Please check the examination details below before entering your candidate information

Candidate surname	Other names
StemUp Model Solution	

Centre Number | Candidate Number

Pearson Edexcel Level 3 GCE

Monday 15 May 2023

Morning (Time: 1 hour 30 minutes)

Paper reference **8EC0/01**

Economics A

Advanced Subsidiary

PAPER 1: Introduction to Markets and Market Failure

You do not need any other materials.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- There are two sections in this question paper.
- Answer **all** questions in Section A.
- In Section B, answer **all** of questions 6(a) to 6(e) and **one** question from 6(f) or 6(g).
- Answer the questions in the spaces provided
  – *there may be more space than you need.*

Information

- The total mark for this paper is 80.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Calculators may be used.

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ▶

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SECTION A

Answer ALL questions. Write your answers in the spaces provided.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

You are advised to spend 25 minutes on this section.

Use the data to support your answers where relevant. You may annotate and include diagrams in your answers.

1 In 2021, energy regulator Ofgem announced that the maximum price of energy will rise from £1 277 to £1 971 a year, for the average household bill.

(Source: adapted from https://www.moneysavingexpert.com/utilities/what-is-the-energy-price-cap/)

(a) Which **one** of the following is the percentage increase in the maximum price to the average household bill?

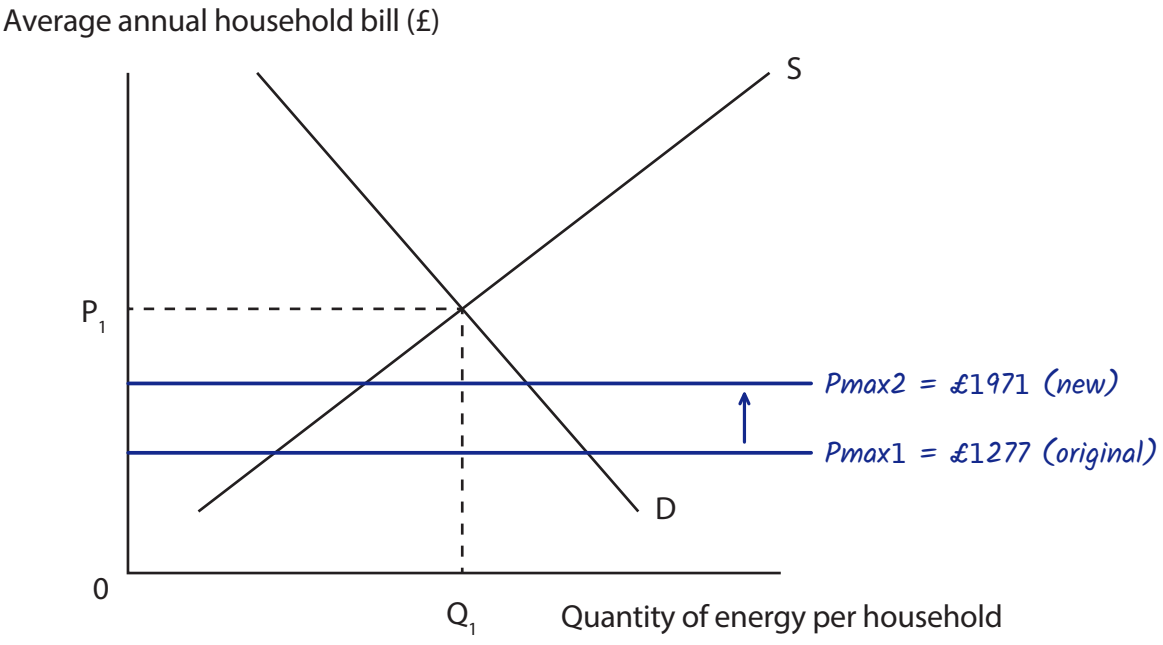
(1)

- ☐ **A** 35 %
- ☐ **B** 45 %
- ☒ **C** 54 %
- ☐ **D** 694 %

(1971 − 1277) ÷ 1277 × 100 = 54.3%

(b) Annotate the diagram below to show the original **and** new maximum price in this market.

(2)



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(c) Define the term 'equilibrium price'.

(1)

Equilibrium price is the market clearing price at which quantity demanded equals quantity supplied, so there is no excess demand or excess supply and no tendency for the price to change.

(Total for Question 1 = 4 marks)

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2 The world's largest producer of natural gas is the USA. In 2021 production fell even though the price increased.

(a) Using the data provided, explain **one** likely factor that may influence the price elasticity of supply of gas.

