AQA

General Certificate of Education (A-level)
June 2011

General Studies A   **GENA4**

(Specification 2760)

Unit 4: Science and Society (A2)

Final

Mark Scheme

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all examiners participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for standardisation each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, examiners encounter unusual answers which have not been raised they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Unit 4   (A2 Science and Society)

INTRODUCTION

The nationally agreed assessment objectives in the QCA Subject Criteria for General Studies are:

AO1   Demonstrate relevant knowledge and understanding applied to a range of issues, using skills from different disciplines.

AO2   Marshal evidence and draw conclusions: select, interpret, evaluate and integrate information, data, concepts and opinions.

AO3   Demonstrate understanding of different types of knowledge, appreciating their strengths and limitations.

AO4   Communicate clearly and accurately in a concise, logical and relevant way.

- The mark scheme will allocate a number or distribution of marks for some, or all, of the above objectives for each question according to the nature of the question and what it is intended to test.

- In most cases mark schemes for individual questions are based on *levels* which indicate different qualities that might be anticipated in the candidates' responses. The levels take into account a candidate's knowledge, understanding, arguments, evaluation and communication skills as appropriate.

- Examiners are required to assign each of the candidates' responses to the most appropriate level according to **its overall quality**, then allocate a single mark within the level. When deciding upon a mark in a level examiners should bear in mind the relative weightings of AOs (see below). For example, in Section B more weight should be given to AOs 1 and 2 than to AOs 3 and 4.

- *Indicative content* is provided as a guide for examiners. It is not intended to be exhaustive and other valid points must be credited. Candidates do not have to cover all points mentioned to reach the highest level.

- A response which bears no relevance to the question should be awarded no marks.

Distribution of marks across the questions and assessment objectives for this unit

Question Numbers		Q1	Q2	Q3	Q4	AO marks for Sec. A	AO marks for Sec. B	AO marks for A + B
Assessment Objectives	**AO1**	2	2	3	3	10	8	18
	AO2	6	4	4	4	18	7	25
	AO3	1	4	2	2	9	5	14
	AO4	2	2	2	2	8	5	13
Total marks per Question		11	12	11	11	45	25	70

Level of response	Mark range	Criteria and descriptors for Assessment Objectives 1 – 4
LEVEL 3	10 – 11 (12)	**Good response to question** Good to comprehensive knowledge and understanding demonstrating overall grasp of the range and nature of issues (AO1). Capacity to interpret evidence and sustained ability to present relevant arguments, analysis and exemplification, focusing on the main points of the question (AO2). Some understanding of different types of knowledge, with some appreciation of their limitation in seeking to reach a reasoned and logical conclusion (AO3). Ability to communicate clearly and accurately in a fluent and organised manner (AO4).
LEVEL 2	5 – 9	**Reasonable attempt to answer question** Modest to quite good knowledge and understanding demonstrating some grasp of the nature of some key issues (AO1). Moderate range of arguments, analysis and exemplification covering some of the main points of the questions (AO2). Limited understanding of different types of knowledge but some ability to work towards a conclusion (AO3). Mostly clear and accurate communication and organisation (AO4)
LEVEL 1	1 – 4	**Limited response to question** Restricted / narrow knowledge and understanding of key issues (AO1). Simple, perhaps mostly unexplained points – or very narrow range – with limited interpretation or analysis and exemplification AO2. Lacking in understanding of different types of knowledge with little or no evidence of ability to work towards a conclusion (AO3). Variable levels of communication and organisation (AO4).
LEVEL 0	0	**No valid response or relevance to the question.**

SECTION A

01   Using the data and other information in Source A consider why politicians and health professionals need to be concerned about the trends revealed by Figures 1 to 6.

(11 marks)

- There are six separate figures in Source A, each providing data / comments which might be used to show why politicians and health professionals need to be concerned about the trends indicated by the data. *Answers, at each level, should be based on the interpretation of data / comments in Source A.*

- Level 1 answers may be very brief / narrow and / or have a tendency to re-write the data / comments descriptively and possibly in some detail but saying little about the need for politicians and health professionals to be concerned.

