



*Rewarding Learning*

**ADVANCED SUBSIDIARY (AS)  
General Certificate of Education**

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## **Economics**

**Assessment Unit AS 1**

*assessing*

**Markets and Market Failure**

**[SEC11]**

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## **Assessment**

**MARK  
SCHEME**

Users are strongly recommended to study the General Marking Instructions at the beginning. Particular attention to guidance on levels of response, making calculations and quality of written communication will make the mark scheme easier to understand and apply.

## General Marking Instructions

This mark scheme is intended to ensure that the AS examinations are marked consistently and fairly. The mark scheme provides examiners with an indication of the nature and range of candidate responses likely to be worthy of credit. It also sets out the criteria which they should apply in allocating marks to candidates' responses. The mark scheme should be read in conjunction with these general marking instructions which apply to all papers.

### Quality of candidates' responses

In marking the examination papers, examiners will be looking for a quality of response reflecting the level of maturity which may reasonably be expected of 17-year-olds, which is the age at which the majority of candidates sit their AS examinations.

### Flexibility in marking

The mark scheme is not intended to be totally prescriptive. For many questions, there may be a number of equally legitimate responses and different methods by which the candidates may achieve good marks. No mark scheme can cover all the answers which candidates may produce. In the event of unanticipated answers, examiners are expected to use their professional judgement to assess the validity of answers. If an answer is particularly problematic, then examiners should seek the guidance of the Supervising Examiner for the paper concerned.

### Positive marking

Examiners are encouraged to be positive in their marking, giving appropriate credit for valid responses rather than penalising candidates for errors or omissions. Examiners should make use of the whole of the available mark range for any particular question and be prepared to award full marks for a response which is as good as might reasonably be expected for 17-year-old candidates. Conversely, marks should only be awarded for valid responses and not given for an attempt which is completely incorrect or inappropriate.

### Types of mark schemes

Mark schemes for questions which require candidates to respond in extended written form are marked on the basis of levels of response which take account of the quality of written communication. These questions are indicated on the cover of the examination paper. Other questions which require only short answers are marked on a point for point basis with marks awarded for each valid piece of information provided. Some material may be included in the mark scheme for the benefit of teachers and pupils preparing for future examinations. Candidates are not expected to have provided this information. Such material is printed in the mark scheme in italics.

### Levels of response

Questions requiring candidates to respond in extended writing are marked in terms of levels of response. In deciding which level of response to award, examiners should look for the "best fit" bearing in mind that weakness in one area may be compensated for by strength in another. In deciding which mark within a particular level to award to any response, examiners are expected to use their professional judgement. The following guidance is provided to assist examiners.

**Threshold performance:** Response which just merits inclusion in the level and should be awarded a mark at or near the bottom of the range.

**Intermediate performance:** Response which clearly merits inclusion in the level and should be awarded a mark at or near the middle of the range.

**High performance:** Response which fully satisfies the level description and should be awarded a mark at or near the top of the range.

### Marking calculations

In marking answers involving calculations, examiners should apply the “own figure rule” so that candidates are not penalised more than once for a computational error.

For example, a question might require candidates to calculate the impact of a fall in a consumer’s income from £300 to £270 per week on consumption of magazines, given that their income elasticity of demand for magazines is +0.6. They are told that the person buys 100 magazines a year to begin with, and the answer is worth 4 marks.

A bare answer that consumption falls to 94 magazines per year earns 4 marks. A bare answer that consumption falls to 82 – or any other number of – magazines per year is worth 0 marks. However, workings may show that the candidate knows that

$$\text{percentage change in Qd magazines/percentage change in income} = +0.6.$$

They then mistakenly record the change in income as –30%, [the minus is important], but calculate accurately on that basis that Qd must have changed by –18%.

In these circumstances the candidate has performed several elements of a process correctly, and failure to express change in income properly should only be penalised once.

The “own-figure” rule when that figure is visible entitles that AS candidate to a mark of [3] for saying that consumption would fall by 18 magazines per year, even though that’s incorrect.

### Quality of written communication

Quality of written communication is taken into account in assessing candidates’ responses to all questions that require them to respond in extended written form. These questions are marked on the basis of levels of response. The description for each level of response includes reference to the quality of written communication. Where the quality of candidates’ economics is not matched by the quality of written communication, marks awarded will not exceed the maximum for Level 2 in questions which have three levels of response or the maximum for Level 3 in those which have four levels of response.

For conciseness, quality of written communication is distinguished within levels of response as follows:

Level 1: Quality of written communication is limited.

Level 2: Quality of written communication is satisfactory.

Level 3: Quality of written communication is of a high standard.

In interpreting these level descriptions, examiners should refer to the more detailed guidance provided below:

**Level 1 (Limited):** The candidate makes only a limited attempt to select and use an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

**Level 2 (Satisfactory):** The candidate makes a reasonable attempt to select and use an appropriate form and style of writing, supported with appropriate use of diagrams as required. Relevant material is organised with some clarity and coherence. There is some use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning evident.

**Level 3 (High Standard):** The candidate successfully selects and uses an appropriate form and style of writing, supported with the effective use of diagrams where appropriate. Relevant material is organised with a high degree of clarity and coherence. There is widespread use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a sufficiently high standard to make meaning clear.

- 1 Capital goods are goods that are used to make consumer goods and services. Consumer goods on the other hand are products which satisfy the needs and wants of consumers directly. When the Skoda Octavia is used as a taxi it is a capital good as it is being used to provide a consumer service. However, when it is used as a family car it is a consumer good.

