scotland and writing about value of learning a foreign language.
2001: directed writing about friendship; second piece of writing about participating in an international youth conference.
2002: directed writing about a group exchange trip to a school in France; listening to a young French student talking about her life at university and writing about where you would like to live at home or away from home when you leave school.

QUIZ

Translate these useful expressions:
Q1. La détente totale

Q2. J'avais envie de découvrir de nouveaux paysages

Q3. Il n'y avait rien à faire

Q4. Après un petit trajet

Q5. Je me suis bien amusé(e)

Put the following verbs in brackets into the appropriate past tense. These also are useful expressions!
Q6. Les gens (être) très amicaux

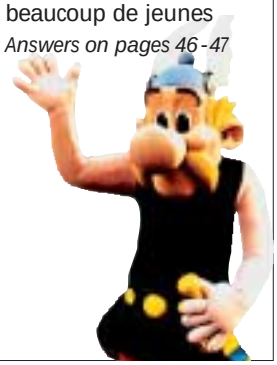
Q7. Nous (loger) chez une famille française

Q8. Il (faire) froid la-bas

Q9. Le voyage (durer) deux heures

Q10. Je (faire) la connaissance de beaucoup de jeunes

Answers on pages 46-47



EXAMFRIDAY, 30 MAY, 0900

geography

Higher Geography is a knowledge-intensive subject – which means you really need to know your stuff!

There is an element of application of knowledge, problem solving and critical thinking, but on the whole Higher Geography is an extremely knowledge-driven course.

Unfortunately there's no alternative to learning your options inside out if you want to do well. The upside is there will be no unpleasant surprises – everything you have covered during the year will be tested.

The syllabus is precisely defined and most questions relate clearly to the syllabus. The Higher Paper 1 Core always follows a set pattern, testing your knowledge on eight topics covering physical and human geography: atmosphere (climate), hydrosphere (hydrological cycle and river features), lithosphere (rocks on surface of earth, glaciation and limestone formation), biosphere (soils and vegetation), population, rural (three farming systems), industrial (one industrial area within EU) and, finally, urban geography (a specific study of a city in the developed world).

A look at recent examination papers shows the range of topics that have been examined:

ATMOSPHERE

- The global heat budget, why equatorial areas are warmer than polar areas
- Atmospheric heat interception, how heat arrives at the Earth's surface
- The global pattern of winds, heat redistribution
- The global pattern of ocean currents, more heat redistribution
- The passage of the inter tropical convergence zone over Africa, the description and explanation of tropical wet/dry cimates
- Global climatic change, the greenhouse effect and global warming

HYDROSPHERE

- With the aid of a map extract, locate, name and identify features of a river and its valley. The river may be in its upper, middle, or lower course
- Be able to explain the formation of a selection of river features e.g.

PAST PAPERS

Atmosphere: the passage of the Inter Tropical Convergence Zone over Nigeria (1998, 2000); global pattern of ocean currents/or wind currents & how heat arrives at Earth's surface (1999); greenhouse effect (2001); latitudinal variation of the Earth's energy balance (2002)
Hydrosphere: hydrographs and rainfall (1998, 2000); global hydrological cycle (1998); describe river features with map (1999, 2001); variations in river flow through the year (2002)
Lithosphere: glaciation (1998, 2000, 2001); downslope mass movement (1999); formation of limestone pavement, gorge, stalactites and stalagmites (2002)
Biosphere: vegetation succession on sand dunes or derelict land (1998, 2000, 2001); three soil types (1998, 1999, 2002); explain climax vegetation (1999)
Population: Impact of population changes (1998, 2000); migration (1999, 2002); population pyramid (2001)
Rural: choice of describing all three types of farming (1998, 2000); shifting cultivation or intensive peasant farming (1999, 2002); peasant farming (2001)
Industrial: reasons for industrial decline & regeneration (1999, 2000); why an area was chosen for industrial activity & environmental impact of same (1998, 2001, 2002).
Urban: The central business district and either inner city or suburban housing (2000, 2001); identify land use zones (1998); different stages in growth of city (1999); describe two urban environments with reference to maps (2002)

waterfall, gorge, meander, ox-bow lake, flood plain, levees, braiding and delta
- Compare the processes of erosion, transport and deposition along the course of a river
- Explain the hydrological cycle
- Interpret hydrographs and relate them to rainfall in a river basin

LITHOSPHERE

- How the surface of the Earth is broken up (weathering), moves downslope (mass movement) and is worn away (erosion)
- You must know about the types of UK scenery i.e. glaciated uplands, chalk and clay vale and carboniferous limestone. Don't just study one subject – you may be asked for a number of types

BIOSPHERE

- Explain what Climax and Succession mean
- Describe and explain how vegetation changes over sand dunes and derelict land
- Describe and explain the three prescribed soil types i.e. podzols, grey/brown forest soils and gleys
- Show how the three soil types would change over an area of the UK influenced by slope and drainage
- Explain why coniferous forests with podzols have a lower population density than deciduous forests

POPULATION

- How population has changed in countries over time with reference to changing birth and death rates
- How population data can be shown by population pyramids and how to interpret these
- The social, economic and environmental consequences of population change
- Policies employed by case study countries to cope with population increase or decrease
- The causes of migration. Why people move with reference to named countries i.e. push and pull factors
- The effects of large-scale migration on the countries of origin and destination, and the advantages and disadvantages to each
- Why countries measure their population by holding censuses despite the difficulties involved

RURAL

These questions are based around three case studies. You must know about:
- Extensive grain farming e.g. the Prairies
- Shifting Cultivation e.g. Amazon Basin
- Intensive peasant farming e.g.the East Asian paddy fields

These key points must be well learnt:
- The different farming techniques

STRUCTURE OF EXAM

HIGHER

There are two papers, the first one is called Core Geography and the second is called the Applications of Geography.

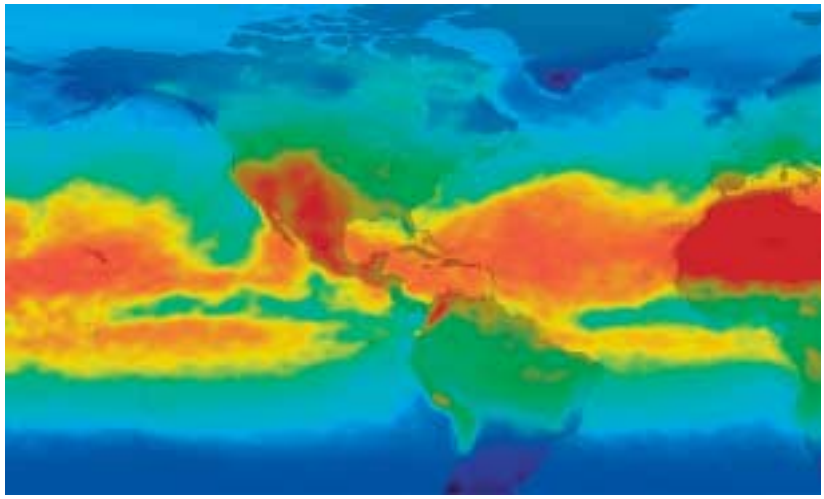
The core paper covers eight topics, four of them concerning physical geography and four human. All eight questions have to be tackled. The total mark is out of 50, and the time allowed is one hour and 30 minutes.

The second paper is the Applications paper, for which you have one hour and 15 minutes. There are six applications, three in each section, and you need to answer one question from each section (physical and human). The questions are worth 25 marks each, and are normally subdivided into three or four parts.

ADVANCED HIGHER

There are three sections to the Advanced Higher syllabus, but only one is examined externally. The two-hour exam covers fieldwork and statistical techniques. You must answer two questions from section A and B. The first is map-based, and the second covers statistical or fieldwork techniques. All are essay questions and have the same value.

The second unit is a field study, which is submitted separately in the form of a dissertation, and unit three builds on the applications from the Higher. The candidates research these more deeply and produce a critical review of the issues involved.



Hot topic: Arm yourself with total ozone recall

■ The farming landscape: what the farm settlement pattern and field pattern look like
■ The population density of each area: is it high or low?
■ What kind of social, economic or environmental changes may have occurred to your farming area?

INDUSTRIAL

This section is often based around an Ordnance Survey map and typical questions are:
■ Why was an area chosen for an industrial activity?
■ Given a map location, why is an area suitable for a new industrial venture?
■ Compare two industrial locations on an OS map - one older, the other newer.

The following questions are based around an industrial concentration case study e.g. Clydeside.
■ Explain the physical, human and economic factors that led to the rise of the industrial concentration
■ Explain why this area declined
■ Explain the economic, social and environmental consequences of decline
■ Describe and explain recent industrial changes and the impact on the environment

URBAN

This section is based on your case study of one city in the developed world and often centres on an OS map. Typical questions are:
■ Find the Central Business District and give reasons for your choice
■ Identify and locate land use zones
■ Describe and explain why the changes in the use of land then forms the inner and outer city
■ Using named examples describe changes to the land use zones of your city over the last 30 years

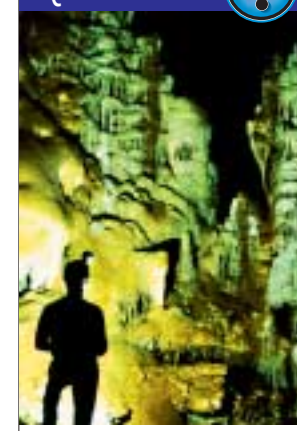
HIGHER PAPER 2 APPLICATIONS

There are six applications, and candidates will have studied two or possibly three of them.

