



**ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2023**

Economics

Assessment Unit AS 1

assessing

Markets and Market Failure

[SEC11]

MONDAY 15 MAY, MORNING

**MARK
SCHEME**

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.

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.

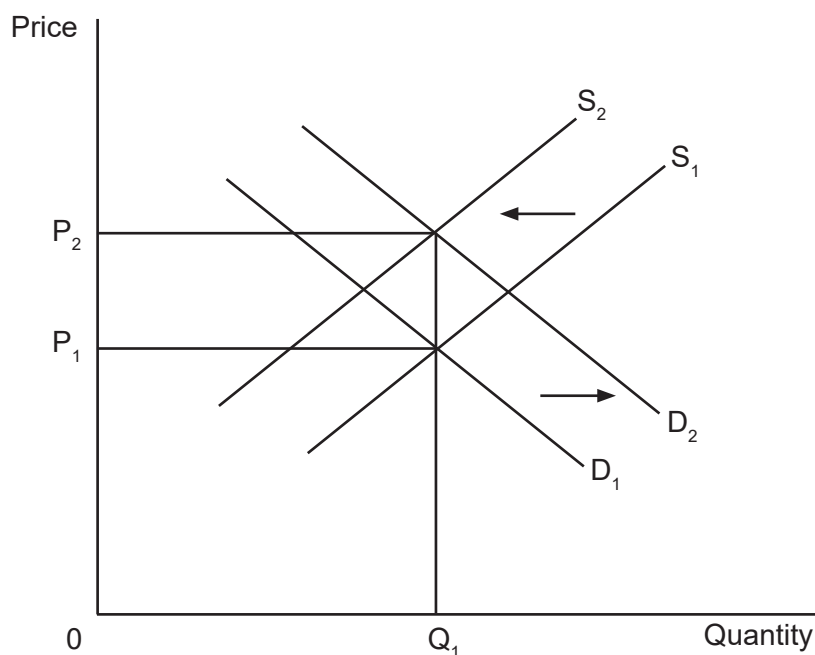
Level 2 (Satisfactory): The candidate makes a reasonable attempt to select and use an appropriate form and style of writing, supported with appropriate use of diagrams as required. Relevant material is organised with some clarity and coherence. There is some use of appropriate specialist vocabulary. 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.

		AVAILABLE MARKS
<p>1 For an explanation that a positive statement is one which can be proved or disproved with reference to facts [1]. For an explanation that a normative statement is an expression of opinion which cannot be proved or disproved with reference to facts [1]. For use of appropriate examples from the source [2].</p>	[4]	4
<p>2 (a) Tax revenue will be the tax per unit (£0.02) multiplied by the new equilibrium quantity traded (8 million sticks). This is $£0.02 \times 8,000,000 = £160,000$. Award [3] for correct answer. Award up to [2] for correct methodology but error in calculation or presentation.</p>	[3]	
<p>(b) Before the tax consumer surplus will have a value of £250,000 ($0.05 \times 10,000,000/2$). After the tax that value will fall to £160,000 ($0.04 \times 8,000,000/2$) a fall of £90,000. Award [4] for correct answer. Award up to [3] for correct methodology but error in calculation or presentation.</p>	[4]	7
<p>3 If Zoom increases its price by 5% the number of passengers carried by Fastbus will increase by 1.5% (percentage change in quantity demanded = $+0.3 \times 5 + 1.5$)</p> <p>Award up to [3] for correct methodology but error in calculation or presentation.</p>	[4]	4
<p>4 A public good is a good which is both non-rival and non-excludable. Once street lights are provided no one can be excluded from using them (non-excludable) and use by one person does not reduce the amount available for others to use (non-rival).</p> <p>[2] For definition of public good. [2] For application to street lights.</p>	[4]	4

- 5 As shown in the diagram below the price has risen as a result of a fall in supply and an increase in demand. The fall in supply was caused by China restricting exports. The increase in demand was caused by governments encouraging the use of electric vehicles which generates a derived demand for rare earth metals, and the increased real incomes in developing countries which has increased the demand for luxury goods such as mobile phones, which also use rare earth metals in their batteries.

The graph below is an example of an appropriate diagram:



Issues and areas for analysis include:

- Explanation of demand and supply.
- Reference to the demand for rare earth metals being derived from demand for electric vehicles and mobile phones
- Reference to elasticities of demand and supply.
- Influence of government policy on demand and supply - China restricting exports.
- 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.