For clear explanation of difference between capital and consumer good [2]

For appropriate examples in each case [2]

This question is worth 4 marks and the candidate essentially has to do 4 things to gain these marks.

1. Explain what is meant by a capital good (1). The key to this mark is in explaining that capital goods are used in the production of other goods and services.
2. Give an example of how a Skoda Octavia car can be used as a capital good (1) – award credit for a taxi or any other relevant example – but no credit is awarded for an example of some other good being used as a capital good. For example, someone saying that a digger is a capital good would not be awarded this mark as the example is not relevant to the question about a Skoda Octavia.
3. Explain what is meant by a consumer good (1).
4. Give an example of how a Skoda car could be considered a consumer good (1) – again the example of a consumer good must be related to a Skoda car to gain this mark.

4

- 2 (a) Income is a flow concept which refers to the amount of money an individual earns over a given period of time and includes incomes from wages, salaries, interest payments, dividend payments and rents.

Wealth on the other hand is a stock concept which refers to the value of assets an individual has at any particular time. These assets can be in the form of property, shares, artwork and private pensions.

For clear explanation of difference between income and wealth [2]

For appropriate examples in each case [2]

A candidate only needs to give one example in each case to gain the 2 application marks. Two or more examples of income with no example of wealth (or vice versa) would gain only 1 mark. A candidate who gives two or more examples in each case but where one example is incorrect will not lose any of the application marks. This candidate could still gain full marks so long as they clearly and accurately explained the difference between income and wealth. However, it is often the case that errors in the examples reflect an imperfect explanation of the difference in income and wealth and hence the candidate may only be awarded 1 of the available 2 marks for the explanation.

- (b)
- It is clear from the table that both income and wealth are unevenly distributed.
  - However income is more evenly distributed than wealth
  - The highest quintile group have more income than the bottom 3 quintiles added together. With the top quintile having 9 times more income than the bottom quintile group

- The highest quintile group have more wealth than the other 4 added together. With the top quintile having more than 15 times the wealth of the bottom 2 quintiles added together.

Up to [2] for narrative comparison of the distribution of income and wealth  
 The 2 marks available here are for simply stating what the chart shows, namely that while both income and wealth are unevenly distributed, wealth is much more unevenly distributed than income. Candidates are not asked why this might be the case and hence no marks are awarded for superfluous information regardless of how accurate or interesting it may seem.

Up to [2] for appropriate use of data  
 The 2 marks available here are for selecting appropriate points of comparison. The comparisons given in the mark scheme provide an idea of what a candidate might do to gain the 2 marks but individual candidates may choose different comparison points which may be worthy of credit.

- 3** Behavioural economists argue that an individual's ability to act rationally is limited (or bounded) by the information available, the cognitive ability of their minds and the finite amount of time available to make decisions. This inability of the human mind to process all the information available, leads to what behavioural economists have termed cognitive biases. If consumers were behaving rationally they would spend the same time and effort in both cases. However, consumers often relate the saving available to the initial price. The £5 represents 20% of the price of the jumper, but only 1% of the price of the leather jacket. Therefore, an irrational consumer may consider that spending the extra time and effort is not worth it in the case of the leather jacket as it represents only a 1% saving. This is often referred to as the relative price bias.

Up to [2] for reference to bounded rationally- even without use of the specific term  
 Up to [2] for reference to relative price bias – even without use of the specific term

Up to [2] for any other valid explanation

Constrained max [4] marks

A candidate who provides a general explanation as to why consumers might act irrationally would gain 2 marks. As the mark scheme states a candidate does not have to use the term bounded rationality to gain these marks.

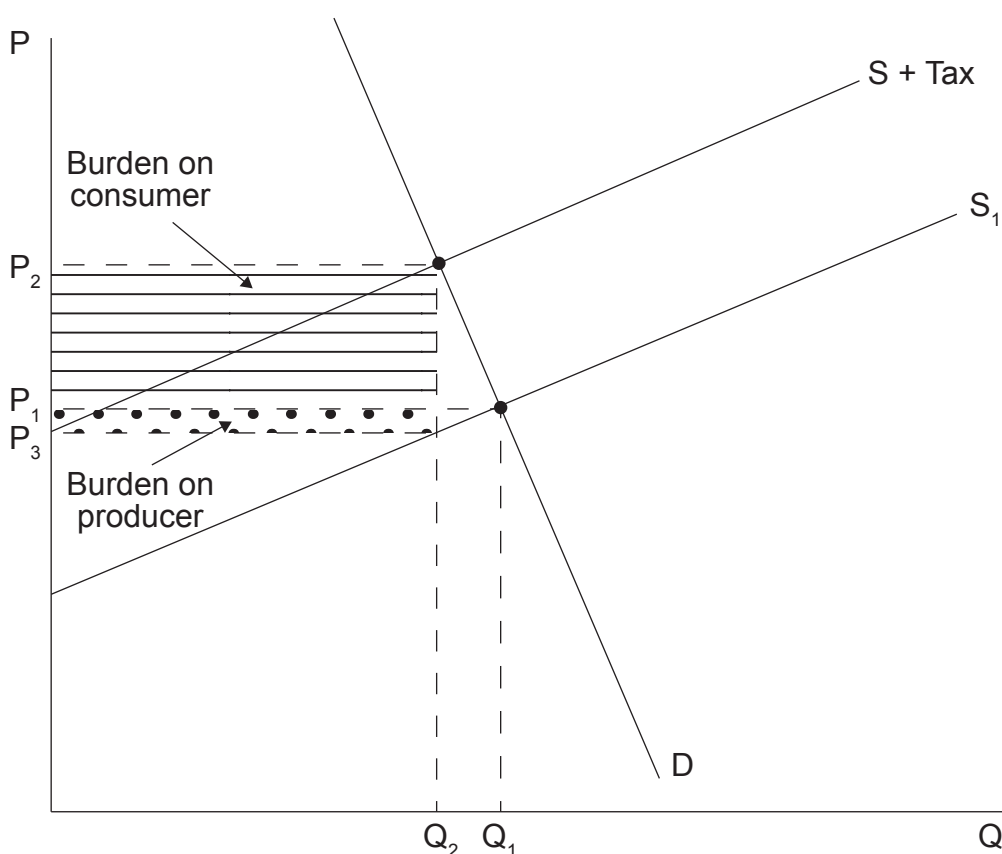
To gain 4 marks a candidate would need to provide a clear explanation of the origins of the irrational behaviour in this particular case. Again, no specific reference to the term relative price bias is required to gain full marks so long as the explanation is clear.