Three physical applications:
■ Rural land resources (within a UK context)
■ Rural land degradation (soil erosion and its impact and solutions, on North America and either North Africa or the Amazon)
■ River basin management (within context of North America or Africa)

Three human applications:
■ Urban change and its management (contrast between a developed country and a developing country, so study two cities)
■ European regional inequalities (e.g. what do you do to bring the Highlands & Islands in line with rest of country. You do that for a development area in the UK and one other European country.
■ Development and Health (in the context of the developing world)

QUIZ



Q1. What is an arête?

Q2. How is a corrie formed?

Q3. Give an example of a 'coloniser' plant that grows in an embryo dune or strandline

Q4. Why is overgrazing considered inappropriate farming?

Q5. Name two adverse social consequences of water control projects?

Q6. Name the physical factors that would put people at risk of contracting malaria?

Q7. Name some 'push' factors for migration

Q8. What are the benefits of controlling a disease such as cholera in a developing country?

Q9. Summarise the processes involved in the formation of a terminal moraine.

Q10. Which direction do stalactites and stalagmites grow?

Answers on pages 46-47

EXAMMONDAY, 2 JUNE, 0900

history

THE greatest sin when it comes to sitting Higher History is irrelevance. There is a huge amount of knowledge to assimilate, but just regurgitating everything you know about a topic will not do.

In this exam, where there are two essays to write, it's particularly important to make sure you understand what the question is asking of you and then answer it in full. In fact, you should choose the question you are going to answer based on how well you understand it and not just because it ties in with your revision.

When you are tackling essay questions it is important to structure your essay properly; jot down a plan with some pieces of important evidence you don't want to omit. When you are writing the essay make sure each paragraph starts with a key sentence (that the rest of the paragraph develops) and that your paragraphs are linked, and end with a conclusion summing up your argument.

If you aspire to an A grade you should bring in different opinions or historical interpretations. In the end you just have to knuckle down and revise the work you have been doing throughout the year. Start early and do a little a lot – don't try to cram your revision into the last few days before the exam.

When it comes to revising you should go back to your course notes, read them, re-read them and condense them even further. If you come across anything you are not sure of or do not understand, go back to the textbook or seek help from your teacher.

It can be helpful to construct a timeline of dates of important events so you can see the big picture, and to put sources into context. Because history is taught in sections, it is sometimes difficult to have an overview.

A timeline will help you understand the events leading up to World War II, for example (see timeline below). Useful too are study aids in bookshops.

Also you can hire historical videos from the local library, which will help build up the big picture. Some pupils find it helpful to revise with a friend, going through past papers together

and discussing how they would tackle different questions.

Most Higher pupils will have studied the Later Modern period, Britain 1850-1979. If you are studying this option you should be familiar with the following points:

THE GROWTH OF DEMOCRACY

- The Extension of the Franchise: 1832 Reform Act, Disraeli's 1867 Reform Act, Gladstone's 1884 Third Reform Act.
- Representation of the People Acts: in 1918 all men over 21 and women over 30 enfranchised. Electorate more than doubled; 1928 Act gave women the vote on same terms as men and in 1969 all persons over 18 enfranchised.
- Electoral Corruption: Ballot Act of 1872 and Corrupt Practices Act of 1883.
- Redistribution of Seats Act 1885 and 1918 Representation of the People Act.
- Changes in Party Organisation: 1867 Conservatives set up the National Union of Conservative Associations; 1870 Disraeli founded Conservative Central Office; 1874 Conservative victory; 1877 National Liberal Federation; from 1867 Gladstone v Disraeli.
- The problem of the House of Lords: non-elected chamber with Conservative majority was problem for Liberal governments; 1893 Lords reject second Home Rule Bill for Ireland; 1906 Liberal landslide; Lords reject People's Budget 1909; Lloyd George attacks Lords as 'Mr Balfour's poodle'; Parliament Act (1911).
- Women's Suffrage: 1897 National Union of Women's Suffragette Societies led by Millicent Fawcett; arguments used against women's suffrage; Emmeline Pankhurst founds Women's Social and Political Union in 1903; militancy from 1905; 1912 set fire to pillar boxes; Emily Davison dies in front of King's horse at The Derby; Cat and Mouse Act of 1913; reasons for delays to women's suffrage; war effort; 1918 gain vote.

THE LIBERAL SOCIAL REFORMS 1906-1914

- Poverty: Charles Booth and Seebohm Rowntree; poverty line; primary and secondary poverty; 34% military recruits for Boer War failed medical; national efficiency campaign; rise of collectivism.
- Old Age Pensions (1908), insurance against ill-health and unemployment (1911); school meals and medical services for children (1906), minimum wages in certain industries; eight hour day (1908 - miners); trade boards 1909; 1911 Shops Act; borstals and juvenile courts set up 1908.

THE BRITISH LABOUR MOVEMENT TO 1939

- Before 1914: 1868 first Trades Union Congress; 1874 – Lib-Labs; Trade Union gains 1870s; peaceful picketing allowed 1875; New Unions; match girls', gas workers' and dockers' strikes.
- Origins of Labour Party: socialist groups e.g. Social Democratic Federation (1884) and Fabian Society 1884; Independent Labour Party formed 1893 by Keir Hardie; Labour Representation Committee formed 1900; 1900 Keir Hardie elected to parliament; Taff Vale Case (1900); 20 Labour MPs returned in 1906 election and LRC changes name to Labour Party.
- Labour and Liberal Govt 1906-1914.
- Labour militancy before 1914: 1911 London and Liverpool dock strikes; 1912 national miners' strikes; 1914 Triple Alliance; post-war strike wave.

THE NATIONAL GOVERNMENT, MASS UNEMPLOYMENT AND DEPRESSION

- The British Economy between the Wars: 1914 – strong economy based on coal, steel, textiles and ships; Great War cost £11,325m mostly borrowed from US; 1920 slump and rise in unemployment; Wall Street Crash 1929.
- Mass unemployment: two million 1920-21; three million 1932-33; boom and slump world trade cycle; old industries suffer.
- Collapse of Labour Government 1931 and Formation of National Government
- Financial measures – Britain comes off Gold Standard (1931); cheap money; housing boom of later 1930s, especially in South East. 1930s new growth industries: national grid; engineering; chemical industry (ICI 1926); construction. Baldwin's re-election; 1936 rearmament – boost to 'Outer Britain'.
- Welfare polices: The Dole & the Means Test; hunger marches

STRUCTURE OF EXAM

HIGHER

You must sit two papers in Higher History. In Paper 1 you have two essays to write in one hour and 20 minutes, which means 40 minutes maximum for each essay. You have to write one essay on a Scottish or British topic, and one on a European or World topic. Both essays must be from one of three historical periods (medieval, early modern or later modern) you have been studying throughout the year. Each essay is worth 25 marks.

For Paper 2 you have one hour 25 minutes to complete a document, or source based paper. You must choose the same historical period as you wrote about in Paper 1. Within each special topic there is a set of five sources (e.g. cartoons, photographs, eyewitness accounts) and five questions based on these primary and secondary sources. You must answer all five questions – most will be paragraph answers but there is one worth eight marks that is effectively a short essay. Paper 2 is worth a total of 30 marks.

There is also a third element, an extended essay or dissertation which candidates research during the school year, write under controlled conditions in the classroom, and send away to be marked externally. This is worth 30 marks.

ADVANCED HIGHER

There is a single three-hour paper in two sections. Part I consists of two 25 mark essays. You have a choice of two from six questions within each of 13 topics or periods. As well as using evidence to support your arguments and analysis, you should refer to other historical interpretations or schools of thought.

Part II is a set of three source-based items each worth 12 marks. You must answer all three questions within your topic/period - there is no choice of questions. As well as commenting on the provenance and content of the source(s) you should use your own knowledge to contextualise the view in the source(s).

Candidates also work on a 4,000-word dissertation through the year, which is sent away to be marked externally.

Rise to the occasion: Study hard and victory can be yours

POST-WAR LABOUR GOVT & ESTABLISHMENT OF WELFARE STATE

- Beveridge Report published 1942 by Churchill's Coalition Government.
- General Election of 1945 - PM Clement Atlee
- Welfare measures: 1945 Family Allowance Act; National Insurance Act 1946; National Assistance Act 1948; National Health Service Act 1946 came into effect 1948 under Bevan; council house building programme; New Towns Act 1946; 1944 White Paper on Employment policy.
- Nationalisation: 1946 Bank of England nationalised; coal and civil aviation 1947; public transport, electrical and gas industries 1948; iron and steel 1949; iron and steel denationalised by Tories 1953; problems with nationalisation
- End of Labour Government: by 1951 election majority down to six; economy in crisis due to Korean war of 1950; imports expensive; rearmament; Bevan resigns over prescription charges. 1951- Conservatives returned to power.

You also have a choice of studying the following aspects of Scottish History: Changing Scottish Society, 1880s–1939: The impact of urbanisation on Scotland with reference to leisure/popular culture, religion and education, or The Rise of Political Nationalism: Changing attitudes to the union, 1880-1939; issues of devolution and independence, c 1930-79

PAST PAPERS

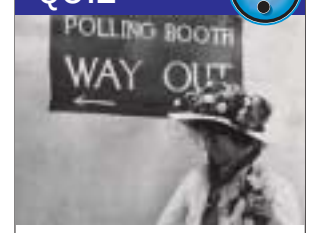
HIGHER

Most candidates study Option C of Higher History, Later Modern Britain 1850-1979. The topics covered over the last three years include: Later Modern Britain 1850s-1979: steps towards democracy (2000, 2001 and 2002); Labour Party and trade unions (2000 and 2001); Liberal reforms 1906-1914 (2002); women's equality 1900-1979 (2000, 2001 and 2002); welfare reforms (2000, 2001 and 2002). Growth of Nationalism: Germany 1815-1850 (2000 and 2001); Bismarck (2002); Italy 1815-1871 (2000, 2001 and 2002); expansion of Prussia (2001); nationalism and Italy 1871-1914 or nationalism and Germany 1871-1914 (2002); Cavour (2001); internal problems of Germany or Italy 1871-1914 (2001); Fascism in Germany and Italy (2000, 2001 and 2002).