- Level 2 answers are likely to cover at least 3 of the Figures in Source A, perhaps with a combination of some descriptive writing and some analytical comment in the context of using the data to demonstrate why politicians / health professionals may be concerned about trends shown in the data.

- Level 3 answers will use data and information from at least 5 of the 6 Figures in Source A with clear and relevant use of the data to demonstrate clearly why politicians and health professionals need to be concerned about the trends shown in the data and leading to a brief, but recognisable, conclusion.

Indicative content

- Figure 1 **Bar graph of obese and overweight adults**
- Figure 2 **Key facts on obesity, physical activity and diet**
- Figure 3 **Top out-of-school meals**
- Figure 4 **Danger in kids' packed lunch**
- Figure 5 **Reasons for non-participation in active sport**
- Figure 6 **Implications of treating the obesity epidemic**

- Levels of obesity in the UK are quite high especially among males. *How can this best be tackled? Childhood obesity will eventually lead to associated adult illnesses. Children as health service priorities?*

- Physical activity increasing among men and, to a lesser extent, women but plenty of people not participating in active sport. *Need for sport promotion programmes / improved and accessible facilities. Need to modify lifestyle and eating habits.*

- Looking at snacks preferred by children out of school *the most popular are food and drink which are usually high in sugar and / or fat.*

- Leeds University research findings published in 2010 shows that only 1% of primary school childrens' lunch boxes meet nutritional standards set by the government in 2008. *Indicative of the problems faced by the government / local councils in their efforts to improve the nutritional standards of school meals when so many children favour less nutritious alternatives.*

- Reasons why people do not participate in active sports dominated by 'health not good' enough and, to a lesser extent, 'not really interested' and 'difficult to find the time'. *On what grounds is health not good enough? Action that can be taken.*

- Significant costs of obesity in terms of early deaths, lost working days, health costs to NHS, economic costs. *Shortened life expectancy and significant costs of treating obesity-related illnesses (e.g. cardio-vascular problems and type 2 diabetes).*

Conclusion

Politicians are responsible for the strategic operation of the NHS and, in consultation with health trusts and health professionals for the setting of national priorities which might also extend to health education. There are clearly significant cost implications and the problem of obesity is increasing rapidly.

Previous initiatives, promoting sport, exercise and healthy eating have made an impact but many people remain resistant or at least indifferent to the promptings of politicians and health professionals (much along the lines mentioned in Source F). Many of the consequences of obesity are long-term. It may be a matter of personal responsibility and personal choice. The cost, though is both personal in terms of reduced life expectancy for the obese and overweight, and an ever-growing one to the Exchequer.

Any other valid point from Source A should be credited.
Not all points need to be mentioned to gain full marks.

02 **Using evidence from Sources B and C examine the potential difficulties faced in limiting the consumption of junk food by young people.**

(12 marks)

- Level 1 answers are likely to be very brief, or written in a mainly descriptive (and / or general / insufficiently relevant) fashion about limiting junk food consumption with very limited to the reference to the content of the two sources.

- Level 2 answers should show some limited analysis and demonstrate some ability to understand some of the obstacles to limit the consumption of junk food by young people.

- Level 3 answers should provide clear and informed analysis and the ability to understand a range of obstacles to limit the consumption of junk food by young people leading to a brief, but recognisable, conclusion.

Source B indicative content

- Practical difficulties of limiting lunchtime student access to junk food via shops close to schools.

- Desire to buy foods rich in sugar and starch by many young people.

- Criticisms of efforts to restrict individual freedom of choice and accusations of Orwellian tactics and nanny-statism.

- Many people not fully persuaded by healthy school meal alternatives pioneered by celebrity chef Jamie Oliver especially if such provision is inadequately funded.

Source C indicative content

- Significant marketing / advertising pressures promote junk food.

