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Centre number

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Candidate number

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Surname *StemUp Model Solution*

Forename(s)

Candidate signature

I declare this is my own work.

INTERNATIONAL A-LEVEL ECONOMICS

Unit 3 The Economics of Business Behaviour and the Distribution of Income

Monday 13 January 2025

07:00 GMT

Time allowed: 2 hours

Materials

For this paper you must have:

- the Source Booklet, provided as an insert (enclosed)
- a calculator, which you are expected to use where appropriate.

Instructions

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions in **Sections A, B and C**.
- Answer **EITHER** Question 15 **OR** Question 16 in **Section D**.
- You must answer the questions in the spaces provided. Do **not** write outside the box around each page or on blank pages.
- Do **not** write in the Source Booklet.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 90.
- You may use a bilingual dictionary for this exam.
- You may **not** use an English dictionary.

For Examiner's Use	
Question	Mark
1–10	
11	
12	
13	
14	
15	
16	
TOTAL	



J A N 2 5 E C O 3 0 1

Section A

Answer **all** questions in the spaces provided.

Only **one** answer per question is allowed.

For each question completely fill in the circle alongside the appropriate answer.

CORRECT METHOD



WRONG METHODS



If you want to change your answer you must cross out your original answer as shown.



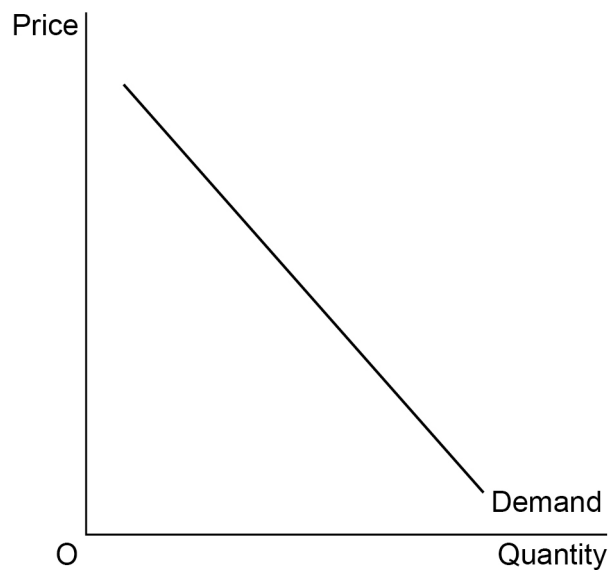
If you wish to return to an answer previously crossed out, ring the answer you now wish to select as shown.



0 1

Figure 1 shows the relationship between the price of a good and the quantity demanded.

Figure 1



Which one of the following supports this relationship?

[1 mark]

A Decreasing returns to scale



B Diminishing marginal utility



C Diseconomies of scale



D The law of diminishing returns



0 2

Which one of the following shows that the distribution of income in a country has become more equal?

[1 mark]

A A decrease in levels of unemployment

☐

B A reduction in the Gini coefficient

☒

C An increase in average real incomes

☐

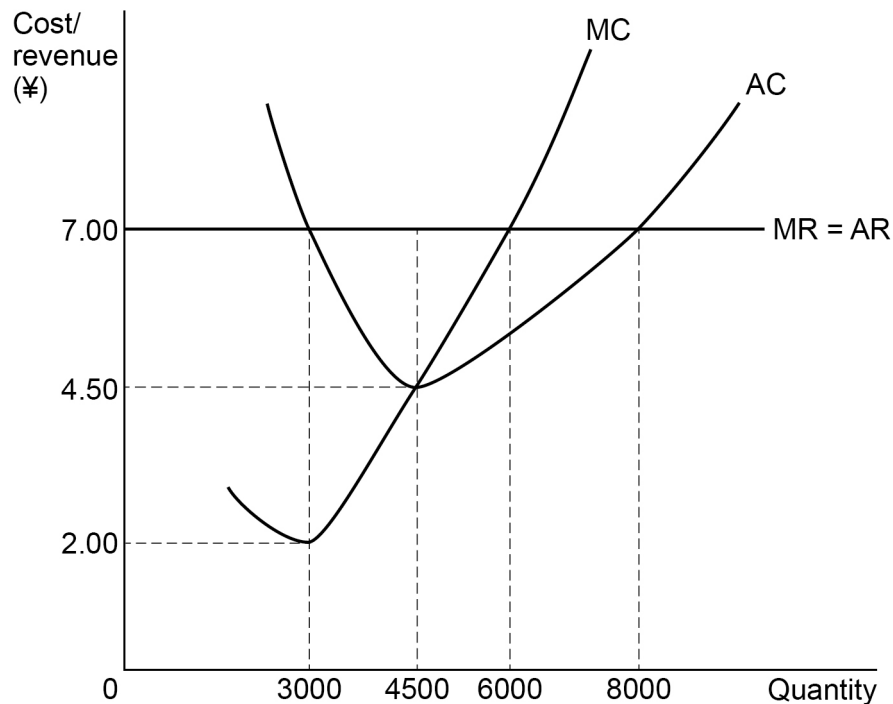
D An outward shift of the Lorenz curve

☐

0 3

Figure 2 shows the short-run cost and revenue curves for a profit-maximising firm in perfect competition.