USA: racial issues 1918-1939 (2000, 2001 and 2002); causes of Depression (2000 and 2001); Wall Street Crash (2002); New Deal (2000 and 2001); Civil Rights Movement (2000, 2001 and 2002); Russia: Tsar's authority (2000, 2001 and 2002); Stolypin (2000 & 2001); Russian Revolution (2000, 2001 and 2002); Red Army and Civil War (2001); Lenin (2000)

EXAMTUESDAY, 20 MAY, 1300

QUIZ



As most pupils study Option C of Higher History, Britain 1850s-1979, the questions are based on that period.

Q1. What political party was responsible for the Second Reform Act?

Q2. What class of people dominated Parliament in the 1850s?

Q3. Which working class organisation was formed in 1868?

Q4. What tactics were used by the WSPU to gain votes for women?

Q5. What group of women got the vote in 1918?

Q6. What title did the LRC adopt in 1906?

Q7. What was Lloyd George's budget known as in 1909?

Q8. What was the name given to the governments between 1931 and 1939?

Q9. Who published a famous report on social insurance in December 1942?

Q10. Name the five Giant Problems dealt with by the Labour Government of 1945.

Answers on pages 46-47

The red letter day ... and beyond

YOU think the nervousness and excitement is over? Just wait until the postman delivers your results.

You should receive your Scottish Qualifications Certificate (SQC) by first-class mail on Tuesday 12 August.

Some of you will be going on to college or university, and the Universities and Colleges Admissions Service (UCAS) will also be informed about your results in time for them to tell your choice of college or university about your results.

Results information will also be sent to candidates' schools to give teachers plenty of time to plan next year's timetables and give you career and course guidance if you are returning for the new term.

If your SQC does not arrive on 12 August and you were expecting one, contact your school or college immediately. The school or college will be able to confirm your results and liaise with the SQA to find out what has happened.

Your certificate envelope will also contain a cover letter, which you should read carefully before looking at the other documents in the envelope.

As well as giving you some general information about your Scottish Qualifications Certificate, it will also detail any courses which you have failed or which you have been awarded at a lower level because you failed by a narrow margin (this is called a 'fallback' award, and is always made at grade A).

Full details of the courses you have passed, and the units/elements which make them up, are given on the SQC. It will list all the courses and Group Awards you have achieved. The courses and Group Awards you achieved in previous years will also be listed.

Your SQC also lists all the National Units and Standard Grade Elements that have contributed to your Course and Standard Grade awards.

To pass a Course at Intermediate 1, Intermediate 2, Higher or Advanced Higher level, you must successfully complete the Units which make up the Course, and the external exam. If you fail the exam, or only partially complete it for any reason, the Units you have completed successfully will always be recorded on your SQC — so you have full credit for what you have achieved.

Making the grade: Prepare well, and you could be smiling too on 12 August

The final page of your SQC is the Supplementary section, which records your Core Skills profile, along with other information about your achievements.

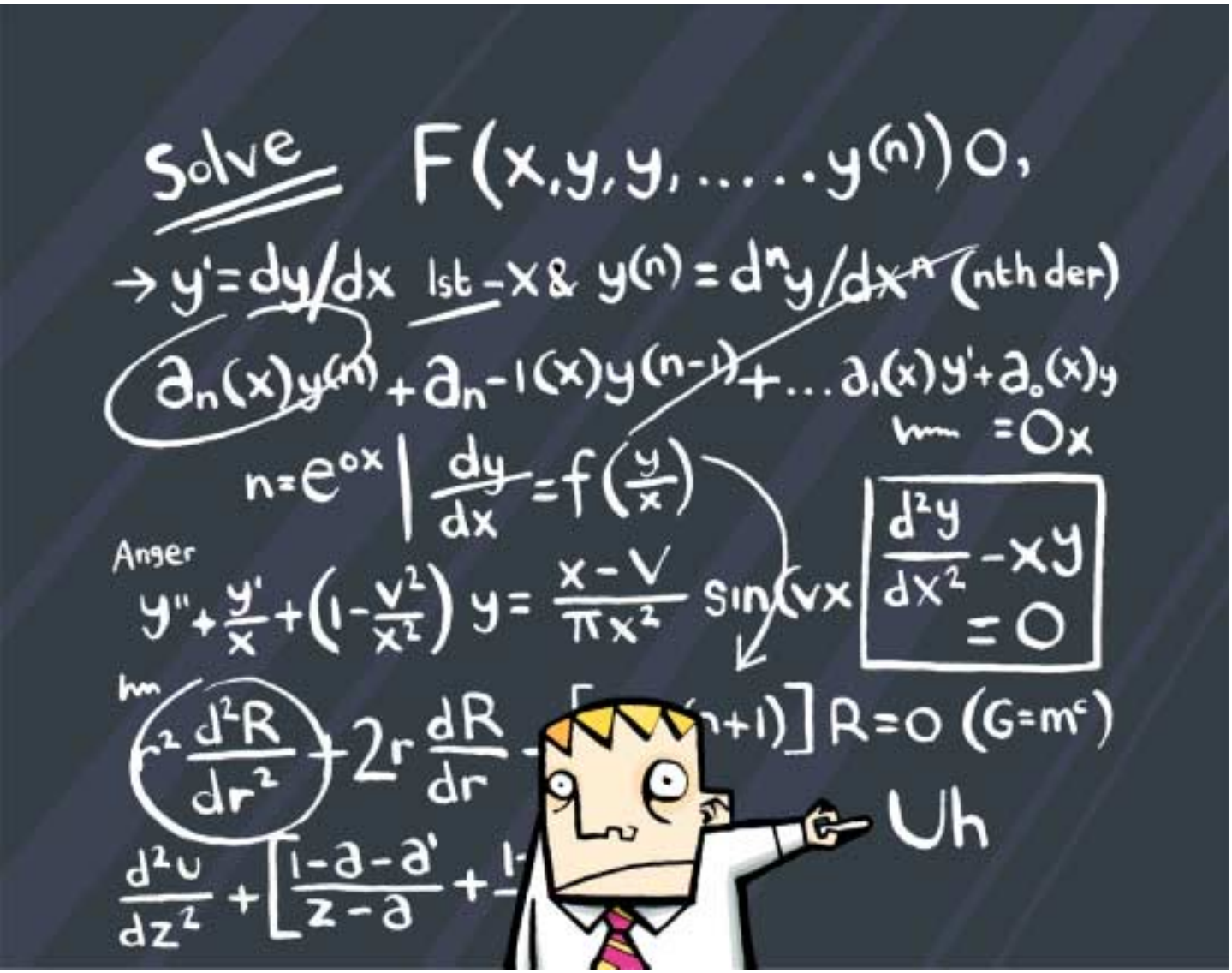
In the envelope, there will also be an information leaflet that explains the SQC. If you do not understand your certificate, or if you think something is missing or wrong, go immediately to your school or college and ask for help. If there is a problem, your school or college will contact the SQA to sort it out.

A telephone advice line, available from 12–15 August, will be given in the information leaflet issued with your certificate and will be published in the media.

The leaflet National Qualifications: How Awards Are Made, describes the quality assurance procedures the SQA carries out every year to make sure the awards made to candidates are fair, and that standards are rigorously maintained from year to year. This is available on our website (www.sqa.org.uk) or from our Helpdesk on 0141-242 2214, quote code FA1484.

ASSESSMENT APPEALS

Appeals to have your results reconsidered may be made only by the head of your centre. You should go to your school or college for advice about appeals.



mathematics

PRACTICE really does make perfect when it comes to revising Mathematics.

Working your way through past papers is the only way to make sure you have understood what you've been taught during the year.

You can use the syllabus and topics covered in the unit tests as guides to revision, but the best way to prepare for the exam is practising past paper questions. Just reading and re-reading your notes won't work with this subject.

Ask your teacher when you get stuck as most teachers are prepared to mark attempts by their pupils. Your teacher will also have supplied you with past paper questions and their answers, but beware: it will be no benefit to you to simply read over the questions and their answers and be able to understand them both. The trick is to be able to work through the problem yourself and then look at the given answer.

We have supplied a tough little quiz at the end of this section that will test your abilities to answer examination questions at Higher level. In addition, graphicacy, optimisation, position vectors, growth and decay or log graphs, chain rule, medians, altitudes and perpendicular bisectors have all appeared in recent times.

Things to remember to look out for:

It is assumed that you know all your S Grade facts and one particular area you must be familiar with is S Grade Trig:

KNOW YOUR TRIG VALUES

	0°	30°	45°	60°	90°
sin	0	$^1/_2$	$^1/\sqrt{2}$	$\sqrt{3}/2$	1
cos	1	$\sqrt{3}/2$	$^1/\sqrt{2}$	$^1/_2$	0
tan	0	$^1/\sqrt{3}$	1	$\sqrt{3}$	–

TRIGONOMETRY

i. Area of a triangle = $^1/_2$ ab sin c
ii. Angle in semicircle = 90°
iii. $\sin^2 x + \cos^2 x = 1$
iv. $\tan x = \sin x / \cos x$

RECURRENCE RELATIONS

When finding a limit, do not forget to state why there is a limit,

$-1<k<1$

EQUATIONS

E.g. solve $x^3+2x^2-x-2=0$
Try polynomial division with roots ±1, ±2 etc

DIFFERENTIATION

Stationary/rate of change/maximum/minimum/inflexion:
$m_{tangent}=dy/dx$

INTEGRATION

Do not forget to add c, the constant of integration. This can be worth a mark.