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.

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.
- Excellent, relevant analysis used accurately and appropriately in relation to the impact on economic agents.
- An excellent quality of written communication. [6]

6

6 (a) Observations could include:

- Short haul flights create more greenhouse gas emissions than bus or train journeys.
- Short haul flights create 254 g of greenhouse gas emissions per passenger km travelled compared to 41 g for rail travel and 104 g for bus journeys.
- Short haul flights produce more than twice (144% more) the amount of greenhouse gas emissions per passenger km than bus journeys.
- Bus journeys produce approximately 41% of the greenhouse gas emissions per passenger km of short haul flights.
- Short haul flights produce more than six times (520% more) the amount of greenhouse gas emissions per passenger km than train journeys.
- Train journeys produce approximately 16% of the greenhouse gas emissions per passenger km of short haul flights

Up to [2] for basic comparison of emissions in absolute terms.

Up to [3] for appropriate manipulation of data.

[5]

- (b)** Income Elasticity of Demand (YED) measures the responsiveness of demand to a change in income. It is calculated by the formula.

$$YED = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in income}}$$
 The value of YED will determine how demand changes in response to a change in income. The data states that YED is 0.8 for short haul flights and 2.4 for long haul. For short haul flights a rise in income will lead to a slightly smaller percentage increase in demand for flights. Long haul flights are a luxury good so a rise in income will lead to a greater percentage increase in demand for flights. This is why as consumer incomes rise there will be 'rapid growth in passenger numbers'.

Issues and areas for analysis include:

- Definition/explanation of YED.
- Explanation of how YED is calculated.
- Reference to positive YED for both long-haul and short-haul flights.
- Appropriate examples.

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.

Level 2 ([3]–[4])

A good response provides an answer that demonstrates:

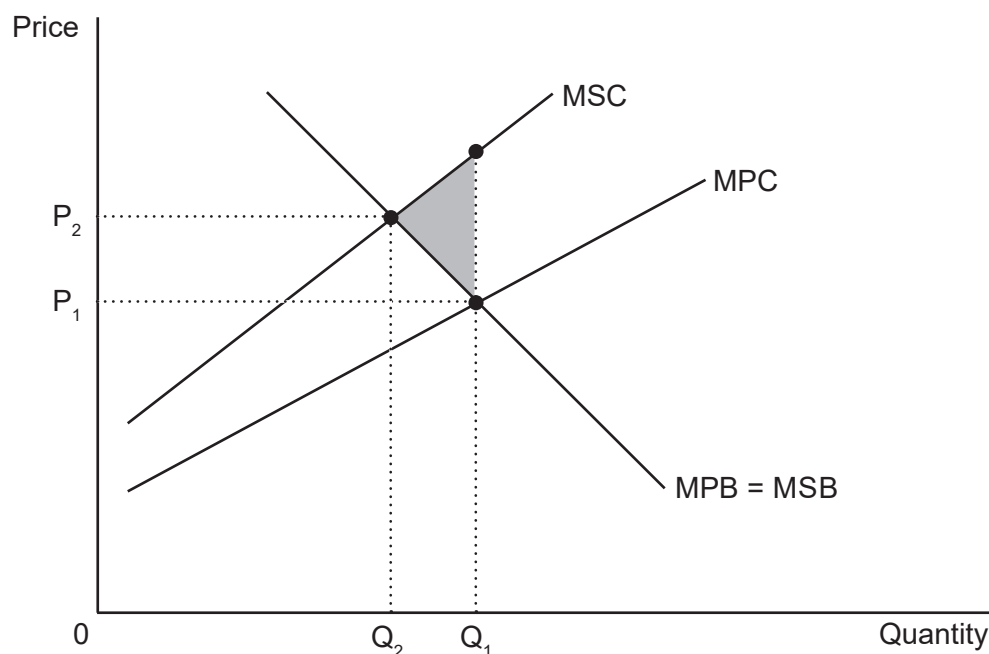
- Good knowledge and understanding of relevant terminology, concepts, principles and models.
- Good application of relevant economic principles, terminology, concepts and models to the context of the question; where relevant, data and diagrams are used reasonably to address the issues in the question.
- 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.