(3)

One factor is the time period, together with a lack of spare capacity. In the short run the supply of gas is price inelastic (PES +0.14), because producing more gas needs new wells, pipelines and workers, and there is limited spare capacity and storage. This is why US production fell in 2021 even though the price of gas increased: suppliers were unable to respond to the higher market price. In the long run firms can invest in new capacity, so supply becomes more price elastic.

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(b) The table below shows estimates of the price elasticity of supply and price elasticity of demand for gas.

	Natural Gas
Price elasticity of supply	+0.14
Price elasticity of demand	−0.10

(Source: adapted from http://www.usaee.org/usaee2013/submissions/Abs/Ponce_Neumann_Elasticities_gas_supply.pdf, http://www.mackinac.org/1247)

Which **one** of the following can be inferred from the table?

(1)

☐ **A** A 10% increase in the price of gas would cause a more than 10% increase in the supply

☐ **B** Gas is a normal good with income inelastic demand

☒ **C** The demand and supply of gas are both price inelastic

☐ **D** The demand for gas is more responsive to changes in price than supply

(Total for Question 2 = 4 marks)

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3 Disruption in the supply chains of essential goods and shortages of key medical products during the global health crisis have highlighted the links between countries and renewed the debate on the advantages and disadvantages of specialisation.

(Source: adapted from https://commonslibrary.parliament.uk/research-briefings/cbp-8978/)

(a) Define the term 'specialisation'.

(1)

Specialisation is when an individual, firm or country concentrates on producing one good or service, or a narrow range of goods or services, rather than producing everything itself.

(b) Which **one** of the following is a positive economic statement?

(1)

- ☒ **A** Disruption to global supply chains will reduce the level of trade
- ☒ **B** Supply chain disruption is the most important issue facing governments
- ☒ **C** The free market leads to the best allocation of resources
- ☒ **D** The government ought to increase healthcare spending

(c) Explain **one** likely advantage of specialising in the production of goods to trade.

(2)

Specialising allows a country to increase productivity in the goods it is best at producing, as workers repeat tasks and develop skills, which reduces unit costs. The extra output can be traded with other countries, increasing the size of the market and ultimately raising profits.

(Total for Question 3 = 4 marks)

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4 During 2021 the UK experienced severe shortages of crisps, petrol and many other items.

(Source: adapted from https://www.independent.co.uk/news/business/news/uk-shortages-covid-brexit-supply-chain-b1968458.html)

(a) Explain **one** reason why it is rational for a firm to raise prices when there is excess demand.

(3)

Firms aim to maximise profits. In 2021 there were severe shortages of crisps and petrol in the UK, so at the existing price quantity demanded was greater than quantity supplied. Consumers competing for the limited goods are willing to pay more and bid up prices. By raising the price the firm earns more revenue per unit on the same output, increasing profit. The higher price also rations the scarce goods to those most willing and able to pay, so demand contracts and supply extends until the excess demand is eliminated.

Esso, Tesco and Sainsbury's all charge £1.48 for a litre of petrol.

(b) Which **one** of the following is the most likely cross price elasticity of demand for close substitutes?

(1)

- ☐ **A** – 2.1
- ☐ **B** – 0.1
- ☐ **C** + 0.1
- ☒ **D** + 2.1

(Total for Question 4 = 4 marks)

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5 During the global health crisis, 11.7 million jobs were furloughed, costing the UK Government £70 billion. This meant people were paid by the government 80% of their wages even though they did not work. Some private sector employers continued to pay the remaining 20%.

(Source: adapted from https://commonslibrary.parliament.uk/examining-the-end-of-the-furlough-scheme)

(a) With reference to the above information, define the term 'mixed economy'.

(2)

A mixed economy is one where resources are allocated partly by the free market (the private sector) and partly by the government (the public sector).

For example, during the health crisis the UK Government spent £70 billion paying 80% of the wages of 11.7 million furloughed jobs, while some private sector employers continued to pay the remaining 20%.