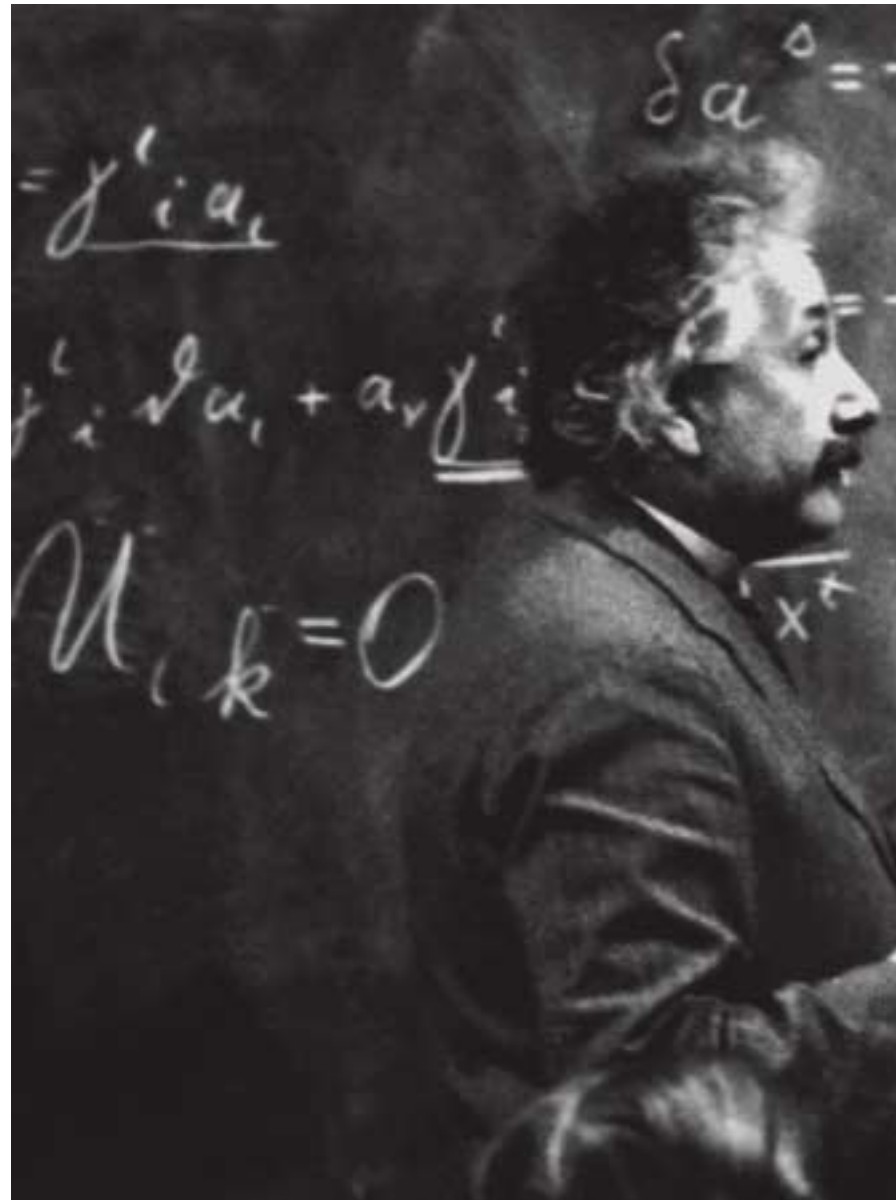
AREA

Area often signifies integration:

- Integrate area under a curve – may need to split up integral
- Area between two curves – need to find points of intersection
- Areas in context – may need to split up into different areas and combine

STRAIGHT LINES

Remember: $m=\tan\theta$
$m_1m_2=-1$

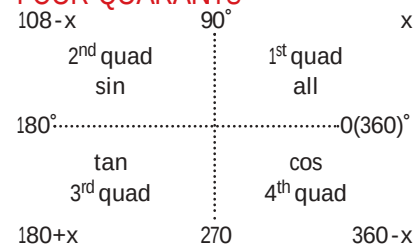


Chalk up another one: It helps if you can use a calculator, but you must

Non-Calculator Paper 1

Remember in Paper 1 you will not have the use of a calculator. It is VITAL that you know exact trig values off by heart, see panel. It is likely that answers to trig questions in paper 1 involving angles will be tested on this list of values.

KNOW YOUR ANGLES IN THE FOUR QUARANTS



STATISTICS

Mean: $\mu=E(x)$: discrete: $\sum x\,p(x)$
continuous: $\int_a^b x\,f(x)\,dx$

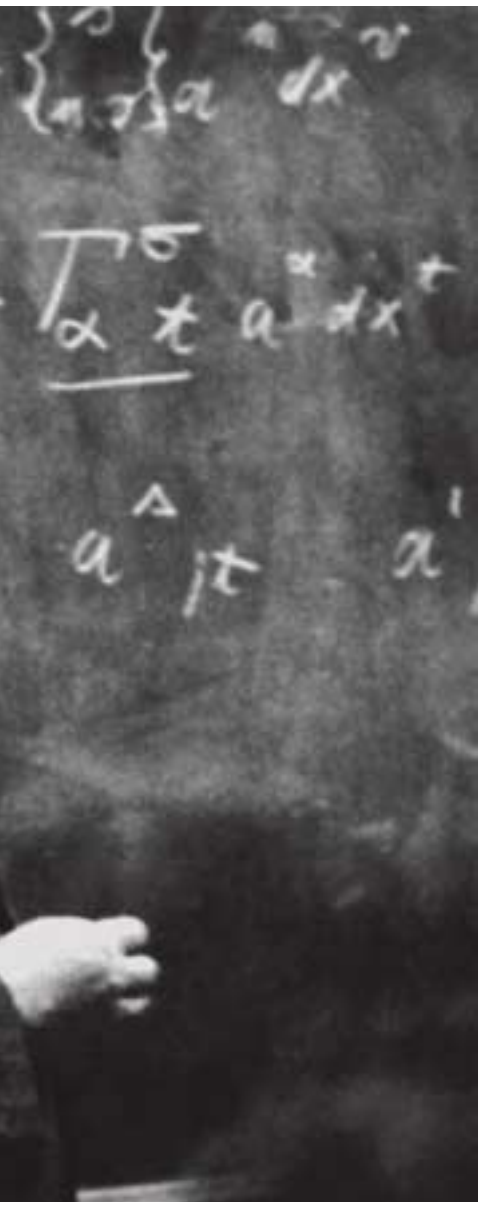
QUARDRATIC EQUATIONS: b^2-4ac

The solution for quadratic equations of the form $ax^2+bx+c=0$ is given by the equation

$$x=\frac{-b\pm\sqrt{(b^2-4ac)}}{2a}$$

Evaluate b^2-4ac to determine nature of intersection

Value	Nature	Application
<0	unreal	no intersection
=0	real and equal	tangency
>0	real and distinct	2 points of intersection



understand the principles

STRUCTURE OF EXAM

HIGHER

There are two papers. You have 70 minutes for Paper I, and must not use a calculator. This paper is worth 50 marks.

You have 90 minutes to complete Paper II, and may use a calculator. This paper is worth 60 marks.

ADVANCED HIGHER

You have three hours to complete a single paper ranging over the three units of the syllabus.

Variance:

discrete: $\sum x^2 p(x) - \mu^2$

continuous $\int_a^b x^2 f(x)\,dx - \mu^2$

Conditions for a probability density function:

i) $\int_a^b f(x)dx = [\sum p(x) = 1$ for discrete$]$

ii) $f(x) \geq 0$ for all $a \leq x \leq b$

When comparing box plots, stem and leaf or other data, comment on:
a) average b) variability

For bivariate analysis, follow the formula sheet CAREFULLY
And for estimates from data to be valid you need to:

- interpolate (*not* extrapolate)
- have a *good* fit
- predict from x-axis

PAST PAPERS

All aspects of the Higher syllabus were comprehensively covered in past papers. For Higher you will have either studied units 1, 2 and 3 of the syllabus, or units 1, 2 and statistics. Subject matters to cover are:

Unit 1: properties of the straight line; functions and graphics; basic differentiation; recurrence relations.

Unit 2: factor/remainder theorem and quadratic theory; basic integration; trigonometric formulae; the equation of the circle.

Unit 3: vectors in three dimensions; further differentiation and integration; logarithmic and exponential functions; further trigonometric relationships.

Statistics: exploratory data analysis; discrete probability distributions; continuous probability distributions; the relationship between two variables.