- Food industry too slow to react to pressures to promote healthier foods.

- Production goals too often geared to short-termism, market share and profit.

- Schools / government need to take greater responsibility for health education.

Conclusion

Junk food is undoubtedly popular and it is frequently heavily promoted and readily available.

Young people may not be fully aware of the health risks of a diet containing too much sugar and saturated fat or may feel that any health problems are likely to be long term – ignoring the rise in childhood obesity.

Some schools have enjoyed remarkable success with their healthy eating options but many haven't and often have a poor image among young people. Young people are reluctant to be 'nagged' about anything, including diet, and do not react positively to what they consider to be unreasonable restrictions imposed on them by schools. In the circumstances, it is not difficult to see why improvements in the diets of young people are difficult to secure.

Any other valid point from Sources B and C should be credited.

Not all points need to be mentioned to gain full marks.

03 **Using evidence from Source D, and your own knowledge, consider the success of initiatives to increase participation of young people in sport and to use sport to raise their self-esteem.**

(11 marks)

- Level 1 answers might write in brief and / or general terms about greater participation in sport among young people or effects on their self-esteem. Alternatively, there may be a longer answer with few relevant points.

- Level 2 answers are likely to contain some limited analysis relating to the participation of young people in sport and its impact on their self-esteem. At the higher levels, evidence will be drawn from both Source D and the candidate's own knowledge.

- Level 3 answers are likely to demonstrate a clear and informed understanding, exploration and analysis relating to the participation of young people in sport and its impact on their self-esteem, leading to a brief, but recognisable, conclusion. Evidence will be drawn from both Source D and the candidate's own knowledge.

Source D indicative content

Gibson & Boseley refer to:

- Rise of more informal pursuits such as cycling and jogging.

- Move from more organised to 'turn up and play' activities.

- Slow progress towards reaching government targets to get more people playing sport.

- Role of government investment in sports participation.

- Extent to which the 2012 Olympics will become a catalyst to encourage more participants.

Dame Kelly Holmes is concerned about the:

- Lack of female role models in sport despite the success of a number of females in sport.

- Difficulties in raising self-esteem among girls – uncool, unattractive conditions etc.

- Need for more women in senior sport leadership roles.

- Discrimination in the media coverage of women's sport relative to men's.

But she praises:

- Schools that have made more imaginative sports provision.

Possible points drawn from a candidate's own knowledge

- Much may depend on local initiatives, facilities, funding etc.

- Traditional attitudes about sport and gender may be difficult to break down.

- Initiatives may not be well funded / publicised or financed over a longer term.

- Raising self-esteem depends on more than participation / success in sport.

- Competitive sport emphasises winning which may be an obstacle to some.

Conclusion

School sport has undoubtedly changed in recent years with more alternatives available and A levels / degree studies in PE / sports science. More people participate in sport and, particularly, exercise through gyms and jogging. However, a few key sports – mostly male – still dominate, PE / sport lacks academic status and pressures on curriculum time are as great as ever.

Kelly Holmes (athletics) and of Claire Taylor (cricket), Victoria Pendleton (cycling), Rebecca Adlington (swimming) and Beth Tweddle (gymnastics) have enjoyed great success in recent times but there is still only limited media coverage of women in sport and it remains to be seen how far the self-esteem of females in particular has been raised. Similarly there are a great many people who spend most of their time on more sedentary pursuits.

Any other valid points from Source D or own knowledge should be credited.

Not all points need to be mentioned to gain full marks.

04 **Compare and contrast the views of the authors of Sources E and F on the value of exercise and careful dieting.**

(11 marks)

- Level 1 answers are likely to rely more on description / narrative and a brief / generalised approach identifying only a few issues connected with the views of the two authors on the value of workouts and dieting. Alternatively, candidates may produce a longer but insufficiently relevant answer.

- Level 2 answers will use the views of the authors of both sources, although perhaps not evenly, to make some comparisons and contrasts between their views on the value of workouts and careful dieting.