Figure 2



In the long run, when the industry is in equilibrium, how much revenue will the firm earn?

[1 mark]

A ¥20 250

☒

B ¥31 500

☐

C ¥42 000

☐

D ¥56 000

☐

Turn over ►



0 4

Table 1 shows the average revenue and average cost for a firm at different levels of output that can be produced in a day.

Table 1

Output (units per day)	Average revenue (\$)	Average cost (\$)
6	150	120
7	130	105
8	110	100
9	90	90

If the firm's objective is to maximise its total revenue, how much profit will it make in a day?
[1 mark]

- A** \$0 ☐
- B** \$80 ☐
- C** \$175 ☒
- D** \$180 ☐

0 5

An industry regulator introduces a policy to increase the contestability of a market.

Which one of the following is the most likely consequence of this policy for firms in this market?

[1 mark]

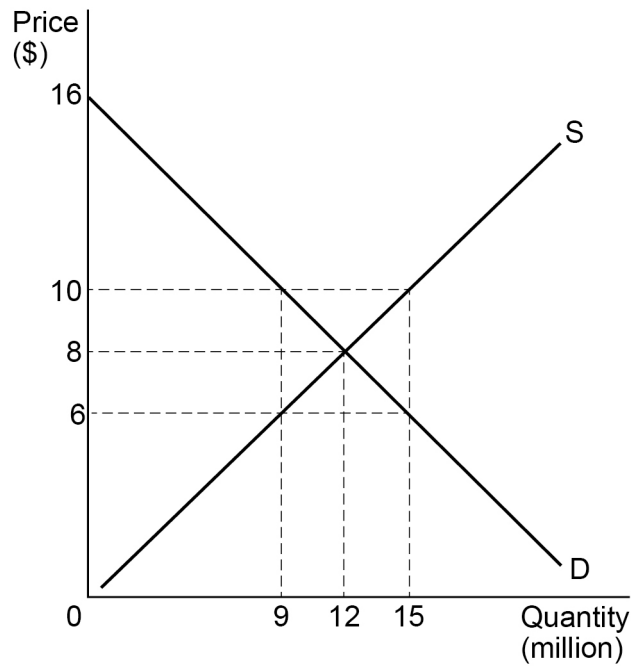
- A** Firms will be able to earn higher profits. ☐
- B** Firms will be able to use price discrimination. ☐
- C** Firms will have more monopsony power over workers. ☐
- D** Firms will produce closer to allocative efficiency. ☒



0 6

Figure 3 shows the supply (S) and demand (D) curves for an industry.

Figure 3



The government introduces a maximum price of \$6 per unit.

What is the change in consumer surplus?

[1 mark]

A \$15 million

☒

B \$18 million

☐

C \$27 million

☐

D \$75 million

☐

Turn over for the next question

Turn over ►



0 7

The three largest firms in an oligopolistic market collude and all agree to raise their prices by 20%.

Which one of the following is the most likely outcome of this action?

[1 mark]