QUIZ

All non-calculator questions apart from number four

Q1. Find the value(s) of k if $y = kx + 1$ is a tangent to the circle $x^2+y^2+10x-2y+6=0$

**Q2. The vectors $\begin{pmatrix} 2 \\ t \\ t \end{pmatrix}$ and $\begin{pmatrix} 3 \\ 6 \\ t-1 \end{pmatrix}$ are perpendicular. Find the value(s) of t

**Q3. $4\log_x 12 - 2\log_x 9 = 1$. Find the value of x

Q4. Solve $\cos 2x = (2-\cos x)\cos x$ for $0° \leq x < 360°$

Q5. Find the size of the acute angle between the lines $y=3x-2$ and $2y-x=8$

Q6. Find the area enclosed by the curves $y=x^3+3$ and $y=3x^2-1$

Q7. Given $f(x)=7-8x-2x^2$, express f(x) in the form $a(x+b)^2+c$ and hence find the maximum value of f(x)

Q8. Given that $f(x)=x^2-4x$ and $g(x)=3x-1$ find the turning point of h(x) where $h(x)=f(g(x))$ determine its nature

Q9. A recurrence relation is of the form $u_{n+1}=a\,u_n+b$
If $u_2=27$, $u_3=18$, $u_4=15$, find a, b and u_1

**Q10. Express $\sqrt{3}\cos x - \sin x$ in the form $k\sin(x-\alpha)$, $0 \leq \alpha < 2\pi$ and $k>0$

Q11. Evaluate $\int \sqrt{(3x-5)}\,dx$

Statistics question

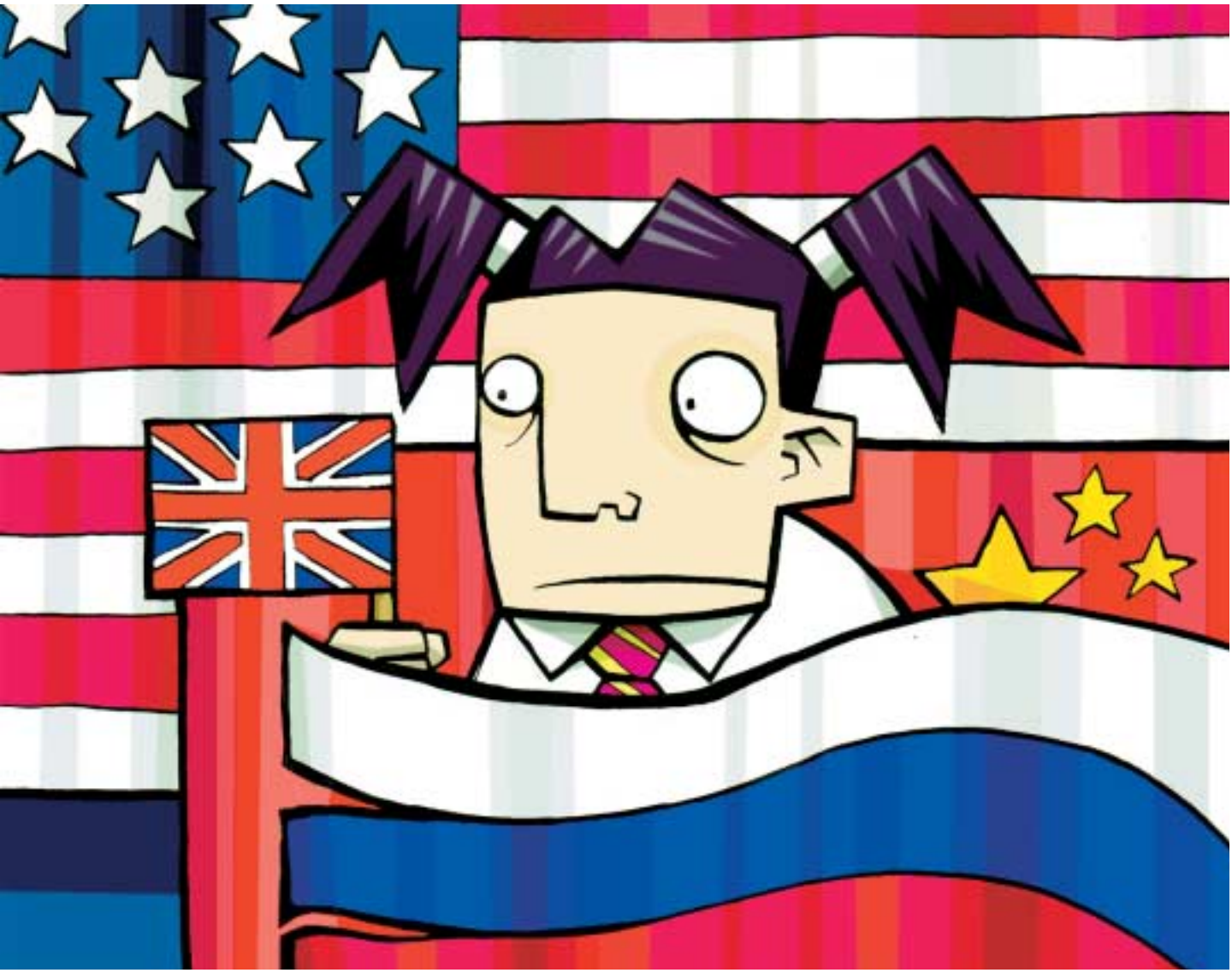
A probability density function, f(x), is given by

$f(x) = k(4x-3x^2)$ $0 \leq x \leq 1$
0 otherwise

Show that k=1 and hence find the mean, variants and mode of the p.d.f.

*** Maths unit 3 questions (not for statistics candidates)*

EXAM WEDNESDAY, 21 MAY, 0900



modern studies

IN MODERN Studies you should know your study themes inside out – and know how to apply that knowledge to back up political arguments and positions, and to analyse current affairs.

The Higher examination covers three areas: political issues in the UK, social issues in the UK and international issues.

As well as keeping up-to-date with current affairs by reading newspapers and watching the news, you should be familiar with the following points within your study themes.

POLITICAL ISSUES IN THE UK

DECISION MAKING IN CENTRAL GOVERNMENT

- Pressure groups: section groups (e.g. CBI, trade unions, BMA); protest groups (e.g. fuel protesters); promotional groups (Shelter, Child Poverty Action)
- Pressure methods: lobbying MPs, media, public relations, New Establishment
- Mass media: New Labour spin doctors; downfall of Mandelson and Charlie Whelan
- Public opinion: influenced by media, measured by opinion polls, reflected by voting & public demonstrations
- Parliament: role of MP, House of Commons, Question Time, Select Committees, special advisers, backbenchers, House of Lords, Parliamentary Sovereignty, Prime Minister and Cabinet

THE GOVERNMENT OF SCOTLAND

- Scottish Office, Secretary of State for Scotland
- West Lothian Question; Scotland Bill 1997; Holyrood site & cost of new building; single chamber Parliament meets 1999; 1999 and 2003 elections, 73 elected first past the post MSPs and 56 additional members; three First Ministers in three years; position of Secretary of State for Scotland; Presiding Officer; reserved powers of Westminster (e.g. foreign affairs, taxation, defence, social security); legislative role of Scottish Parliament (e.g. local government services; education and training, economic development, environment, law & order); criticisms levelled at Scottish Parliament; Sewel Motions; Scottish

PAST PAPERS

Political issues: backbench MPs (2000 and 2001); role of senior civil servants (2002); powers of PM (2001); pressure groups (2000 and 2002); local government (2000 and 2001); Scottish Parliament powers (2000); arguments for and against Scottish Parliament (2001); role of Secretary of State for Scotland (2001); role of MSPs (2002); public participation in local govt (2002); organisation of Labour Party (2000 and 2001); Lab v Cons policies (2000 and 2001); conflict within Conservative Party (2002); Labour and Lib Dem similar policies (2002); Scottish Parliament voting system (2000); voting behaviour (2000 and 2001); first past the post voting system (2001); AMS (2002); influences on decision making (2001 and 2002).

Social issues: social class (2000 and 2001); poverty (2000 and 2001); causes of social exclusion (2002); national minimum wage (2001); welfare to work policies (2000 and 2001); women's equality (2001); racial discrimination in UK (2002); policies to reduce people on benefit (2002); community care (2000 and 2001); provision of hospital services (2000); NHS (2001 and 2002); pros & cons private health care (2000 and 2001); govt changes to primary health care (2001); health & social class (2001).

International: social & economic measures of South Africa govt (2000 & 2001); legacy of apartheid (2002); racial harmony measures (2001); autonomy of South African groups (2000); political rule in South Africa (2002); role of Communist Party in China (2000); China's human rights record (2002); China as market economy (2001 and 2002); freedom in China (2001); ethnic minority disadvantages in USA (2000 & 2002); distribution of ethnic minorities in USA (2001); political progress of ethnic minorities in US (2000 and 2002); role of European Parliament, Commission & Council of Ministers (2000 & 2001); achievements of EU (2002); co-operation between members of EU (2001); European Monetary Union (2000); Common Agricultural and Fisheries policies (2000); peace-keeping role of UN (2000, 2001 and 2002); role of NATO in global security (2002); UK overseas aid policy (2000); production & distribution of food in Africa (2001, 2002); how NGOs respond to food shortage (2001); role of UN in food security (2002)

Executive; coalition government

- Scottish Local Government: financial support from central government; level of borrowing; erosion of powers to quangos etc; COSLA; former responsibilities of local government (education, social work, housing, transport etc) now with Scottish Executive/Parliament; conflict between local authorities and Scottish Executive over level of financial settlement; Central Belt financial bias; hikes to Council Tax; McIntosh Report recommending PR for local government elections; Labour support for PR fading; student grant crisis; free care for the elderly – crisis?

Two men, one vote: What factors affect voting behaviour?