- Level 3 responses will do this in a more developed and evaluative way using both sources and providing more detailed and sustained comparisons and contrasts, leading to a brief but identifiable conclusion.

Source E (Dan Roberts) indicative content

- Good reasons in terms of improved physical and mental health to exercise.

- Those who exercise should not be put off by distorted and sensationalist reporting of research findings.

- Those wishing to lose weight should combine both exercise and diet.

- Programmes have to be approached consistently and with some knowledge if desired outcomes are going to be achieved.

- Roberts appears to write in an informed way quoting research studies.

Source F (Dr Max Pemberton) indicative content

- He is critical about dietary 'kill-joys' and 'humourless nutritionists'– perhaps reflecting the laissez faire position of his newspaper.

- Draws attention to what he calls 'a deep-seated need to demonise selected groups' (e.g. people who are overweight).

- Points to the dangers of excessive dieting (e.g. Kate Moss).

- Pemberton is a doctor but believes that 'the job of doctors – and nutritionists – isn't to stand in judgment on other people's lives' and that people should make their own judgments if they are aware of the risks.

- Pemberton writes in an anecdotal manner and his view is likely to be some distance from the views of many of his medical colleagues.

- Tongue-in-cheek? A reflection of the views of many people that individuals are able to make fewer and fewer decisions about their own lives? Selfish because of the costs to the NHS of treating weight-related illnesses?

Conclusion

Two different views – one pointing to the importance of diet and exercise and the inaccurate reporting of scientific studies and the other more subjective and quirky, cautioning against making outsiders of the overweight and unfit. Individual candidates will have to make up their own mind about where their sympathies might lie and where more objective analysis might take them.

Any other valid points from Sources E and F should be credited.
Not all points need to be mentioned to gain full marks.

GENERAL MARK SCHEME FOR SECTION B

Each essay should be awarded a single mark out of 25. In awarding the mark examiners should bear in mind the overall assessment objectives for General Studies (see INTRODUCTION) which the essay questions are intended to test in the following proportions.

AO1 – 8 marks   AO2 – 7 marks   AO3 – 5 marks   AO4 – 5 marks

Level of response	Mark range	Criteria and descriptors: knowledge, understanding, argument, evaluation, communication
LEVEL 4	20 – 25	**Good to very good treatment of the question:** Wide ranging and secure knowledge of the topic (AO1); good range of convincing and valid arguments and supporting illustrations, effective overall grasp and logically argued conclusion (AO2); good understanding and appreciation of material, nature of knowledge involved and related issues (AO3); well-structured, accurate and fluent expression (AO4).
LEVEL 3	13 – 19	**Fair to good response to the demands of the question:** Reasonable knowledge of topic (AO1); a range of arguments with some validity, appropriate illustrations with reasonable conclusions (AO2); some understanding and appreciation of material, nature of knowledge involved and related issues (AO3); mostly coherent structure and accuracy of expression (AO4).
LEVEL 2	6 – 12	**Limited to modest response to the demands of the question:** Limited / modest knowledge of topic (AO1); restricted range of arguments and illustrations but some awareness and attempt at conclusion (AO2); little understanding and appreciation of material, nature of knowledge involved and related issues (AO3); weak structure and variable quality / accuracy of expression (AO4).
LEVEL 1	1 – 5	**Inadequate attempt to deal with the question:** Very limited knowledge of topic (AO1); little or no justification or illustration, no overall grasp or coherence (AO2); inadequate understanding and appreciation of material, nature of knowledge involved and related issues (AO3); little or no structure / frequent expression (AO4).
LEVEL 0	0	**No valid response or relevance to the question.**

- Section B questions are set in two related parts.
- Candidates need to answer both parts to gain access to the higher mark levels but need not do so in equal measures.
- To that extent, although following the above guidelines, and awarding one final mark, examiners may award up to 19 / 25 (maximum for Level 3) marks to candidates who have produced a particularly good answer to one part of the question (plus some credit for a much shorter / weaker answer to the other part) instead of seeking to divide the marks equally between the two parts.