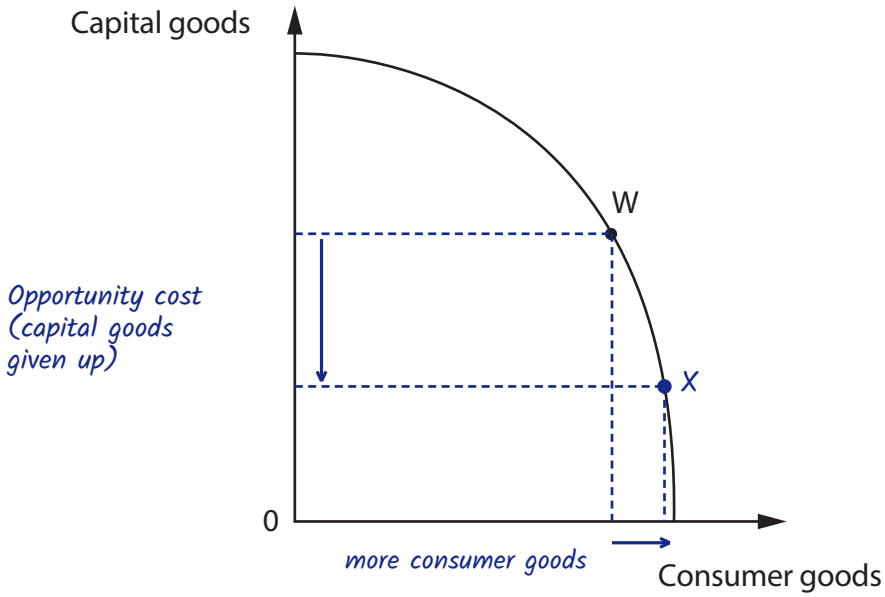
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(b) The diagram shows the production possibility frontier of an economy. Assuming the economy is at point W, annotate the diagram to show the opportunity cost of producing more consumer goods.

(1)



(c) Which **one** of the following is a likely advantage of a command economy?

(1)

- ☒ **A** Low levels of unemployment
- ☐ **B** Price acts as a signal to allocate resources
- ☐ **C** Price controls cause shortages of goods
- ☐ **D** The profit motive gives firms the incentive to be more efficient

(Total for Question 5 = 4 marks)

TOTAL FOR SECTION A = 20 MARKS

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SECTION B

Read Figures 1 and 2 and the following extracts (A to C) before answering Question 6.

Answer ALL Questions 6(a) to 6(e) and EITHER Question 6(f) OR Question 6(g).

You are advised to spend 1 hour and 5 minutes on this section.