POLITICAL PARTIES AND THEIR POLICIES

The main political parties of the UK including SNP: their organisation, decision-making process, policies

THE ELECTORAL SYSTEM, VOTING AND POLITICAL ATTITUDES

- Voting systems: first past the post as used to elect the House of Commons and local councils; the various forms of proportional representation including Additional Member System, list systems, single transferable vote (note other proposed systems e.g. alternative vote, though some of these not proportional)
- Voting behaviour: main factors and how these are changing – social class, media etc

SOCIAL ISSUES IN THE UK

INCOME AND WEALTH IN THE UK

- Creation/distribution of income and wealth: differences due to social class, ethnic group, gender, geography; standards of living affected by unemployment/employment
- Poverty: how it can be defined and measured; who is most affected; economic and social problems; special problems of women and ethnic minorities
- Government policies affecting unemployment, taxation etc
- Differences between main parties' social/economic policies

HEALTH CARE IN THE UK

- Demand and provision for health care; social and geographical differences; state and private medicine; case study (effects of ageing population); Conservative and Labour parties' policies on health care; NHS Trusts, primary care groups; interest/pressure groups and health care

INTERNATIONAL ISSUES

A SOCIETY IN CHANGE – SOUTH AFRICA

- Racial groups within South Africa; recent political, social and economic change; remaining inequalities

A SOCIETY IN CHANGE – CHINA

- Changing structure of Chinese society; principles of Chinese socialism/impact on society; changes to ideology/structure of society
- Political system;

structure/distribution of power; forces for change; human rights issues and government responses
- Social and economic progress; achievements and effects on party officials, military, workers, peasants and women

ETHNIC MINORITIES IN THE USA
- Where Blacks, Hispanics and other ethnic groups live; reasons for this, including (im)migration; current trends
- Social/economic progress/inequality; responses by federal and state governments including the role of the courts
- Political progress/inequality; responses by federal and state governments; political parties and pressure groups; influence of ethnic groups on political progress

THE EUROPEAN UNION
- Co-operation within EU: membership, goals, institutions, policies, decision making, achievements, implications of enlarged membership
- Resolution of conflict: collective interests of member states; conflict between these and individual state interests
- Reference to either moves towards European integration or the Common Agricultural Policy and Common Fisheries Policy; sources of conflict amongst member states; different interests; policy goals

GLOBAL SECURITY
- World security and the organisation and work of UN and NATO: membership, goals, institutions, policies, decision-making.
- Examples of recent conflicts involving UN and/or NATO

THE POLITICS OF FOOD
In relation to Africa, excluding the Republic of South Africa:
- Reasons for food shortage: the problems of exploiting and distributing resources; political, economic and social inequalities; land tenure and use; development policies; the impact of war
- Responses to food shortages: changes in international aid; agricultural policies and famine relief; role of non-governmental organisations (NGOs); British Government policies on overseas food aid; effectiveness of these responses
- How power is exercised in the control and supply of food by government relief agencies.

STRUCTURE OF EXAM

HIGHER
There are two papers, Part I (essays) and Part II (decision making exercise)

Part I (1 hour 25 mins) is a short essay paper. It is divided into three sections. You must answer one question in each section: political issues in the UK (20 marks); social issues in the UK (10 marks); international issues (20 marks).

Part II (1 hour 20 mins) is on Social Issues in the UK (either income and wealth or health care).

There are three source items which will give viewpoints and statistics on an issue, and a number of short evaluating questions worth 10 marks in total. You must also write a report worth 20 marks for which you synthesise information from the sources and add background knowledge.

ADVANCED HIGHER
A single paper in two parts over three hours.

You will have studied one of three themes: comparative politics and research methods; law and order and research methods; the European Union and research methods.

Part 1: two 30-mark essay questions. Candidates should use analysis, supported by relevant evidence, to argue their case and provide a balanced view by considering alternative viewpoints and/or comparisons.

Part II: a series of shorter questions that add up to 30, some source-based. You will be asked to look at issues and the nature of the evidence and research methods which can be used. The third element is a 5,000 word dissertation worth 45 marks which is submitted separately for external marking by the end of April.

QUIZ

Q1. Who resigned from the Cabinet over Iraq?

Q2. What is the name of the voting system used to elect the Scottish Parliament?

Q3. What is a tax credit?

Q4. Which age group costs the NHS most money?

Q5. Who is the President of South Africa?

Q6. Which former British colony is now part of China?

Q7. Which minority group has the highest per capita income group in the US?

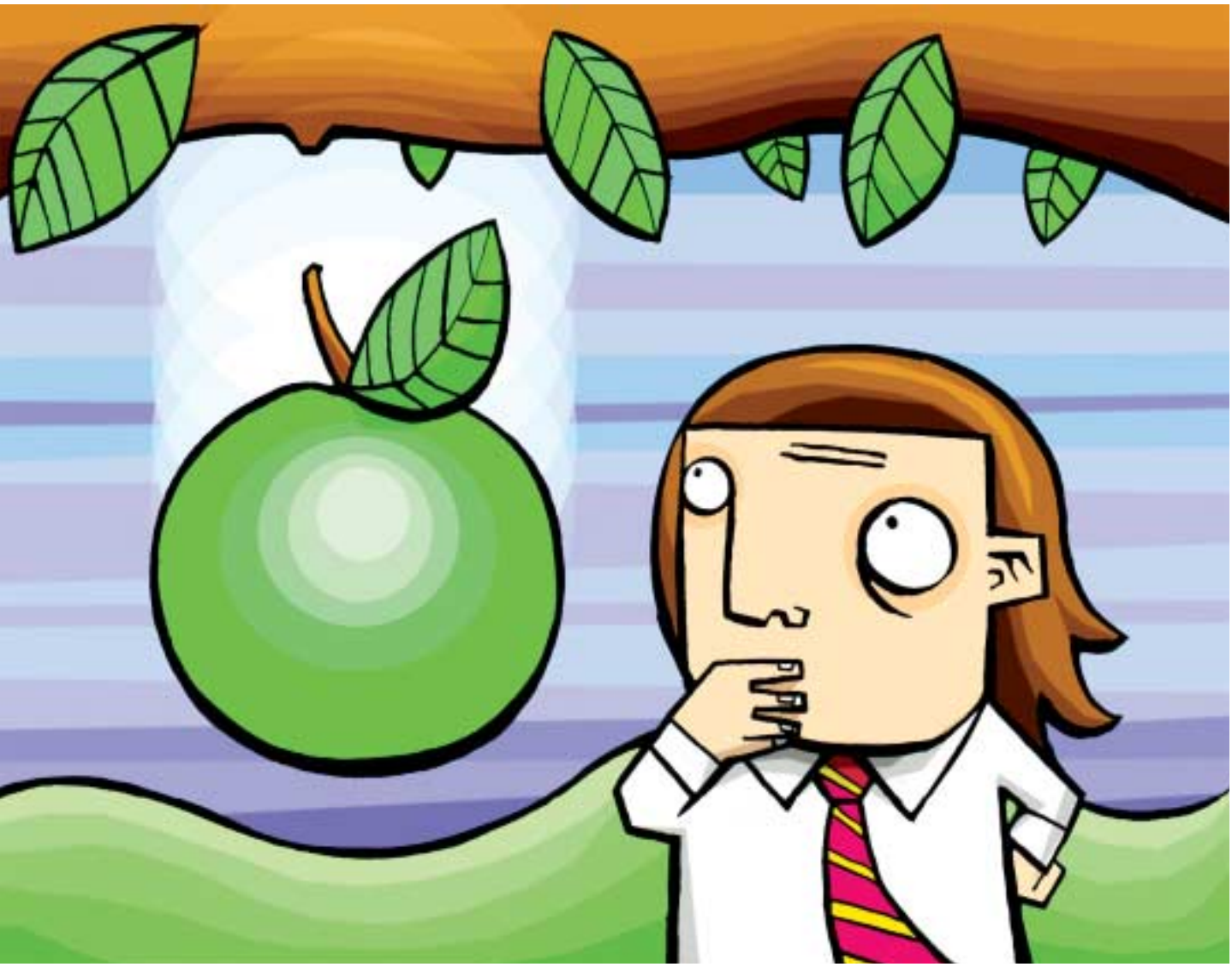
Q8. Which country turned down the invitation to join the EU?

Q9. Name three former communist countries now in NATO

Q10. What do the initials NGO stand for?

Answers on pages 46-47

EXAMWEDNESDAY, 28 MAY, 0900



physics

THE key to doing well in this subject is having a clear understanding of the rules and relationships on which it is based.

Once you've learnt a body of physics knowledge, you can then apply it to finding the solutions to any number of problems.

Rules and relationships in physics are expressed in terms of mathematical equations such as F=ma. It's important to memorise such equations, but also to understand what they mean, which involves being able to define the terms that are used in it. A good way to test your understanding of an equation is to say it in words, or 'saying what you see'. The equation F=ma represents Newton's Second Law of motion. The equation is telling us that if an unbalanced force F acts on an object of mass m, the object will be given an acceleration a. It also tells us, for a given force, the acceleration is inversely proportional to the mass. Note that when we describe the equation F=ma in words we use the quantities force, mass and acceleration.

You should practise writing out descriptions and explanations of situations where physics principles are at work e.g. describe the gas laws in terms of the movement of particles; describe the effect of a grating on a monochromatic light beam; explain the occurrence of absorption lines in the spectrum of sunlight.

In your exam you will also have to show that you can use your knowledge to solve problems e.g. you may be asked to select data from a diagram, graph, passage, or a table of data, and then process the data by doing calculations using physics relationships. You may be asked to comment on how a task should be tackled or how an experimental method could be improved. You could be asked to show that you can use your knowledge of physics to predict what might happen in a given situation or explain what is happening.

You will not be supplied with a formula list in the exam, so you should memorise formulae. A list of physics equations that you should know, understand and be able to use

in your examination is given below. Use the tables as a checklist when you are revising for your examination.

KINEMATICS

- Scalars & vectors
- Distance/displacement
- Speed/velocity
- Acceleration definition

Graphs – area under v/t graph = displacement, gradient of v/t graph = acceleration, gradient of s/t graph = velocity.