AVAILABLE  
MARKS

8

4

- 4 (a) PED of restaurant meals =  $-2.4\%/5\% = -0.48$   
 For calculation or presentation of PED of restaurant meals as  $-0.48$  [3]  
 Up to [2] for correct methodology but error in calculation or presentation  
 A candidate who produces the correct answer without any evidence of how they arrived at that answer would receive the full 3 marks. An incorrect answer without any evidence of how it was arrived at would receive 0 marks even if an examiner could guess at where the error was made.  
 A candidate who provided evidence of the correct method but clearly made an inputting error would receive 2 marks. A candidate who for example presented the answer as  $-0.48\%$  would also receive 2 marks.  
 A candidate who arrived at an answer of  $-2.08$  based on a calculation of PED = % change in P/% change in QD ( $5\%/2.4\%$ ) would receive 1 mark.
- (b) According to the data the PED for alcohol is  $-0.1$  making the demand for alcohol price inelastic. An indirect tax will shift the supply curve to the left from  $S_1$  to  $S_2$ . The relative price inelasticity of demand means that all other things being equal the burden of this indirect tax is likely to fall mainly on the consumer. This is shown on the diagram below.



**Issues and areas for analysis include:**

- Calculation or presentation of PED
- Reference to shifting supply curve
- Distinction between a specific or ad valorem tax
- Appropriate examples
- Appropriate diagram

**Level 1 ([1]–[2])**

A basic response provides an answer that demonstrates:

- Basic knowledge and understanding of relevant terminology, concepts, principles and models.

- Basic application of relevant economic principles, terminology, concepts and models to the context of the question; limited use of relevant data, and diagrams where relevant, to address the issues in the question.
- Basic analysis; may lack focus.
- A low quality of written communication.

At this level a candidate may simply state that the consumer will bear most of the burden but will not provide any analysis (diagrammatic or otherwise) to support this assertion. Alternatively, they may attempt to draw a diagram but this diagram will contain significant errors.

### Level 2 ([3]–[4])

A good response provides an answer that demonstrates:

- Good knowledge and understanding of relevant terminology, concepts, principles and models.
- Good application of relevant economic principles, terminology, concepts and models to the context of the question; where relevant, data and diagrams are used reasonably to address the issues in the question.
- Good analysis in relation to the impact on economic agents; analysis may not be developed fully or may have some inaccuracy at times.
- A good quality of written communication.

At this level a candidate might draw a reasonably accurate diagram which shows supply shifting to the left and highlights the area representing the burden on consumers. However, no explanation is given as to why the consumer is more heavily affected. Alternatively, the candidate may illustrate the imposition of an ad valorem tax rather than a specific tax.

### Level 3 ([5]–[6])

An excellent response provides an answer that demonstrates:

- Excellent accurate knowledge and understanding of relevant terminology, concepts, principles and models.
- Excellent application of relevant economic principles, terminology, concepts and models to the context of the question; where relevant, data and diagrams are used effectively to address the issues in the question.
- Well focused, relevant analysis used accurately and appropriately in relation to the impact on economic agents.
- An excellent quality of written communication.

At this level the candidate will provide a clear and precise explanation of why the consumer is likely to pay most and this will be illustrated on a clear and accurate diagram. [6]

**Section Total**

**AVAILABLE  
MARKS**

9

**25**



- 5 (a)
- Executive pay has grown much more quickly than that of the average employee.
  - Executive pay has grown by 434% since 2000
  - Average employee pay has increased by 48% since 2000
  - Average employee pay has increased at a fairly consistent rate over the period (approximately 2–3% per year)
  - The rate of growth of executive pay has been less consistent, and there have been significant fluctuations – fell by approximately 4% between 2002 and 2004, and grew only modestly (approx. 6.8%) between 2006–2008 compared to the rapid growth (of approx. 44%) between 2008 and 2010