Question 6

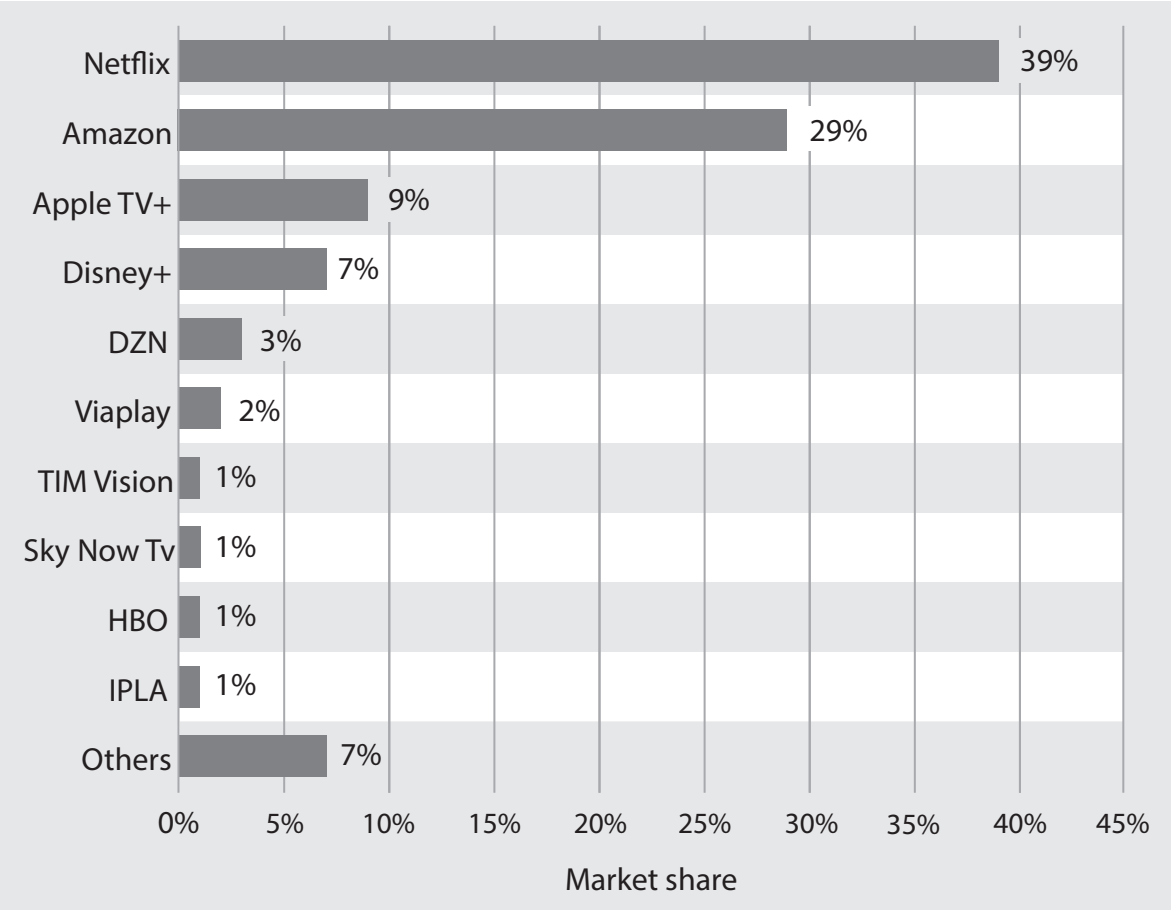
The market for television content

Figure 1: Elasticities of demand for streamed television services, UK, 2021

Price elasticity of demand	–0.6
Income elasticity of demand	1.6

(Source: adapted from https://www.consultancy.uk/news/24986/covid-19-presents-netflix-with-chance-to-hike-prices)

Figure 2: Market shares of streamed content providers, Europe, 2021



(Source: adapted from Statista 2021)

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Extract A

The growth of streamed television content

Netflix currently has 13 million UK subscribers, who typically pay £9.99 a month to the US based private sector firm. At this price, up to two users can view the television content at the same time. The demand for individual firms' streamed television content boomed when people were forced to stay at home and has only begun to slow recently as more firms enter the market e.g. Amazon Prime Video.

The launch of Disney+ at the end of 2019, including original content such as the £74 million *Star Wars* TV spin-off *The Mandalorian*, resulted in the service adding more UK subscribers in a year in 2020 than any other streaming platform has ever managed.

However, the costs of providing streaming television content have risen. Consumers now expect original content, for example *Stranger Things* which costs around £10 million an episode to make. Furthermore, advertising in a saturated market is expensive.

In 2021, Netflix put up the price of its most-popular package by £1 a month to £9.99. Fortunately for Netflix, its subscriber demand has proven price inelastic. Just 3% of customers in a survey said they would definitely cancel their subscription after Netflix's latest price rise.

(Source: adapted from 'As UK hits peak, Netflix the streaming giant will have to work harder', The Guardian, Monday 3 January 2022)

Extract B

Is television content a public good?

Public service broadcasting in the UK is made up of a number of parts. First, there are the main UK-wide public service broadcasters (PSBs). There is the publicly funded BBC, and the publicly owned Channel 4 which is funded through advertisements.

The BBC was established in 1922 by a Royal Charter. It is mainly funded through the TV licence fee, which costs £159 a year and is a compulsory charge for those who watch live TV on any device. Live TV and catch-up services are free to view and do not restrict household usage. Without the licence fee very few people would pay due to the free rider problem.

The BBC's Charter sets out its five public purposes:

- To provide impartial news and information
- To support learning for people of all ages
- To show the most creative, highest quality and distinctive televised content
- To provide content for minority groups which would not be profitable for a private firm
- To reflect the UK, its culture and values to the world.

(Source: adapted from https://publications.parliament.uk/pa/cm5801/cmselect/cmcumeds/156/15604, and 'BBC licence fee to be abolished in 2027 and funding frozen', The Guardian, Sunday 16 January 2022)

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Extract C

The environmental impact of streaming television content

The carbon footprint produced by watching a month of Netflix programmes is equivalent to driving a car to Saturn. Every activity in the chain required to stream video, from the use of huge datacentres and transmission over Wi-Fi and broadband to watching the content on a device, requires electricity. The majority of this is generated by emitting CO^2. Modern flatscreen televisions use significant amounts of energy.

There's very little a government can do about this in a free market dominated by US firms. The focus of any government intervention could be to encourage alternative forms of entertainment and recreation, support the development of more energy efficient devices, to improve information on the environmental effects or to use regulation to limit viewing hours.

(Source: adapted from 'Streaming's dirty secret: how viewing Netflix top 10 creates vast quantity of CO2', The Guardian, Friday 29 October 2021)

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6 (a) With reference to Figure 1 and Extract A, explain the relationship between price elasticity of demand and total revenue.

(5)

(b) With reference to Extract B, explain **two** external benefits associated with the consumption of 'public service broadcasting' (line 2).

(6)

(c) 'Television content is a public good' (Extract B). Assess this statement.

(10)

(d) Using examples from the information provided, explain what is meant by both 'substitutes' and 'complementary goods'.

(4)

(e) Discuss likely reasons why the market price of streaming television content is increasing. Draw a supply and demand diagram to support your answer.

(15)

EITHER

(f) Evaluate possible methods of government intervention to reduce the environmental damage caused by the consumption of television content.

(20)

OR

(g) Evaluate the possible disadvantages of a free market approach to the provision of television content.

(20)

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6 (a) With reference to Figure 1 and Extract A, explain the relationship between price elasticity of demand and total revenue.