SECTION B

05 **'The concept of social class is based on envy and prejudice. Class no longer has any relevance to life in contemporary Britain.'**

To what extent do you agree that people's perception of social class is based on 'envy and prejudice'?

Discuss the claim that social class 'no longer has any relevance to life in contemporary Britain.'

The term was first used in the early 19th century and the most influential early proponent of the theory of social class was Karl Marx. Until the 1980s, the concept of social class – which was often used to link economic roles, social identity and political affiliation was widely seen as central to sociological discussion and analysis although the term is often used imprecisely. It has been a far less fashionable topic in recent years. Recent prime ministers such as John Major and Tony Blair were both dismissive and New Labour have not been identified with the concept. However, class re-emerged as a topic in the long build-up to the 2010 general election and following spending cuts and price rises into 2010/2011.

Indicative content (To what extent……….)

- Social class is often identified with inequality and this may have little to do with envy and prejudice as the causes of which are widely debated. There is much recent social science research on links between social class and inequality.

- Inequality is an uncomfortable topic. Inequality of opportunity, inequality of outcome or both?

- Popular right wing argument that those seeking to raise class issues are either communists, or consumed by envy and prejudice, or both.

- Social class is very difficult to define objectively. For statistical purposes, the Registrar General relies heavily on links between class and occupational grouping. Alternatively, factors such as home ownership and education can be taken into account. In some ways social class evolves in the same way that society evolves.

- Personal values and political beliefs often cloud the debate on the basis of social class. An objective stance may be difficult to achieve. The 'envy and prejudice' argument tends to be simplistic and is one sometimes put forward by those who, for whatever reason, belong to the higher social classes.

Indicative content for (Discuss the claim……….)

- Increasingly questioned whether class has any real relevance in a diverse and pluralistic society.

- Equally, there is still plenty of evidence that many British people still identify themselves as being members of a class but there is also social mobility and class boundaries are not fixed.

- Also evidence that class and education are linked. (Current Conservative prime minister and his chancellor both attended the same fee-paying and highly prestigious independent school {Eton}.) Chief Executive of the Training & Development Agency claimed that: 'The performance of a school and a child is highly linked to social class.' (Sept 2008) 8-9% of young people are privately educated but take up 50% of places at top universities.

- The Milburn report *Unleashing Aspiration* (2009) demonstrated that the top jobs (75% of judges, 70% finance directors, 32% of MPs) are dominated by privately educated people although not all would agree that private education perpetuates the class system. The Social Mobility Commission, set up by the Lib Democrats, reported in 2009, argued that the poorest children had little chance of becoming lawyers, doctors, senior civil servants and financiers.

- It can be argued that social class has a large impact on how children are raised, schooled and on friendship patterns.

Candidates do not have to cover all the points to gain marks in the highest level.

Conclusion

Social class cannot be defined with any great precision and both proponents and critics of the theory may lack objectivity. Being a member of a different social class can involve a number of fundamental and more peripheral differences in culture, background and lifestyle. Often, it may be difficult to say whether an individual belongs to one class or another. The theory may offer some useful sociological pointers but there is no universally agreed definition and it can lead to over-simplification in analysis and may need to be used with caution.

06   **'I don't care about being accused of self-interest. I don't want those wind turbines near to where I live. They are ugly, noisy, a threat to birds and are a blot on the landscape. As far as generating electricity is concerned there are plenty of more effective options'.**

      How far do you think that the resident quoted above may have a legitimate case against the environmental impact of wind turbines?

      Discuss the claim that there are 'more effective options' for the generation of electricity.

Indicative content (How far do you think……….)

- It would be helpful to explore the concept of what might be meant by 'a legitimate case'.

- Whenever plans are announced, and planning permission sought for wind turbines opinion is often sharply divided. It is an emotive subject, especially for local residents whose lives may, in their view, be adversely affected by the building of wind farms. Subjective, perhaps, but may still be legitimate.