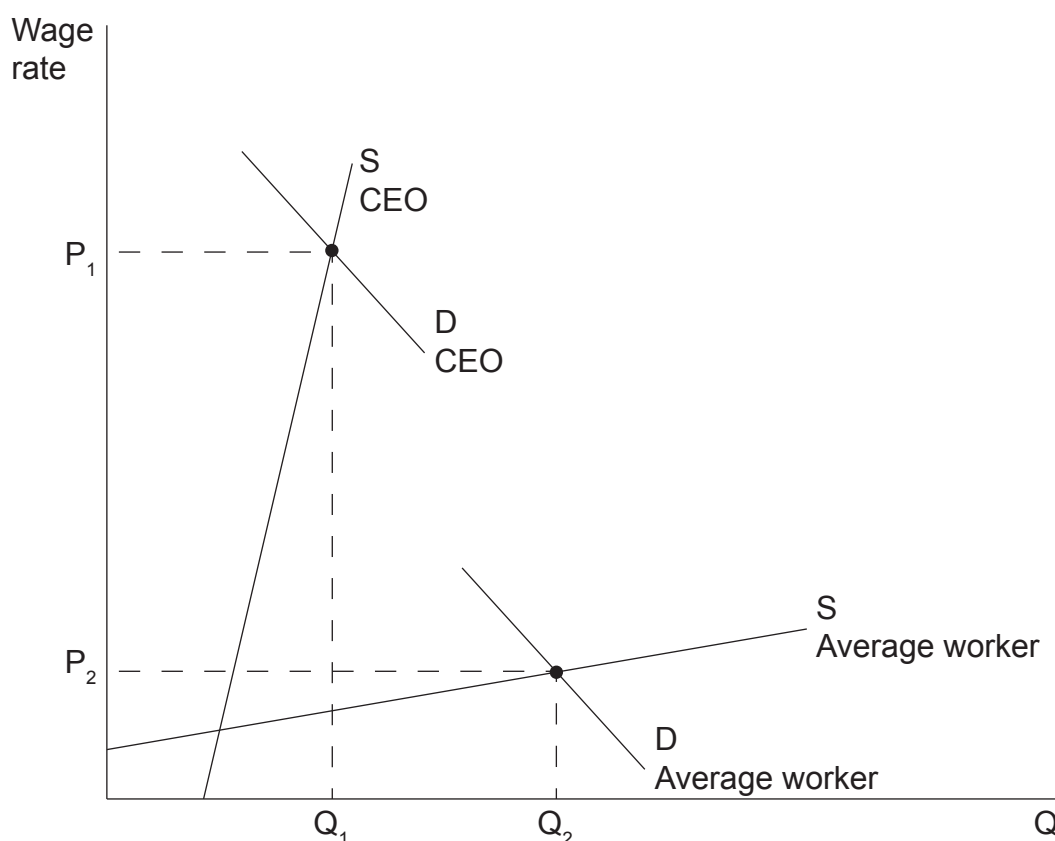
Up to [2] for narrative comparison of the growth in executive pay with that of the average full time employee since 2000

A candidate who scores 1–2 marks may simply state that executive pay has increased faster than average employee (1 mark) and may state that executive pay has increased from 100 to 534 while average employee has increased from 100 to 148 (1 mark).

Up to [3] for appropriate use of data

To gain marks for the appropriate use of data candidates need to manipulate the data in some way to make effective comparisons. For example, the candidate may compare the growth in percentage terms, or state that CEO pay has increased approximately 10 times faster than the pay of an average worker. This alone would be worthy of 2 of the 3 available marks. To gain all 3 marks the candidate would need two separate points of comparison. For example, they might also explain that CEO pay has fluctuated much more significantly than the pay of the average worker. [5]

(b) In a free market wages are determined solely by the forces of demand and supply. The market theory of wages states that wage differentials are due to differences in demand and supply conditions for different occupations. For example, the wages of a CEO are higher than the wages of the average worker because the supply of individuals with the skills to manage a large company is much more limited than the supply of workers with the skill to do more typical jobs. Equally the demand for a highly experienced CEO is likely to be much higher than the demand for a typical worker. This combination of high demand and limited supply will lead to a higher equilibrium wage for highly skilled workers such as CEOs. This is shown on the diagram below.



**Issues, analysis and areas for discussion include:**

- Reference to demand and supply conditions and elasticities for different occupations
- Reference to how equilibrium wage is determined
- Reference to the skills levels of workers
- Reference to human capital differences: – some jobs require lengthy training and education, and this is reflected in higher wages.
- Appropriate examples
- Appropriate diagrams

**Level 1 ([1]–[2])**

A basic response provides an answer that demonstrates:

- Basic knowledge and understanding of relevant terminology, concepts, principles and models.
- Basic application of relevant economic principles, terminology, concepts and models to the context of the question; limited use of relevant data, and diagrams where relevant, to address the issues in the question.
- Basic analysis; may lack focus.
- A low quality of written communication.

At this level a candidate may simply state that CEOs get paid more because they are in limited supply or have more skills but may not provide any analysis (diagrammatic or otherwise) to support this assertion. Alternatively, they may attempt to draw a diagram but this diagram will contain significant errors.

### Level 2 ([3]–[4])

A good response provides an answer that demonstrates:

- Good knowledge and understanding of relevant terminology, concepts, principles and models.
- Good application of relevant economic principles, terminology, concepts and models to the context of the question; where relevant, data and diagrams are used reasonably to address the issues in the question.
- Good analysis in relation to the impact on economic agents; analysis may not be developed fully or may have some inaccuracy at times.
- A good quality of written communication.