(5)

Price elasticity of demand (PED) measures the responsiveness of quantity demanded to a change in price. When demand is price inelastic (PED between 0 and −1), a rise in price causes a proportionately smaller fall in quantity demanded, so total revenue (price × quantity) rises. When demand is price elastic, a price rise causes total revenue to fall.

Figure 1 shows that the PED for streamed television services in the UK is −0.6, which is price inelastic. A 10% rise in price would cause only a 6% fall in quantity demanded, so firms are able to raise prices without a fall in total revenue; in fact revenue increases.

Extract A shows this for Netflix. In 2021 it raised the price of its most popular package by £1 to £9.99, a rise of about 11%, and its subscriber demand 'has proven price inelastic'; just 3% of customers said they would definitely cancel. With 13 million UK subscribers, monthly revenue would rise from about 13m × £8.99 = £116.9m to about 12.61m × £9.99 = £126.0m, so total revenue increases despite the small fall in subscribers.

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(b) With reference to Extract B, explain **two** external benefits associated with the consumption of 'public service broadcasting' (line 2).

(6)

An external benefit is a positive effect on a third party, who is not involved in the consumption of the good and does not pay for it, so the social benefit of public service broadcasting is greater than the private benefit to the viewer.

First, public service broadcasting provides impartial news and information, one of the BBC's public purposes in Extract B. When viewers consume unbiased news, they become better informed, which reduces information gaps in markets. Better informed citizens make better decisions as consumers and voters, for example about their health or which political party to support, which benefits society as a whole through better choices and a better functioning democracy.

Second, there are educational benefits, as the BBC aims 'to support learning for people of all ages'. Consumption of educational content raises education and skill levels. A more educated population is more productive, which is expressed in higher wages, higher profits for firms and higher GDP per capita, as well as higher tax revenues for the government. These benefits are received by employers and society, not just by the individual viewer, so they are external benefits.

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(c) 'Television content is a public good' (Extract B). Assess this statement.

(10)

A public good is a good that is non-rivalrous and non-excludable. Non-rivalry means that one person's consumption does not reduce the amount available to others. Non-excludability means that people who do not pay cannot be stopped from consuming the good. This creates the free rider problem: people can consume the good without paying, so a private firm cannot make a profit at a zero price and the good would not be provided by the free market at all, a missing market.

Some television content does have these characteristics. It is non-rivalrous: one household watching a BBC programme does not stop another household watching the same programme, and the marginal cost of providing it to an extra viewer is zero. This implies that, to achieve allocative efficiency, the price charged should be zero. Extract B states that live TV and catch-up services are 'free to view and do not restrict household usage'. Traditional broadcasting is also largely non-excludable, since anyone with a TV aerial or broadband router can receive the signal. Extract B states that 'without the licence fee very few people would pay due to the free rider problem'. This is why the BBC is free-to-air and funded by a compulsory licence fee of £159 a year rather than provided by private firms.

However, much television content is not a pure public good. Streaming services are clearly excludable: Netflix only allows access to subscribers who pay £9.99 a month, and digital broadcasters can now exclude non-payers using set-top boxes, passwords and encryption. This is why private sector firms such as Netflix, Amazon and Disney+ are able to provide content profitably, with Netflix having 13 million UK subscribers and 39% of the European market. There is also an element of rivalry: up to two users can view at the same time on one Netflix account, so there is a cap on sharing, and heavy viewing can cause congestion on broadband networks.

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Therefore most television content is better described as a quasi-public good, as it is non-rivalrous but increasingly excludable. Even the BBC is partly excludable, since the licence fee is a legal requirement for anyone watching live TV. The fee could also be seen as regressive, as everyone pays the same £159 regardless of income, which may in effect exclude some people on low incomes.

Overall, the statement is only partly true. Public service broadcasting such as the BBC has strong public good characteristics, particularly non-rivalry, which is what really matters for the case for public provision. However, technology has made most content excludable, so over time the significance of the public good argument has fallen. With streamed services now dominant in most of the UK's 25 million TV homes, most television content is a private or quasi-public good rather than a pure public good.

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(d) Using examples from the information provided, explain what is meant by both 'substitutes' and 'complementary goods'.

(4)

Substitutes are goods in competitive demand: one good can be replaced by another to satisfy the same want, so a rise in the price of one increases demand for the other. For example, Netflix and Disney+ are substitutes, as both provide streamed television content.

Complementary goods are in joint demand: they are consumed together, so an increase in demand for one causes an increase in demand for the other. For example, flatscreen televisions are consumed with streamed television services.

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(e) Discuss likely reasons why the market price of streaming television content is increasing. Draw a supply and demand diagram to support your answer.

(15)

The market price is determined where demand equals supply, so the price of streaming television content rises if demand increases (shifts right) and/or supply decreases (shifts left), as shown in the diagram, where price rises from P1 to P2.