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.
- Excellent, relevant analysis used accurately and appropriately in relation to the impact on economic agents.
- An excellent quality of written communication. [6]

- (c) Airline flights generate significant external costs. These can include noise pollution near airports, particulates and, importantly, greenhouse gases which contribute to global warming. Whilst airlines will pay their private costs such as fuel and wages, these external costs will not be paid by consumers or producers but instead are met by third parties. For example, the global warming caused by emissions may lead to governments having to bolster flood defences. The impact of this can be seen in the diagram below.



The socially efficient level of output will be where $MSB = MSC$ which is Q_2 . However, as the free market does not take external costs into account output will be greater at Q_1 where $MPB = MPC$. This overproduction is market failure and leads to a welfare loss shown by the shaded area.

Issues, analysis and areas for discussion include:

- Definition/explanation of negative externalities/external costs.
- Reference to external costs associated with air travel.
- Reference to market failure.
- Distinction between free market equilibrium and socially optimal equilibrium.
- Appropriate diagram.
- Appropriate example.

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 to address the issues in the question.
- Basic analysis; may lack focus.
- A low quality of written communication.

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.

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. [9]

- (d) There are a range of policies the government could pursue to reduce greenhouse gas emissions from the airline industry. Governments could subject the industry to greater regulation specifying emission standards or regulating the number of flights. However, regulation will cost money and may be difficult to enforce. There is also the risk of regulatory capture rendering it ineffective. Taxes could be imposed to internalise the externality. The data states that the airline industry pays little tax, in particular there is no tax on fuel. A carbon tax on emissions could be introduced. If this was equal to the external cost, then output of the industry would fall to the socially efficient level. However, it can be difficult to calculate the exact value of the externality causing difficulty in calculating how much tax should be paid. For international flights there is a question of where the tax is paid.

A system of pollution permits could be used whereby airlines would have to buy permits for each tonne of carbon produced. If these permits were more expensive than the cost of reducing pollution that provides an incentive for airlines to reduce emissions. In part this arises from a problem in these schemes in judging the correct amount of permits to issue. Governments could try and encourage consumers to use less polluting forms of transport such as rail. This could be done by equalising tax treatment through imposing VAT on airline tickets and tax on aviation fuel. Less polluting forms of transport could also be subsidised. However alternative forms of transport may not always be appropriate and may be less convenient for consumers. Subsidies to other forms of transport involve an opportunity cost. Governments could subsidise the development of less polluting propulsion systems for aircraft such as hydrogen. However, this could be very expensive and involve a considerable opportunity cost.

Issues, analysis and areas for discussion include:

- Regulation.
- Use of Pigovian taxes – aimed at making the polluter pay.
- Emissions trading.
- Subsidies for alternatives.

- Use of appropriate example.
- Use of 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.

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.

Level 3 ([11]–[15])

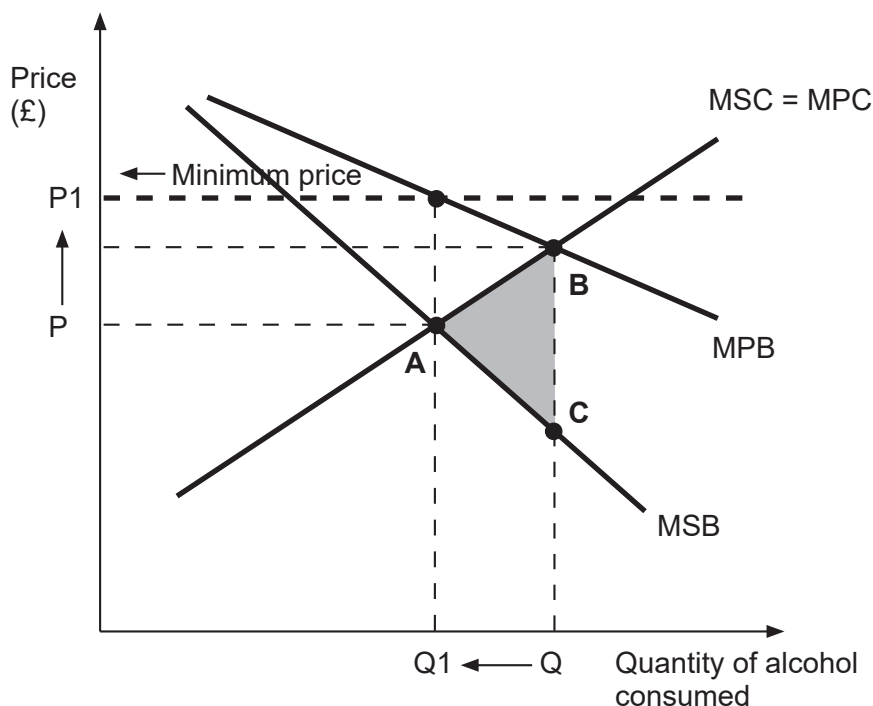
An excellent response provides an answer that demonstrates:

- 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.