At this level a candidate might draw a reasonably accurate diagram which compares the demand and supply conditions of CEOs and average workers. Reference will be made to relative elasticities, however the explanation may be unclear or incomplete. Alternatively, a candidate may provide a fairly detailed explanation of the differential in CEO pay and average worker pay, but the diagram will be incomplete or contain errors.

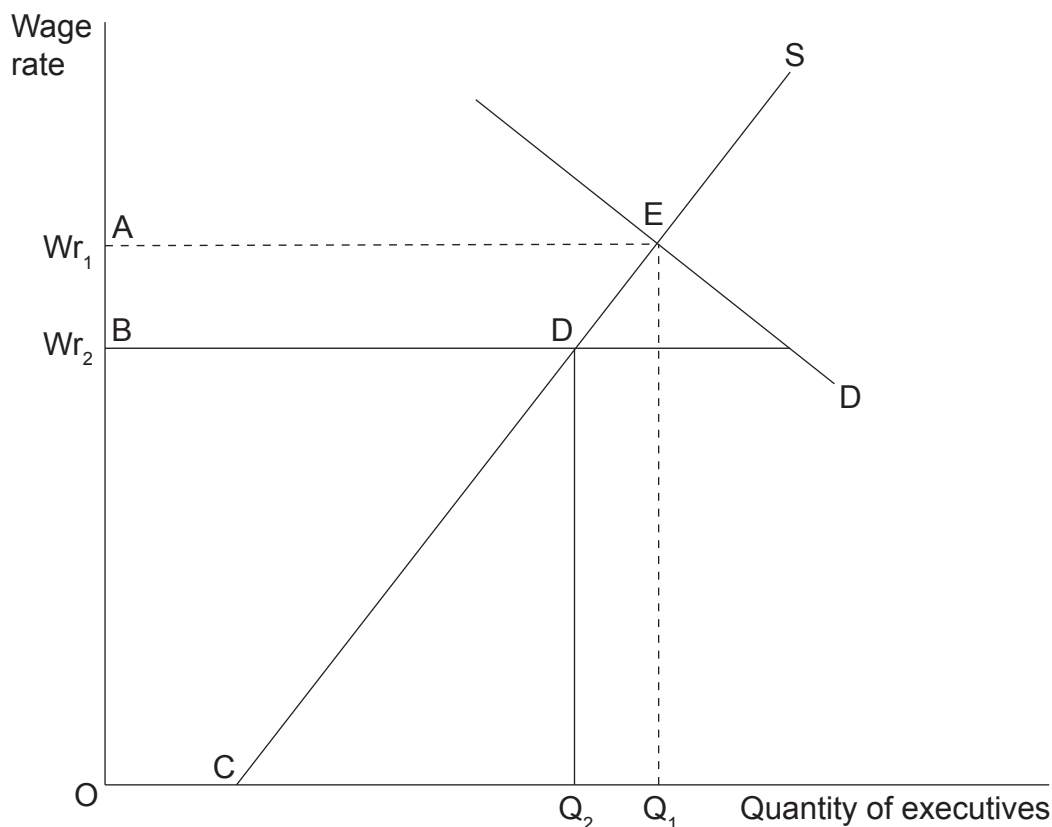
### Level 3 ([5]–[6])

An excellent response provides an answer that demonstrates:

- Excellent accurate knowledge and understanding of relevant terminology, concepts, principles and models.
- Excellent application of relevant economic principles, terminology, concepts and models to the context of the question; where relevant, data and diagrams are used effectively to address the issues in the question.
- Well focused, relevant analysis used accurately and appropriately in relation to the impact on economic agents.
- An excellent quality of written communication.

At this level the candidate will provide a clear and precise explanation of the wage differentials between company bosses and average full time employees, and this will be supported by clear and accurately labelled diagrams. [6]

- (c) Economic rent is defined as any payment to a factor of production over and above the minimum necessary to secure its services. A maximum wage is a legally enforced wage ceiling above which wages cannot go. Prior to the introduction of a maximum wage (which is below the equilibrium wage of highly paid workers) economic rent is equal to the area above the labour supply curve and below the equilibrium wage rate  $wr_1$ . This is shown as the area AOCE on the diagram below. After the introduction of the maximum wage, the wage paid to workers decreases to  $wr_2$ , as a result economic rent decreases to area BOCD.



Obliviously a maximum wage set above the equilibrium will have no impact on the labour market and therefore no impact on economic rent.

**Issues, analysis and areas for discussion include:**

- Definition of economic rent
- Reference to transfer earnings
- Reference to factors which impact on the wage elasticity of supply of labour and the resultant impact on economic rent
- Reference to factors which impact on the demand for labour
- Reference to the importance of the gap between the market equilibrium wage and the maximum wage in determining the impact on economic rent
- Appropriate diagram
- Appropriate examples

**Level 1 ([1]–[3])**

A basic response provides an answer that demonstrates:

- Basic knowledge and understanding of relevant terminology, concepts, principles and models.
- Basic application of relevant economic principles, terminology, concepts and models to the context of the question; limited use of relevant data, and diagrams where relevant, to address the issues in the question.
- Basic analysis; may lack focus.
- A low quality of written communication.

At this level a candidate may demonstrate some knowledge of the concepts of economic rent and maximum wages and may state that the economic rent of CEOs is likely to decrease. However, the candidate may not provide any analysis (diagrammatic or otherwise) to support this analysis. Alternatively, they may attempt to draw a diagram but this diagram will contain significant errors (for example the area of economic rent incorrectly identified).