- Opponents are often labelled as NIMBYs – local residents who are primarily self-interested and, while not necessarily opposing wind farms, are really saying but 'Not In My Back Yard'. May lead to stereotyping / labelling.

- The presence of a nearby wind farm can have adverse effects on surrounding property prices.

- The construction of larger wind farms in particular requires good access roads, deep foundations, possible land clearance and a transformer / power lines for each turbine. This can be very disruptive.

- Opinions about the visual impact of turbines is also often divided. Some people are neutral but some feel that they are visually intrusive and unsightly.

- Spinning blades and the sound of gearboxes can be noisy for those who live close to them, if the noise exceeds 38 decibels, and may present a threat to migratory birds although this may, relatively speaking, be smaller than some claim.

- Some residents may be seeking to preserve a way of life that they have become accustomed to, irrespective of wider needs / interests.

Indicative content (Discuss the claim that……….)

- What qualifies as 'more effective' can be seen in a number of ways. These might include: consistency of generation; reliability; ratio of set-up costs to amount of energy generated; environmental impact; level of carbon emissions; established / new technology; amount of visual / noise impact in relation to amount of energy generated.

- It's only in the last 20 years that the conversion of wind power into a renewable source of energy has become an option for feeding power into the National Grid. Many regard it as a longer-term option.

- Currently, wind power produces only a small proportion of electricity generated in the UK and is obviously dependent on the wind blowing sufficiently (but not too forcefully) and often. With demand for electricity growing our life-style demands supply 24 hours a day, 7 days a week.

- Wind energy is a 'clean' form of renewable energy which is largely 'free' after the initial investment but the electricity produced cannot be stored and feeding it into the National Grid can be complex and costly.

- However, it is a crucial part of the national / international drive for more renewable and sustainable energy sources.

- For those less enthusiastic about wind power there are other options and some consideration might be given by what is meant by 'more effective'.

- Some advocate wave power but an effective generator has yet to be trialled.

- Solar panels might be used but with obvious limitations.

- Tidal power has potential but may lead to loss of access to fishing grounds and navigation.

- Extension of nuclear power generation has both supporters and opponents.

- There is some support for clean coal-fired power stations although the technology remains unproven.

- Geothermal power (power from hot rocks in volcanic areas by taking water down faults in the Earth's surface and heating it) has some advocates but the potential danger may rule it out.

- All electricity generation comes at a cost of one kind or another.

Candidates do not have to cover all points to gain marks in the highest level.

Conclusion

Dominated by European countries, wind farms are now a global phenomenon and are one of the fastest growing means of generating green electricity. In meteorological terms, the UK is better placed than many countries to harness wind power but the resource is significantly underused not least because of setting-up costs and local opposition. £1.7 billion has been earmarked for the biggest wind farm in UK waters – the London Array, off the Kent coast. Inevitably, the more developers seek permission to develop sites, the more opposition there will be. NIMBYism may hide many motives, not all of them necessarily selfish and narrow-minded.

Wind power remains a source of some potential but much investment has taken place in energy generation from fossil and nuclear sources which have a proven track record on a large scale. Environmental pressures may lead to more development of wave, tidal, solar and geothermal power but governments are reluctant to commit themselves because they fear voter reaction. Many people say they would prefer to use renewable energy but change on this scale comes at a cost which, especially at a time of economic uncertainty, many voters would be reluctant to pay. Short-termism and self-interest dominates their thinking as it does that of many politicians.

07 **'Controversies such as the Measles, Mumps and Rubella (MMR) case, accusations of using research evidence of climate change selectively, inaccurate weather forecasting and the extent to which those funding scientific research might influence its findings make it more and more difficult to trust a scientist.'**

To what extent do you agree that it is 'more and more difficult to trust a scientist'?

Discuss the view that the aims of scientists and politicians may often conflict.

Indicative content (To what extent……….)