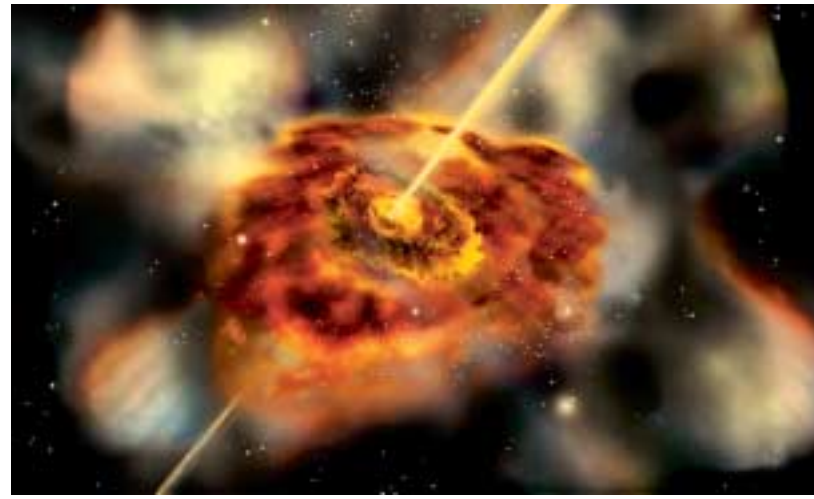
- Equations of Motion : $v=u+at$, $s=ut + \frac{1}{2}at^2$, $v^2=u^2 + 2as$. Derived from graph rules.
- Projectile Motion: Vertical acceleration (use equations of Motion), Horizontal constant speed (use $v=s/t$). Split velocity vector into components first

DYNAMICS

- Newton's Laws of Motion I, II and III
- Applications of Newton II F_{unb} = ma. Lift example use (R – W) = ma. Inclined Plane example use ($mg\sin\theta$ as component of weight acting down and parallel to the slope). Rocket example use (Thrust – Weight = ma). Here acceleration increases as fuel is used up. Coupled systems – treat as a whole to get acceleration then split up into the individual systems.
- Total momentum before a collision = total momentum after a collision in the absence of any external forces. Must remember the direction of the velocity vector! ($p=mv$) Units $kgms^{-1}$ Inelastic collisions do not conserve kinetic energy. For elastic collisions, kinetic energy before = kinetic energy after.
- Impulse = Area under Force – time graph. Impulse = Change in momentum (mv – mu) also = Ft so Ft = mv – mu. In collisions, increasing contact time reduces the force in a collision

PROPERTIES OF MATTER

- Solids, Liquids and gases. Know about separation, volume and density
- P = F/A. Measured in Pascals (Pa)
- Density ρ = m/V (units kgm^{-3})
- Pressure in a liquid. Top and bottom of a surface is at different depths, therefore different Pressures. P bottom > P top. Since F = ρA then Force bottom > Force top. The buoyancy force (or upthrust) = F bottom – F top.
- Pressure in a fluid $P = \rho gh$
- Boyle's law $p_1V_1 = p_2V_2$ for a fixed mass of gas at constant temperature
- Pressure law $p_1/T_1 = p_2/T_2$ for a fixed mass of gas at constant volume. (T must be in Kelvin)
- Charles' law $V_1/ T_1 = V_2/T_2$ for a fixed mass of gas at constant pressure (T must be in Kelvin)
- To change °C into Kelvin add 273
- Combined Gas equation $p_1V_1/T_1 = p_2V_2/T_2$. Temperature must be in Kelvin



Stay sharp: Don't let your knowledge fall into a Black Hole

ELECTRICITY & ELECTRONICS FIELDS & EMF

- 1 Volt is the pd between two points when 1J of work is done in moving 1C of charge between these points. W = QV. $W = \frac{1}{2}mv^2$. Use data sheet for mass and charge of an electron.
- EMF = pd across a source on 'open circuit' ie when no current is flowing in the external circuit
- Tpd = value of voltage across a source or a component in a circuit when a current is flowing
- E = V + Ir
- 'Lost Volts' is the pd across the internal resistance = Ir
- Short circuit current I = E/r occurs when there is no external resistance (R) in the circuit

RESISTORS AND WHEATSTONE BRIDGE

- Total Resistance in series $R_T = R + R_2$
- Total Resistance in parallel $1/R_T = 1/R_1 + 1/R_2$
- A Wheatstone bridge circuit is a very accurate way of determining unknown resistance $R_1/R_2 = R_3/R_4$
- An out of balance Wheatstone Bridge has the Out of balance current Change in resistance (ΔR)

CAPACITORS & AC

- $V_{peak} = \sqrt{2}\, V_{rms}$. Peak voltage measured on an oscilloscope. Rms measured using a multimeter. Similar equations for I (current)
- Measure frequency and Peak voltage using an oscilloscope. Try questions on this!
- Current / time graph for a resistor – no effect
- Current / time graph for a capacitor = directly proportional.
- Q=CV. Unit of capacitance = Farads (learn your prefixes µ, n, p)
- Energy = area under QV graph = $\frac{1}{2}QV = \frac{1}{2}CV^2 = Q^2/2C$
- Learn the voltage/time graphs for a capacitor charging and discharging
- Learn the current/time graphs for a capacitor charging and discharging
- A smaller resistor increases the

PAST PAPERS

All aspects of the syllabus were covered in past papers. Subject matters to cover are: vectors; equations of motion; Newton's Second Law, energy and power; Momentum and impulse; density and pressure; gas laws; electric fields and resistors in circuits; alternating current and voltage; capacitance; analogue electronics; waves; refraction of light; optoelectronics and semiconductors; nuclear reactions; dosimetry and safety; units, prefixes and scientific notation; uncertainties

QUIZ

Q1. An archer fires an arrow at a target 58m distant. The arrow leaves the bow at 32 ms^{-1} at an angle of 30° to the horizontal
(a) What is the horizontal component of the velocity of the arrow? (b) How long will it take to reach the target

Q2. On a calm day, a hot air balloon is tethered to the ground by a rope in which there is a tension of 250N. The total mass of the balloon is 580kg
(a) Draw a diagram showing all the forces acting on the balloon
(b) When the rope is released, calculate the acceleration of the balloon

Q3. A bottle contains a gas at a pressure of 2.0×10^5Pa and a temperature of 0°C. If the bottle can only withstand a pressure of 2.3×10^5Pa, what is the maximum temperature which the gas can be allowed to reach?

Q4. An electron is accelerated towards the screen of a television tube by a potential difference of 22KV (mass of electron = 9.11×10^{-31}kg, magnitude of charge of electron = 1.6×10^{-19}C)
(a) What will be the work done on an electron?
(b) Assuming the electron starts from rest, what will be the final speed reached by the electron?

Q5. State how it would be possible to 'short circuit' a cell

Q6. Explain briefly how a diffraction grating produces a continuous spectrum from a ray of sunlight

Q7. The power for a space probe is produced by an array of photodiodes. Each photodiode in the array acts as a photovoltaic cell. Under certain conditions the power output of the array is 140W at 32V
(a) Calculate the current produced by the array
(b) Explain how a photovoltaic cell can produce a small voltage

Q8. A patient's thyroid gland is to receive a radiation dose of 400Gy from a source, so that 16J of energy is absorbed by the gland. From this information, calculate the mass of the thyroid gland

Q9. Describe two factors which affect the background radiation level

Q10. The equation for the decay of Americium 241 is 241/95 AM → 237/93 Np+ radiation.
Identify the type of radiation emitted in this decay

initial charging current and makes the time shorter

ANALOGUE ELECTRONICS

- Inverting mode – only negative input used.
- Inverting mode gain equation $V_0/V_i = -R_f/R_1$
- Differential mode – both inputs used
- Differential mode gain equation $V_0 = (V2 - V1) R_f/R_1$
- Saturation of the op-amp is when the output voltage cannot exceed the supply voltage. In practice, the op-amp saturates at 85% of the supply voltage

RADIOACTIVITY

- A = N/t (units Bq)
- D=E/m (units Gy)
- H=QD (units Sv)
- Know how to carry out problems involving half value thickness
- $E=mc^2$ where m = mass defect (mass before reaction – mass after reaction)

LASERS & OPTOELECTRONICS

- I = P/A
- $I_1d_1^2 = I^2d_2^2$
- E=hf and Wf = hfo
- $E_{in} = W_f + E_k$
- Photoelectric effect proves the particle nature of light
- Know about emission and absorption spectra
- Learn about semiconductor doping, photoconductive mode, photovoltaic mode
- Draw the symbol for a MOSFET

WAVES & OPTICS

- Law of Relection angle i = angle r
- $n_1\sin\theta = n_2\sin\theta_2$
- $n_1v_1 = n_2v_2$
- $n_1\lambda_1 = n_2\lambda_2$
- Diffraction grating $d\sin\theta = n\lambda$
- Interference is the proof of the wave nature of light pd = $n\lambda$ for constructive. Pd = $(n+^1/_2)\lambda$ for destructive
- Know the difference between the spectrum produced by a prism and a diffraction grating

UNCERTAINTIES

- Know about systematic reading and random uncertainty
- Random uncertainty in mean = maximum value - minimum value / number of measurements
- Combining uncertainties, take the largest percentage uncertainty

STRUCTURE OF EXAM

HIGHER

You have two hours 30 minutes for a single paper consisting of 20 multiple-choice questions (worth one mark each), and around nine questions requiring extended answers (worth 70 marks). The paper is worth a total of 90 marks.

Questions will cover all the three sections of the syllabus: 1) mechanics and properties of matter 2) electricity and electronics 3) radiation and matter.