On the demand side, demand has increased significantly. Extract A states that demand 'boomed when people were forced to stay at home', as lockdowns meant people watched much more television and had fewer alternative forms of entertainment. Demand has also increased because of high quality original content, such as Stranger Things and The Mandalorian, which attracts new subscribers; Disney+ added more UK subscribers in a year than any other platform has ever managed. Figure 1 shows that the income elasticity of demand is +1.6, so streaming is a normal, luxury good: as incomes grow, demand rises more than proportionately. This shifts demand from D1 to D2, creating excess demand at P1 which bids the price up.

On the supply side, the costs of providing streaming content have risen. Consumers now expect original content, and Stranger Things costs around £10 million an episode to make, while The Mandalorian cost £74 million. Furthermore, advertising in a saturated market is expensive, and the cost of gaining new subscribers has increased. Higher costs of production reduce the profitability of supplying content at each price, so supply shifts left from S1 to S2, which also raises the price.

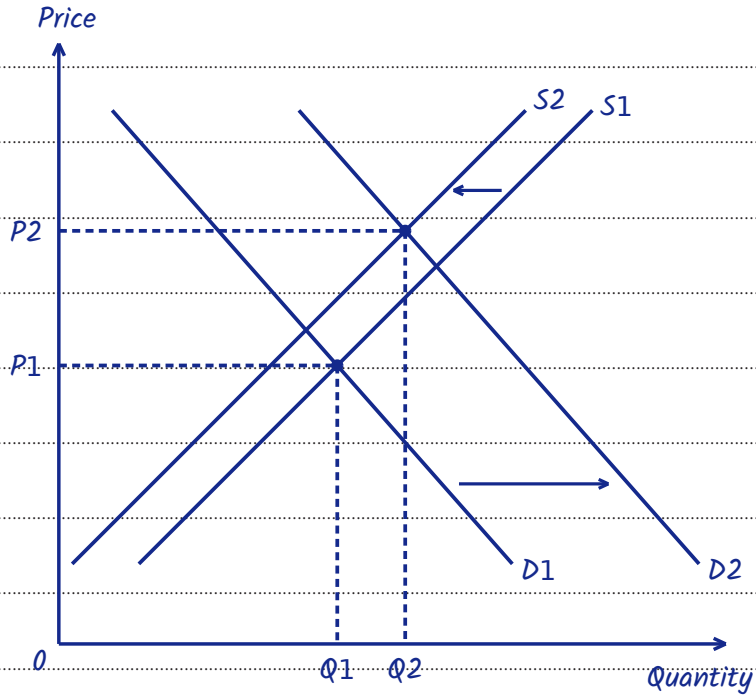
Firms can pass these higher costs on to consumers because demand is price inelastic. With a PED of −0.6, a price rise leads to a proportionately smaller fall in quantity demanded, so total revenue rises. This is why Netflix raised the price of its most popular package by £1 to £9.99, and only 3% of customers said they would definitely cancel. Netflix also has a large market share of 39%, giving it some market power to set prices.

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However, the effect on price depends on the relative size of the shifts. More firms are entering the market, such as Amazon Prime Video, Apple TV+ (9% share) and Disney+ (7%), which increases supply. If the increase in supply from new entrants is greater than the increase in demand, prices may stop rising or even fall. In addition, Extract A suggests demand 'has only begun to slow recently', as lockdowns have ended and the market is saturated, so the demand shift may reverse.

The timescale also matters. In the short run subscribers may tolerate price rises, but in the long run, as the number of substitute services grows, demand for each individual firm becomes more price elastic, so further price rises could lead to large falls in subscribers. Since YED is +1.6, if real incomes fall, for example due to the rising cost of energy, demand would fall more than proportionately and consumers may cancel subscriptions.

Overall, the most important reason for rising prices is the increase in costs of content, together with price inelastic demand that allows firms to pass these costs on. The rise in demand during lockdowns was significant but is likely to be temporary, so as competition increases the rise in prices is likely to slow.



Demand increases D1 to D2: lockdowns, original content, YED +1.6 as incomes rise.

Supply decreases S1 to S2: content costs £10m an episode, expensive advertising.

Price rises from P1 to P2.

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EITHER

(f) Evaluate possible methods of government intervention to reduce the environmental damage caused by the consumption of television content.

(20)

OR

(g) Evaluate the possible disadvantages of a free market approach to the provision of television content.

(20)

Indicate which question you are answering by marking a cross in the box ☒. If you change your mind, put a line through the box ☒ and then indicate your new question with a cross ☒.