- A dangerous generalisation which should be treated as such. There is a great danger in forming generalisations from what are likely to be isolated cases

- Often we tend to have (or have had) an image of scientists as almost 'unworldly' men and women (mostly men) who are objective in all things and who prize rigorous scientific method above all else.

- MMR: Dr Andrew Wakefield wrote a research paper that was published in *The Lancet* in 1998 suggesting a link between the MMR vaccine and autism. Vaccination rates fell significantly and more children contracted the illnesses. The findings of Dr Wakefield's research were subsequently discredited by a series of epidemiological studies.

- Climate change has become a much more controversial area with accusations (as in the University of East Anglia Climatic Research Unit leaked email case in 2009) that data may have been used selectively / interpreted inaccurately by some scientists to support the 'orthodox view' about the link between global warming and human activity. Accusations that climate change data had been 'rigged' were rejected by an independent enquiry.

- Inaccurate weather forecasting: The Meteorological Office, based in Exeter, provides a range of services. After wet summers in 2008 and 2009 and cold winters in 2008-09 and 2009-10, the Met's long term forecasting has been criticised. The Met points to misinterpretation of its data by the media and the improvement in its short-term forecasting but it is unlikely to continue with longer-term forecasting after recent criticism.

- The science associated with GM foods is often criticised in the UK although not necessarily from a point of view securely based on science and this is an area where there is likely to be considerable distortion by some sections of the press.

- Research is often expensive and funding has always been a problematic area especially, but certainly not exclusively, in pharmaceuticals. In an uncertain economic situation, scientists need to preserve their impartiality and dependence, even though they might become more dependent on private, rather than public, financial sources. Evidence to suggest that scientists do not conduct their work with rigour and effective peer review is, to say the least, extremely limited.

- It's unlikely that most people have detailed and specialist knowledge of science. We trust doctors although we understand little about medicine. Perhaps in a similar way we trust the expertise of scientists. When they, or doctors, appear to act in a way that lacks integrity we are usually shocked by what appears to be a breakdown in trust – yet these may be very isolated cases.

Indicative content (Discuss the view……….)

- It's a long time since C P Snow explored the 'two cultures' but, 50 years on, it remains a widely discussed idea. (Snow, a trained scientist and novelist, argued in a 1959 Cambridge lecture that the breakdown of cultures between scientists and those in the humanities was a major hindrance to solving world problems.**)**

- Very few scientists become MPs and there is often a dearth of scientific knowledge and understanding in parliament. (The chair of the Science & Technology Select Committee was Lib Dem MP Phil Willis, a scientifically-trained former headteacher, but who did not stand in the 2010 general election.)

- Scientists and politicians might be seeking different goals. The former might work in a specialised area where the responsibilities are primarily / wholly scientific. Politicians have wider responsibilities. This can certainly be a cause of conflict.

- Politicians need scientists to produce the scientific knowledge which politicians (and, one suspects, many civil servants) lack but which is essential to policy developments in key areas of science, medicine and technology.

- Much research funding for science comes from the government especially in the form of the Higher Education Funding Council. Arguments about the adequacy of such funding are unlikely to be resolved.

- Scientists need adequate resources for research and politicians need to ensure that resources are available for its application. Resources, though, are not finite.

- The classification of 'recreational' drugs may be a significant area of conflict between scientists and politicians. Scientists might take a view based on the outcome of research. Politicians might feel the need to be more pragmatic, taking into account public reaction (say to the classification of drugs) and the likely effect on votes. The two are not necessarily mutually exclusive.

- There was a very public fall out in November 2009 between the Labour Home Secretary, Alan Johnson, and the government's Scientific Advisory Council on Illegal Drugs involving the sacking of the chairman, Professor David Nutt, and the subsequent resignation of several council members. Professor Nutt had claimed that dangers posed by alcohol and tobacco were more serious than those posed by cannabis and ecstasy and criticised the government's decision to re-classify cannabis as a Class B drug. The council, set up in 1971, eventually carried on.