[15]

35

7 Alcohol is viewed as a demerit good. Consumers may lack adequate information on the harm alcohol does to them and so overconsume it. In addition, alcohol carries considerable negative consumption externalities so Marginal Social Benefit is less than Marginal Private Benefit. As a consequence, the equilibrium quantity consumed will be greater than the socially efficient level of consumption leading to market failure. One way to deal with this is to implement a policy of a minimum price as has happened in Scotland. If the minimum price is correctly calculated it should reduce consumption to the socially efficient level. As can be seen in the diagram the introduction of a minimum price reduces consumption to Q_1 which is the socially efficient level.



A minimum price would help target promotions in bars and discounted sales in supermarkets which should help reduce binge drinking. However, it would also target those consumers who drink responsibly and do not generate significant external costs. Moreover, as the demand for alcohol is price inelastic it could be argued it may have a small impact on consumption.

Because of this the government may be better pursuing other policies to reduce consumption such as a complete ban, taxation, regulation or education. These policies will have advantages but also disadvantages and may lead to government failure. Alternatively, it could be argued that the government should not intervene and should simply let the market determine the equilibrium price and level of consumption.

Issues, analysis and areas for discussion include:

- Concept of a demerit good.
- Marginal social costs and marginal social benefit leading to socially efficient level of consumption.
- Information failure.
- A minimum price. Impact of a minimum price on consumption and community surplus.
- Drawbacks of a minimum price policy.
- Reference to alternative policies including taxation. Higher taxes can be

- placed on alcohol.
- A ban.
- Education. Consumers can be educated to the dangers of alcohol consumption.
- Regulation. Restrictions can be placed on the sale of alcohol. For example, pub and off licence opening hours could be reduced, the legal age to drink could be increased and the number of licenced establishments could be reduced.
- Reference to Government failure. Government intervention may cause further problems and is best avoided.
- 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.

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.

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. [20]

20

- 8 Traditional economic theory assumes that consumers are perfectly rational. When making any decision they will carefully weigh up all the costs and benefits of that decision. More specifically it assumes that consumers will purchase a good up to the point where marginal utility is equal to price, since it would be irrational to consume a good if the additional utility gained from its consumption was less than cost of purchasing it.

However, in recent years' *behavioural economists like Richard Thaler and Daniel Kahnemann* have been critical of this theory. They argue that individuals may not follow this model of rational economic behaviour. This may happen for a number of reasons, which include:

- Consumers may lack the cognitive ability to carry out the many calculations required to weigh up the costs and benefits of all the various consumption choices.
- Consumers may not have all the information required to make these decisions nor the time to carefully consider all the options.
- Humans are emotional animals and may make irrational decisions when in a heightened emotional state – angry, under stress, in love etc.
- Consumers may suffer from addiction and hence make decisions which are detrimental to their own wellbeing.
- Consumers may be fooled or manipulated by the clever marketing techniques employed by firms.
- Consumers may have in-built cognitive biases which make rational decision making difficult
 - *Relative price bias.*
 - *Endowment bias.*
 - *Herd behaviour.*

Despite these sources of irrational behaviour, most consumers do attempt to act rationally most of the time and for that reason the assumption of rational decision making still forms the basis of most economic theories.

Issue, analysis and areas for evaluation and discussion include:

- Idea of cost-benefit decision making.
- Reference to marginal utility and the theory of diminishing marginal utility.
- Reference to rational behaviour.
- Reference to bounded rationality.
- Reference to cognitive biases.
- Reference to information failure and asymmetric information.
- Reference to the impact of addiction on decision making.
- Reference to the impact of marketing on decision making process.
- 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.

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.

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. [20]

Total

**AVAILABLE
MARKS**

20

80