**Level 2 ([4]–[6])**

A good response provides an answer that demonstrates:

- Good knowledge and understanding of relevant terminology, concepts, principles and models.
- Good application of relevant economic principles, terminology, concepts and models to the context of the question; where relevant, data and diagrams are used reasonably to address the issues in the question.
- Good analysis in relation to the impact on economic agents; analysis may not be developed fully or may have some inaccuracy at times.
- A good quality of written communication.

At this level a candidate will demonstrate clear knowledge and understanding of the concepts of economic rent and maximum wages. They will state that the economic rent of CEOs is likely to decrease and may provide some analysis to support this assertion, however this analysis may be unclear or incomplete. If a diagram is drawn it may be incomplete or contain some errors.

**Level 3 ([7]–[9])**

An excellent response provides an answer that demonstrates:

- Excellent accurate knowledge and understanding of relevant terminology, concepts, principles and models.
- Excellent application of relevant economic principles, terminology, concepts and models to the context of the question; where relevant, data and diagrams are used effectively to address the issues in the question.
- Excellent, relevant analysis used accurately and appropriately in relation to the impact on economic agents.
- An excellent quality of written communication.

At this level the candidate will provide a clear and precise analysis of the impact of a maximum wage on the economic rent of CEOs. While there is no stated requirement to draw a diagram, candidates at this level will typically support their analysis with a clear and accurately labelled diagram. [9]

- (d) Those who support a national maximum wage argue that it will reduce wage inequality by reducing the pay of those at the top of the pay spectrum. They argue that this will help motivate workers on lower pay (as research suggests that motivation levels are determined more by relative rates of pay than by absolute rates) and as a result this can actually increase productivity. However, those who oppose a maximum wage argue that it is difficult to implement effectively and can make it difficult for UK firms to attract the best talent. They argue that there are more effective ways of reducing wage inequality including increasing the national minimum wage, changing the tax and benefit system to reduce the difference in take home pay and forcing companies to publish their pay ratios.

**Issues, analysis and areas for discussion include:**

- Impact of a maximum wage on recruitment
- Difficulty in implementing a maximum wage when much of a CEO's remuneration is in long term incentive schemes such as share issues or non-cash benefits such as pension contributions, free accommodation, education and travel etc
- Impact of pay inequality on motivation and productivity
- Impact of pay inequality on company reputation and image

- Reference to alternative measures to reduce pay inequality
  - Changes to tax and benefit system to reduce inequality in final income
  - Increasing shareholder power to allow shareholder to vote down pay awards
  - Government oversight of remuneration committees
  - Allowing average employees to sit on remuneration committees
  - Regulations to force companies to publish their pay ratios
- Reference to market failure
- Reference to regulatory capture or government failure
- Appropriate examples
- Appropriate diagrams

### Level 1 ([1]–[5])

A basic response provides an answer that demonstrates:

- Basic knowledge and understanding of relevant terminology, concepts, principles and models.
- Basic application of relevant economic principles, terminology, concepts, and models to the context of the question. Some limited use of data, and diagrams where relevant, in relation to the context of the question.
- Basic analysis; analysis may lack focus.
- Judgement(s) unsupported.
- A low quality of written communication.

An answer at this level is likely to show some understanding of the difficulties associated with introducing a national maximum wage, however it is likely to depend heavily on the source material for inspiration. The answer may well be one-sided and provide no real evaluation of the view that a maximum wage is the least effective policy that the government could introduce to reduce pay inequality in the UK.

### Level 2 ([6]–[10])

A good response provides an answer that demonstrates:

- Good knowledge and understanding of relevant terminology, concepts, principles and models.
- Good application of relevant economic principles, terminology, concepts, and models to the context of the question; where relevant, some reasonable use of data and diagrams in relation to the context of the question.
- Good analysis in relation to the impact on economic agents; analysis may not be developed fully or may have inaccuracies at times.
- Reasonable judgement(s) building on analysis.
- A good quality of written communication.

An answer at this level is likely to show clear knowledge and understanding of the difficulties associated with introducing a national maximum wage and its impact on different economic agents. Clear use will typically be made of the information in the source material but it will be supplemented with additional points or further development. An attempt will be made to critically examine the view, possibly through a discussion of alternative policies to reduce pay inequality, or through the discussion of the potential positive impacts of a maximum wage on motivation and productivity. This examination however may lack scope or depth.

**Level 3 ([11]–[15])**

An excellent response provides an answer that demonstrates:

- Excellent accurate knowledge and understanding of relevant terminology, concepts, principles and models.
- Excellent application of relevant economic principles, terminology, concepts and models to the context of the question; where relevant, data and diagrams are used effectively to address the issues in the question.
- Well focused, relevant analysis used accurately and appropriately in relation to the impact on economic agents.
- Informed judgements that directly address the issues in the question and reach clear conclusions built on analysis.
- An excellent quality of written communication.

At this level the candidate will provide a clear and detailed examination of the advantages and disadvantages associated with introducing a national maximum wage and its impact on different economic agents. The candidate will typically discuss the potential impacts of a maximum wage on areas such as recruitment, motivation, productivity and company reputation, though other relevant areas may be explored. The candidate is also likely to discuss a range of alternative policies the government could introduce to reduce pay inequality and compare the effectiveness of these policies to a national maximum wage. [15]

**AVAILABLE  
MARKS**

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- 6 The production of gold has raised a number of environmental concerns primarily regarding the negative externalities associated with using cyanide to extract the gold from the ore. There are however a number of policies that the government could use to reduce the environmental impact of gold production. These include the introduction of tough regulations and the imposition of fines for polluting firms. Alternative policies include environmental taxation, the use of tradable pollution permits, the provision of subsidies to encourage environmentally friendly production and the extension of property rights.