Chosen question number: **Question 6(f)** ☒ **Question 6(g)** ☒

Write your answer here:

Question 6(f)

Government intervention is action taken by the government to change the decisions made by individuals and firms, for example through taxes, subsidies, regulation or the provision of information, in order to correct market failure. Extract C shows that streaming television content creates negative externalities: the carbon footprint of watching a month of Netflix is equivalent to driving a car to Saturn. Every activity in the chain, from huge datacentres and transmission over Wi-Fi and broadband to watching on energy-hungry flatscreen televisions, requires electricity, most of which is generated by emitting CO_2. These external costs fall on third parties through climate change, so the marginal social cost is greater than the marginal private cost and the market over-produces and over-consumes streamed content.

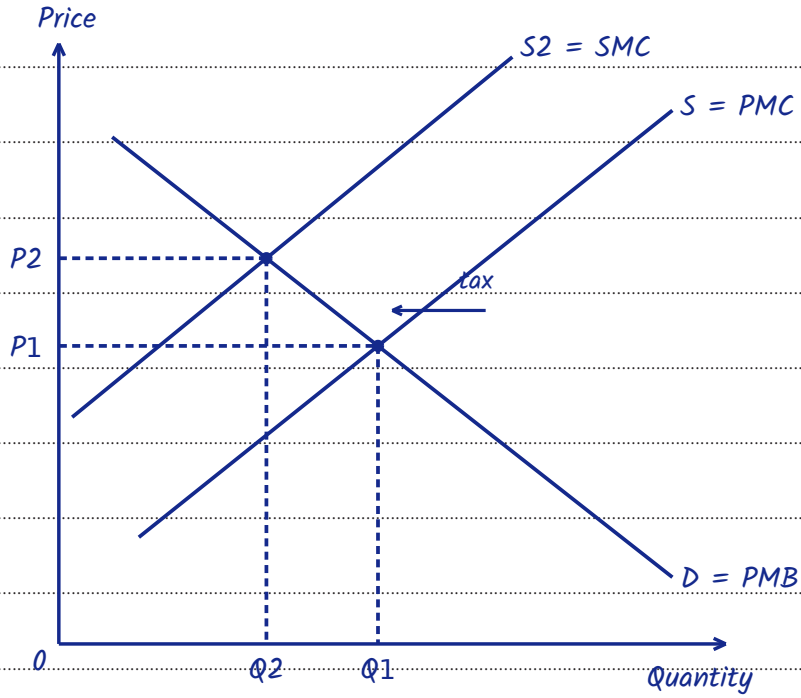
One method is a tax on usage, such as a carbon tax. This internalises the externality: the final price includes the external cost and not just the private cost, so the polluter pays the full social cost. In the diagram, the tax shifts supply from S = PMC to S2 = SMC. Price rises from P1 to P2 and quantity falls from Q1 to Q2, which is socially efficient because marginal social cost equals marginal social benefit, removing the welfare loss.

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However, a tax has problems. It is very difficult to measure the external cost of streaming in money terms, so the government may set the tax too high or too low, causing government failure. Demand for streaming is price inelastic (PED −0.6), so the tax would have to be very high to reduce consumption significantly; it would mainly raise revenue. The market is dominated by US firms, so firms may shift datacentres to countries with lower carbon taxes, so-called pollution havens, and there is a possibility of tax evasion and high administration costs. The tax would also be regressive, hitting low income households hardest.

A second method is to subsidise the development of more energy efficient devices and datacentres. A subsidy lowers the costs of producing efficient televisions, so they become cheaper and consumers switch to them, reducing electricity use per hour viewed without reducing viewing. However, subsidies have an opportunity cost, as the money could be spent on healthcare or education, and firms may become inefficient if they rely on them.

A third method is to improve information on the environmental effects of streaming. Consumers are unlikely to realise how much CO_2 their viewing creates, so there is



Carbon tax shifts supply S to S2 = SMC. Price rises P1 to P2, quantity falls Q1 to Q2 (socially efficient, SMC = SMB).

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information failure. Labelling devices with energy ratings or campaigns could encourage people to watch less or choose lower resolution, and the government could encourage alternative forms of entertainment and recreation such as sport. This is cheap, but its effectiveness depends on whether consumers change their behaviour; many may ignore the information because the private benefit of viewing is high.

Finally, the government could use regulation to limit viewing hours. This would directly reduce consumption, but it would be very difficult to enforce, would reduce consumer welfare and freedom of choice, and might be politically unpopular. Extract C notes that there is very little a government can do in a free market dominated by US firms.

Overall, the most effective approach is likely to be a combination of policies. Subsidies for energy efficient devices and better information tackle the source of the emissions without large welfare losses, while carbon taxes on electricity generation are more effective than a tax on streaming itself. In the long run, decarbonising electricity generation would reduce the environmental damage most, so the magnitude of the problem depends on how electricity is produced rather than on viewing alone.