ADVANCED HIGHER

A single paper lasting two hours 30 minutes. It is marked out of 100. Questions range from short-answer question worth 5 marks to more questions requiring more extended answers worth 12-13 marks.

In addition to sitting an examination there is a report on an investigation of your choice worth 25 marks, marked externally by the SQA.

EXAMMONDAY, 19 MAY, 1300

No time to be idol - get revising

ART & DESIGN

A1. Action painting is a branch of Abstract Expressionism that involves dripping, dribbling or throwing paint onto the surface of the canvas as a way of mediating the workings of the unconscious mind in an unplanned way.
The artist becomes an actor and the picture surface his or her stage. Jackson Pollock is the best-known example

A2. Leonardo da Vinci's portrait of the Mona Lisa, also known as La Gioconda, hangs in the Musée du Louvre in Paris

A3. Cartoon is from the Italian for 'big piece of paper'. It's a full-size, exact, final stage drawing for a painting, ready for transferring to canvass, wall or tapestry, by squaring up or chalking on the back

A4. Art nouveau (around 1890 until First World War) came before Art Deco (1920s and 1930s)

A5. It was a movement started by refugee artists and writers who found themselves in Zurich in 1916 at the height of the carnage of the First World War. Their art was intended to be in praise of illogicality, absurdity, playfulness and chance happenings, and their mode of expression 'anti-art'. Marcel Duchamp, the poet Tristan Tzara and Jean (Hans) Arp were among the leaders

A6. Impressionism

A7. Red, yellow and blue, from which all other colours can be made and which in turn cannot be made by mixing others

A8. The point at which parallel lines appear to meet on the horizon line

A9. The French fashion designer popularised practical clothes for women such as trousers, little black dresses and box-like collarless jackets, accessorised with multiple strands of pearls, gold chains, quilted handbags, two-toned ivory and black sling-back pumps, and gardenias

A10. Antonio Gaudí

BIOLOGY

A1. Protein and phospholipid

A2. On the cristae of a mitochondrion

A3. A sequence of three bases on a transfer RNA (tRNA) molecule

A4. The failure of homologous pairs of chromosomes to separate during meiosis

A5. Ligase

A6. A plant cell with its cell wall removed

A7. Off

A8. Aleurone layer

A9. Interspecific is between members of different species; intraspecific is between members of the same species

A10. Glucagon

BUSINESS MANAGEMENT

A1. The Confederation of British Industry

A2. A sole trader is a one-owner business, owned and controlled by one person

A3. Answers include: huge amounts of finance can be raised; it's easy to borrow money from lenders due to their large size; Plcs often dominate their markets

A4. The four steps of the decision-making process: identifying the Strengths and Weaknesses within an organisation and the Opportunities and Threats outside the organisation

A5. Development, introduction, growth, maturity, saturation and decline

A6. Answers include: Offer discounts and promotions to encourage cash sales and reduce stock levels; Sell any unnecessary fixed assets; Encourage overdue customers to pay their bills; Arrange credit with suppliers; Seek another source of finance (e.g. find a partner); Owners draw less

A7. Trade unions undertake collective bargaining on behalf of the employees rather than workers negotiating individually for pay rises and better conditions

A8. Japan

A9. Answers can include firms such as The Whisky Shop, Starbucks and Tie Rack

A10. Many businesses use their websites to sell their products and services to consumers, who can order online

Reality bites: Gareth Gates and Will Young , who rose to

CHEMISTY

A1. Carbon

A2. Hydrogen bonding is present in water

A3. Not all collisions involve the required activation energy

A4. Hydrogen

A5. Hot copper oxide or acidified potassium dichromate solution

A6. It goes down

A7. The presence of carbon to carbon double bonds in the oil

A8. Amino acids

A9. They are constant

A10. Nuclear fusion

COMPUTING

A1. Testing

A2. Because each line of code must be translated before it can be executed.

A3: They make the program more modular; reduce chance of errors; allow the same variable name (e.g. index or flag) to be used in several subprograms

A4: Normal data, extreme data, exceptional data

A5: Capacity, speed, cost, random or sequential access, magnetic or optical

A6: The memory management systemmm

A7: Mantissa and exponent; the mantissa stores the 'value' of the number, while the 'exponent' is the power of 2 by which the mantissa must be multiplied

A8: (b) and (c). (a) increases the total memory which can be addressed, but has no effect on speed of processing

A9: A scripting language (e.g. VBA: Visual BASIC for Applications)

A10: They allow data to be transferred between different hardware and software (e.g. an rtf file would allow a document created using Word 6 on a PC to be read by AppleWorks on a Mac)

fame in Pop Idol (English & Communication, Q9)

ENGLISH & COMMUNICATION

A1. Aberration and accommodate
A2. Complement means that which completes, and compliment means praise
A3. It should be: I'd like to try yours
A4. Who else's
A5. Incurred
A6. A spoonerism, called after the Rev Spooner, a former Oxford dean who once told a student: 'You have tasted two whole worms and hissed all my mystery lectures; you must take the first drain town'
Q7. When we experience empathy we identify ourselves with someone or something
A8. It's a device used by poets to ascribe human feelings to the inanimate e.g. The one red leaf, the last of its clan/That dances as often as dance it can
A9. Answers can include: Big Brother, Ibiza Uncovered, Wife Swap, The Salon, Pop Idol, Fame Academy
A10. Tabloid newspapers such as The Daily Record and The Sun

FRENCH

A1. Total relaxation
A2. I wanted to discover new horizons
A3. There was nothing to do
A4. After a short trip
A5. I had a good time
A6. étaient
A7. avons logé
A8. faisait
A9. a duré
A10. j'ai fait

GEOGRAPHY

A1. A narrow, saw-toothed ridge developed between corries
A2. By ice-plucking and frost action
A3. Sea Twitch, Sea Couch or Sea Rocket
A4. It leads to removal of vegetation cover, leaving the soil open to erosion through loss of protective cover. Compaction of soil can lead to more rapid overland flow.
A5 ■ Forced removal of people from valley sites.
■ Increased incidence of water borne diseases such as Bilharzia in irrigation channels (N.B. but not in North American examples)
A6. Areas with hot (15-40sC), wet climates, stagnant water (breeding areas for mosquitos)
A7. Factors might include: lack of job opportunities or prospects in own country, and political or religious persecution
A8. They can include:
■ Saving money on health, medicine, doctors, drugs, etc
■ Reducing national debt
■ Having a fitter workforce
■ Increasing productivity
■ Attracting more tourists
A9. ■ Deposition at the end or snout of a glacier
■ A mound of unsorted rock (angular) and clay
■ Built up across the valley floor if glacier stays in place some time
A10. Stalactites hang down from the ceiling while stalagmites grow upwards from the cave floor

HISTORY

A1. The Conservative Party
A2. The aristocracy
A3. The Trades Union Congress
A4. Militant tactics
A5. Women aged 30 and over
A6. The Labour Party
A7. The People's Budget
A8. The National Governments
A9. William Beveridge
A10. Want, Disease, Idleness, Ignorance and Squalor

MATHEMATICS

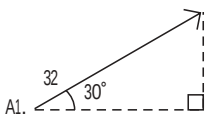
A1. $k=\pm 2$
A2. $t=-2$ or -3
A3. $x=256$
A4. $x=0$, 109.5, 250.5 (one decimal point)
A5. 45°
A6. $6^3/_4$ units^2
A7. $f(x)=-2(x+2)^2+15$; max value is 15
A8. min turning point at (1, -4)
A9. $a=^1/_3$, $b=9$, $u_1=54$
A10. $2\sin(x-4^{\pi}/_3)$
A11. $^{14}/_9$
Statistics anwer: mean is $^7/_{12}$; variants is $^{43}/_{720}$; mode is $^2/_3$

MODERN STUDIES

A1. Robin Cook
A2. Additional Member System
A3. The government transfers money to individuals
A4. The elderly
Q5. Thabo Mbeki
Q6. Hong Kong
A7. Japanese Americans
A8. Norway
A9. Poland, Hungary and Czech Republic
A10. Non Governmental Organisation

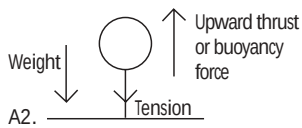
PHYSICS

A1.



(a) $V_x=32\cos 30^\circ = 27.7 ms^{-1}$
(b) $v=s/t$ so $t=s/v + 58/27.7 + 2.1s$

A2.



(a) $W = mg = 580x9.8 = 5684N$
Upthrust + (Weight+Tension) = 5684+250
=5963N
(b) $F_{unb}=ma$
(Thrust-Weight)=ma
5934-5684=580a
$a+0.43_{ms}^{-1}$
A3. $P_1=2.0x10^5Pa$; $P_2=2.3x10^5Pa$; $T_1=273K$; $T_2=?$
$P_1/T_1=P_2/T_2$
$2.0x10^5/273=2.3x10^5/T_2$
$T_{2=}314K$
A4.(a) $W=9v=(1.6x10^{-19})x(22x10^3)=3.52x10^{-15}J$
(b) $W=^1/_2mv^2 3.52x10^{-15}=^1/_2(9.11x10^{-31})v^2 v=8.8x10^7 ms^{-1}$
A5. Place a connection lead across the terminals of the cell
A6. White light is split up into a spectrum of colour. Different colours, which have different wavelengths, diffract by different amounts according to $d\sin\theta=n\lambda$
A7.(a) $I=P/V = 140/32 = 4.4A$
(b) When light shines on the p-n junction in the photodiode, a voltage is produced
A8. $D=E/m$, $m=E/D=16/400=0.04kg$
Q9. Radon gas, building materials, cosmic rays from the sun
Q10. An alpha particle (gamma might also be emitted)

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