Each of these policies has its strengths and weaknesses- however most economists would argue that the best policy is one which would internalise the externality and make the polluter pay the full social cost of production.

**Issues, analysis and areas for discussion include:**

- Explanation of negative externalities , socially optimal production levels and market failure
- Reference to the use of environmental taxes and their drawbacks
  - Tax avoidance
  - Laffer curve effects
- Reference to the use of environmental regulation and its drawbacks
  - Regulatory capture
  - Cost of regulation to firm and government
- Reference to use of tradable permits and their drawbacks
  - Administration cost
  - Difficulty setting appropriate pollution levels
- Reference to use of environmental subsidies and their drawbacks
  - Opportunity cost of subsidies
  - Impact on government finances
- Impact of each policy on market price
- Impact of each policy on efficiency
- Reference to government failure
- Appropriate examples
- Appropriate diagrams – appropriate diagrams may include but are not limited to:
  - Diagrams illustrating how negative production externalities cause the free market equilibrium to differ from the socially optimal equilibrium.
  - Diagram showing the impact of an environmental tax or pollution permits on areas such as output, prices, efficiency and community surplus
  - Laffer curve diagram
  - Diagram showing the impact of an environmental subsidy on areas such as output, prices, efficiency and community surplus

**Level 1 ([1]–[7])**

A basic response provides an answer that demonstrates:

- Basic knowledge and understanding of relevant terminology, concepts, principles and models.
- Basic application of relevant economic principles, terminology, concepts, and models to the context of the question; some limited use of data, and diagrams where relevant, in relation to the context of the question.
- Basic analysis; analysis may lack focus.



- Judgement(s) unsupported.
- A low quality of written communication.

An answer at this level is likely to show some understanding of negative externalities and the policies governments could use to reduce these. Reference may be made to one or two policies that could be used to reduce the negative externalities however they will typically lack analysis or application to gold mining. Evaluation of these policies will be very limited. Attempts may be made to draw diagrams; however, they are likely to contain significant errors. Alternatively, a candidate may provide a reasonable analysis of a number of potential policies; however, no attempt will be made to compare these policies or make any judgements about their relative effectiveness.

### **Level 2 ([8]–[14])**

A good response provides an answer that demonstrates:

- Good knowledge and understanding of relevant terminology, concepts, principles and models.
- Good application of relevant economic principles, terminology, concepts, and models to the context of the question; some reasonable use of data, and diagrams where relevant, in relation to the context of the question.
- Good analysis in relation to the impact on economic agents; analysis may not be developed fully or may have inaccuracies at times.
- Reasonable judgement(s) building on analysis.
- A good quality of written communication.

An answer at this level is likely to show clear knowledge and understanding of negative externalities and the policies governments could use to reduce these. The candidate may discuss a number of policies that could be used to reduce the negative externalities and there will be some attempt to apply these policies to gold mining. There will be a clear and well-structured analysis of the impact of these policies on economic agents and some attempt will be made to evaluate their relative strengths and weaknesses, though this evaluation may lack depth or scope. Candidates in this level are likely to use diagrams to support their analysis, though these diagrams may be incomplete or contain minor errors.

### **Level 3 ([15]–[20])**

An excellent response provides an answer that demonstrates:

- Excellent accurate knowledge and understanding of relevant terminology, concepts, principles and models.
- Excellent application of relevant economic principles, terminology, concepts and models to the context of the question; where relevant, data and diagrams are used effectively to address the issues in the question.
- Well focused, relevant analysis used accurately and appropriately in relation to the impact on economic agents.
- Informed judgements that directly address the issues in the question and reach clear conclusions built on analysis.
- An excellent quality of written communication.

At this level the candidate will provide a clear and detailed evaluation of a wide range of policies that government could use to reduce the negative externalities associated with gold production. The candidate will provide a detailed comparison of these policies and may refer to many of the issues mentioned in the mark scheme. At this level the candidate will make clear judgements about the relative effectiveness of each policy. It is likely that clear and accurate diagrams will be used effectively to support the evaluation. [20]

- 7 Economic theory suggests that it is useful for firms to have knowledge of PED (or indeed any elasticity information) when making decisions with regard to price changes. It is also argued that governments should look carefully at elasticity estimates when considering changes to indirect taxes and subsidies or when considering the imposition of price controls. However, the usefulness of elasticity estimates is often overstated. Critics argue that the figures can be misleading for a number of reasons.

The first weakness in elasticity calculations is that they are calculated using past data. Critics point out that just because a 10% fall in price brought about a 20% increase in quantity demanded in the past does not mean that a further 10% decrease in price will bring about a further 20% increase in quantity demanded. They argue that historical data can be an imperfect indicator of future trends.

While this is undoubtedly a valid observation, the argument can be countered somewhat by stating that using past data to make predictions about future trends is much better than making simply random predictions based on hunches or gut feelings.

The second criticism of PED estimates is that some goods are sold to consumers at different prices from different outlets. Therefore, when the government is calculating for example, the PED of beer, wine or spirits, they will be forced to use an average price for each product which will clearly impact on the accuracy of the calculation or presentation.