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Question 6(g)

A free market approach means television content is provided by private firms, through subscription services such as Netflix or advertising-funded commercial channels, with the price mechanism allocating resources, rather than public service broadcasting financed by the licence fee or taxation.

The main disadvantage is the under-consumption of merit content which has external benefits. Public service broadcasting creates benefits that spill over to society and future generations, seen in the BBC's public purposes: impartial news, learning for people of all ages and high quality distinctive content. In a free market, consumers only consider their private benefit, so marginal private benefit is below marginal social benefit. As the diagram shows, the market produces where MPB = MPC at quantity H, rather than the socially optimal quantity J where MSB = MSC, so there is a welfare loss shown by the shaded triangle and resources are misallocated.

Second, profit-maximising firms will under-provide content that is not profitable. The BBC aims to provide content for minority groups 'which would not be profitable for a private firm', and to reflect UK culture to the world. Private firms, which are mainly US based, focus on mass market content, so minority languages, regional news and educational programmes would be under-provided or not provided at all.

Third, free rider problems mean some content would be a missing market. Live broadcasting is non-rivalrous, and Extract B states that without the licence fee very few people would pay. Commercial channels therefore rely on advertising, which can lead to excessive advertising levels and programming designed to attract advertisers rather than meet viewers' needs, and news may become biased towards the owner's views.

Fourth, a free market may lead to concentration of market power. Netflix (39%) and Amazon (29%) have 68% of the European market, so they can raise prices, as Netflix did by £1 to £9.99, reducing consumer surplus. Low income households may be

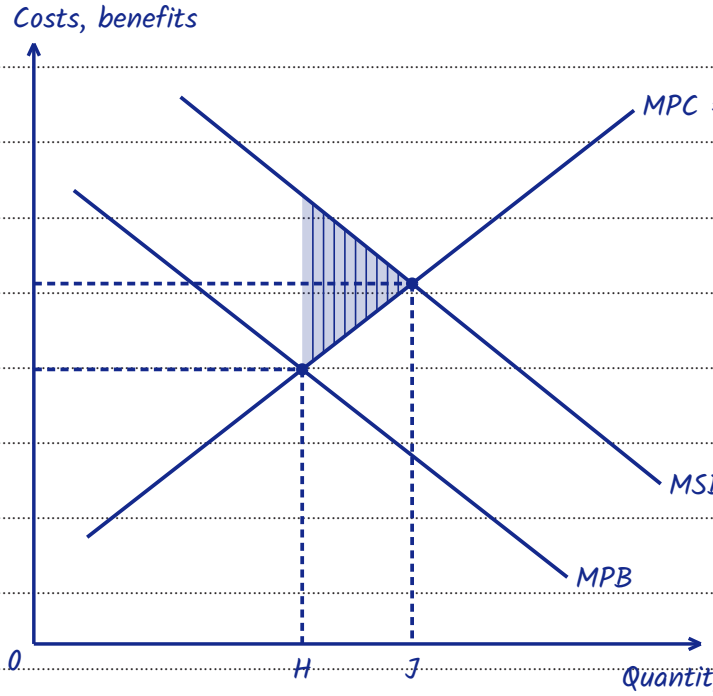
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excluded altogether, creating inequality in access to information.

However, there are strong arguments in favour of the free market. Charging for usage gives firms the incentive to improve quality: the 'streaming wars' between Netflix, Disney+ and Amazon have generated innovation, such as Stranger Things and The Mandalorian, and greater customer satisfaction. The greater the number of subscribers, the more easily firms can spread the high cost of programming, leading to lower average costs. Private firms face the profit motive, so they may be more efficient than public service providers.

Public provision also has problems. The five public purposes of the BBC's Charter are expensive to fulfil, and the £159 licence fee is a regressive tax, with everyone paying the same regardless of income. As people move to streaming, the internet and smartphones, a compulsory licence fee is harder to justify, and the government has already frozen it and plans to abolish it in 2027. Government failure is possible if the government misjudges the value of the external benefits.

Overall, the disadvantages of a free market approach are significant mainly for content with large external benefits, such as impartial news, education and minority



Free market at H (MPB = MPC). Optimum at J (MSB = MSC). Shaded triangle = welfare loss from under-consumption.

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programming, which the market would under-provide. For entertainment such as drama and films, the free market works well and competition benefits consumers. Therefore the best approach is a mixed one, where the market provides most entertainment while public funding ensures the optimum quantity J of public service content.

(Total for Question 6 = 60 marks)

TOTAL FOR SECTION B = 60 MARKS
TOTAL FOR PAPER = 80 MARKS

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