Conclusion

Terence Blacker, writing in *The Independent* on 25 November 2009, headlined his article 'Science must never be political or emotional' and – in doing so – helped to perpetuate the myth about scientists who should be untainted by politics or personal feelings.

Yet Blacker is right in warning scientists not to put the passion of their beliefs before the integrity of their empirical research especially as it is 'a weird fact of scholarly life that the more elevated the area of research, the lower the tactics of those involved' and that 'a university is a bitchy, rivalrous place'.

The most precious asset for scientists is their specialist knowledge – something widely sought by rivals, politicians and the media. Consequently, according to Blacker, the correspondence of some scientists 'reads more like the work of activists than academics' thus leading their research in a particular direction. Yet, ultimately, the careers and reputations are based on intellectual integrity. This is what they must safeguard to ensure and maintain public trust and we must beware of how their work is reported.

08 **'There must come a point when a decision has to be taken about continued British involvement in Afghanistan. The Taliban and terrorists must be opposed but the cost of this opposition – politically, economically and in human terms – is becoming too great.'**

Explain why British troops were sent to take part in the conflict in Afghanistan.

Discuss the case against maintaining a British military presence in Afghanistan.

Indicative content (Explain why British troops……….)

- Support for the US and the 'special relationship' – part of an American invasion in the wake of the 9/11 attacks. The goal was to strike against the Taliban who had given safe haven to al-Qaida.

- Part of NATO umbrella coalition (involving troops from over 40 countries) obligations.

- To try to encourage a stable and democratic government in a particularly volatile part of the world. (The UK is the third largest development aid donor to Afghanistan after the US and the European Commission.)

- To try to contain and reduce the strength of al-Qaida and global terrorism.

- To reduce the amount of opiates in Britain, and elsewhere, stemming from the poppy fields of Afghanistan.

Indicative content (Discuss the case against..........)

- The war (10 000 British troops plus support personnel) has proved extremely costly in terms of funding military support.

- It has brought great personal tragedy, on a rising scale, to many individuals and families.

- Very little progress has been made in the conflict-riven Helmand province, where many British troops are based, since the latest war began and it will take a long time to train pro-government Afghanistan national army and police.

- The Afghan government led by President Hamid Karzai does not command widespread support and there are allegations of corruption and incompetence.

- The terms of engagement are largely dominated by the Taliban who are fearless, very resourceful and better-co-ordinated, using guerrilla-style 'asymmetric tactics' e.g. suicide bombers and IEDs (improvised explosive devices).

- It is partly a religious war and the Taliban are determined, hard-line fundamentalists committed to an extremist view of Islam.

- Cultural differences between east and west are often insurmountable.

- Reconstruction within Afghanistan can only be undertaken on a long-term, long-commitment basis and aid-delivery and military goals need to be de-linked.

- History is against any country that seeks to intervene in Afghanistan.

BUT

- Victory for the Taliban / warlords would be a major boost for drug runners and terrorists.

- Civil war could result from withdrawal, further de-stabilizing Afghanistan.

- Pakistan, part of the Commonwealth and a non-stable state with nuclear power, and where many of the Taliban high-command are based, would become even more vulnerable.

- Uncomfortable though the reality of war is we have to accept that there will be loss of life and financial implications.

- But it is taking a long time to train an efficient Afghan army and police force.

Any other valid points relating to any part of the question should be credited.

Candidates do not have to cover all points to gain marks in the highest level.

Conclusion

Historically, the signs are not good. The British have tried three times between 1839 and 1919 to subjugate Afghanistan. The most basic lesson, which appears to be difficult to learn, is that Afghanistan always beats its invaders. It was summed up by an Afghan tribal leader in 1809 who is quoted as saying: 'We are content with discord, we are content with alarms, we are content with blood. But we will never be content with a master.' (Stephen Tanner, *Military History,* Aug-Sept 2009) and Afghanistan remains a country which eschews any form of centralised government due to divided global loyalties. Most countries with troops in Afghanistan plan to withdraw them by 2015.

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