Again there is some validity in this assertion, however it should be noted that each individual outlet could calculate its own PED based on its own price changes which would yield a more accurate result. In addition, the figure calculated by the government using average data will still be useful in a macro context.

The third criticism is that elasticity values, as calculated by the percentage change in quantity demanded divided by the percentage change in price equation will yield an average value of the price range selected. In practice PED will vary along the demand curve. The PED may therefore be different at different points between any two prices. So if price falls from £3 to £2.50, the PED may be different at £3, £2.75 and £2.50.

Again this is a valid criticism however it can be counteracted by pointing out that it is possible to calculate PED at each point on the demand curve through the use of a slightly different formula.

A fourth criticism of PED estimates is that the figures will vary directly and significantly with the time period over which they are measured. This means that the price elasticity of demand for a particular good may be inelastic in the short-run but elastic in the long-run. They argue that such a large range in the estimates make them practically useless as a tool to aid decision making.

Economists however argue that as long as the time frame for each estimate is clearly defined then knowing that PED will vary over time is actually an advantage rather than a weakness.

The final criticism of PED values is that when calculating them, economists use an assumption known as “ceteris paribus”, which means “all other things remain

unchanged". Therefore, if we calculate the PED to be - 4.0 we make the claim that it was the 10% increase in price that brought about the 40% decrease in quantity demanded. However, in reality some of the 40% decrease in the quantity demanded may have occurred for reasons other than the increase in price, such as a decrease in the real incomes of consumers or a change in the price of a substitute or complement. Those who criticise the use of elasticity values argue that it is impossible for economists to isolate the impact of the price change from the impact of the change in income or the change in the price of a related good.

Economists however will point out that they have developed a quite robust method for isolating the impact of one variable upon another. This technique, known as *regression analysis*, allows economists to hold all other things constant and analyse the direct impact of price changes on quantity demanded.

It is clear from the discussion above, that calculations and estimates of PED have a number of weaknesses, which means that using the figures to make predictions about what might happen in the future is fraught with difficulty. However, it should be noted that despite these problems, if PED estimates are used with caution and in conjunction with a range of other data, they can prove to be very useful to firms and governments.

#### **Issues, analysis and areas for discussion include:**

- Definition of PED and explanation of how it is calculated
- Reference to the use of past data in calculations
- Reference to the use of average prices in calculations
- Reference to the ceteris paribus assumption
- References to different calculation or presentation methods yielding different results
- Reference to the impact of the time frame on calculations
- Reference to the fact that even at the 2 extremes the calculations suggest that cigarettes are relatively inelastic
- Reference to the fact that cigarettes may be an exception in having such variance in PED estimates
- Appropriate examples
- Appropriate diagrams

#### **Level 1 ([1]–[7])**

A basic response provides an answer that demonstrates:

- Basic knowledge and understanding of relevant terminology, concepts, principles and models.
- Basic application of relevant economic principles, terminology, concepts, and models to the context of the question; some limited use of data, and diagrams where relevant, in relation to the context of the question.
- Basic analysis; analysis may lack focus.
- Judgement(s) unsupported.
- A low quality of written communication.

An answer at this level is likely to show some understanding of how price elasticity of demand is calculated and of some of the limitations associated with using PED estimates. The analysis of these limitations will typically lack depth and there may be limited application to the context of the question. Alternatively, the answer may be one-sided and provide no real evaluation of the view that attempts to measure PED are a waste of time and effort.

**Level 2 ([8]–[14])**

A good response provides an answer that demonstrates:

- Good knowledge and understanding of relevant terminology, concepts, principles and models.
- Good application of relevant economic principles, terminology, concepts, and models to the context of the question; some reasonable use of data, and diagrams where relevant, in relation to the context of the question.
- Good analysis in relation to the impact on economic agents; analysis may not be developed fully or may have inaccuracies at times.
- Reasonable judgement(s) building on analysis.
- A good quality of written communication.

An answer at this level is likely to show clear knowledge and understanding of how price elasticity of demand is calculated and of the limitations and difficulties associated with obtaining and using PED estimates. An attempt will be made to critically examine the view that attempts to measure PED are a waste of time and money possibly through a discussion of the benefits to firms and governments of having some estimate of PED, however inaccurate, or through a discussion of some of the actions an economist can take to improve the accuracy of the estimates. This examination however may lack scope or depth.

**Level 3 ([15]–[20])**

An excellent response provides an answer that demonstrates:

- Excellent accurate knowledge and understanding of relevant terminology, concepts, principles and models.
- Excellent application of relevant economic principles, terminology, concepts and models to the context of the question; where relevant, data and diagrams are used effectively to address the issues in the question.
- Well focused, relevant analysis used accurately and appropriately in relation to the impact on economic agents.
- Informed judgements that directly address the issues in the question and reach clear conclusions built on analysis.
- An excellent quality of written communication.

At this level the candidate will provide a clear and detailed evaluation of the view that attempts to measure PED are a waste of time and money. The candidate will provide a clear analysis of the limitations and difficulties associated with obtaining and using PED estimates but will balance this with a discussion of the actions an economist could take to mitigate these limitations. A candidate at this level will make judgements about the relative strength of each argument and may well make reference to the fact that even at the two extremes that estimates are not very far apart. Alternatively, a candidate at this level may make reference to the fact that variations in PED estimates for one product do not necessarily infer that all products will have such variance. [20]

**Total**

**AVAILABLE  
MARKS**

20

**80**