A Greater economies of scale for the three firms

☐

B Higher barriers to entry to the market

☐

C Increased total profits for the three firms

☒

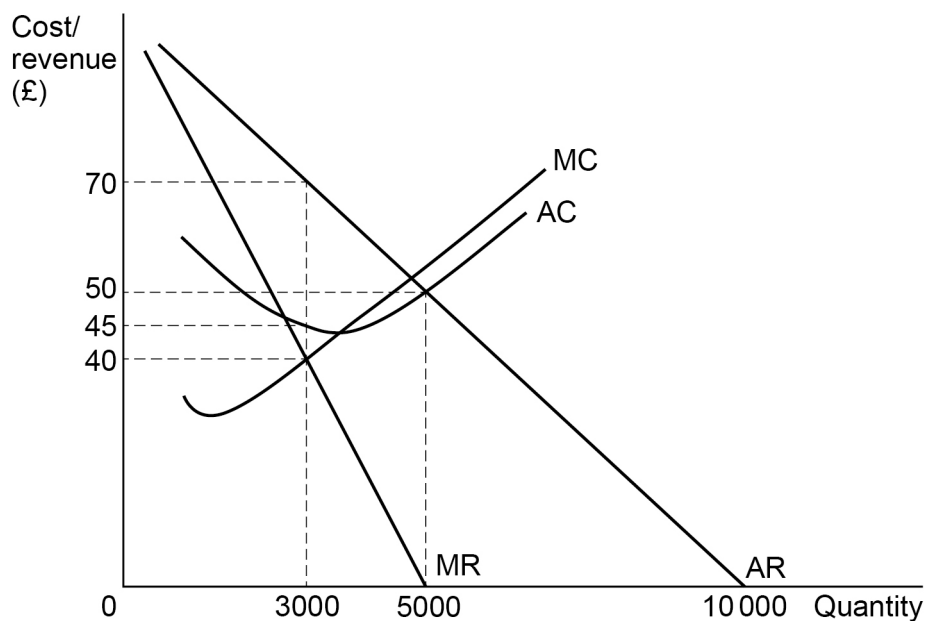
D The industry becomes a natural monopoly

☐

0 8

Figure 4 shows the cost and revenue curves for a profit-maximising firm that sells shoes.

Figure 4



How much profit is the firm making?

[1 mark]

A £0

☐

B £75 000

☒

C £90 000

☐

D £210 000

☐


0 9

Table 2 shows the total revenue product and marginal cost of labour for a profit-maximising firm when it employs different numbers of workers. Employment of all other factors of production remains the same.

Table 2

Number of workers	Total revenue product of labour (\$)	Marginal cost of labour (\$)
3	17	27
4	45	28
5	85	29
6	117	30
7	147	31

How many workers will the firm choose to employ?

[1 mark]**A** 4
☐
B 5
☐
C 6
☒
D 7
☐

Turn over for the next question

Turn over ►



1 0

A consumer knows that adding sugar to their hot drinks will damage their health. They would like to change their behaviour. However, they continue to add sugar to their drinks.

Which one of the following best explains why they continue to add sugar to their drinks?

[1 mark]**A** Altruism☐**B** Anchoring☐**C** Asymmetric information☐**D** Bounded self-control☒**10**

Section B

Answer **all** questions in the spaces provided.

1	1	.	1
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Identify **two** determinants of the price elasticity of demand for labour.

[2 marks]

1 The price elasticity of demand for the final product that labour produces.

2 The ease of substituting capital (or other factors) for labour.

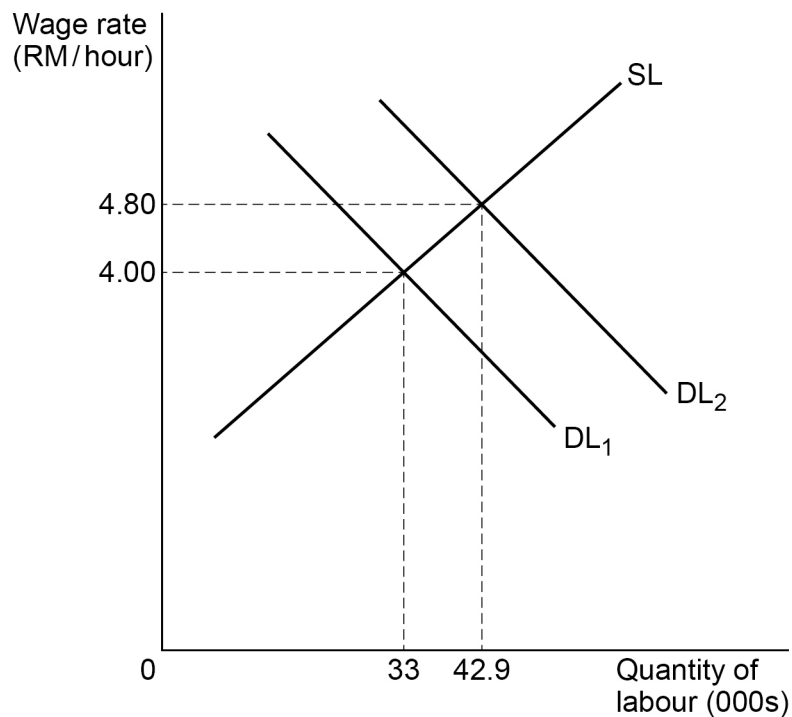
Question 11 continues on the next page

Turn over ►



Figure 5 shows the original demand (DL_1) and supply curves (SL) for a labour market in Malaysia. An increase in the demand for the industry's product causes the demand for labour to shift to DL_2 .

Figure 5



1 1 . 2

Calculate the price elasticity of supply for labour when the wage rate increases from RM4.00 (Malaysian ringgits) per hour to RM4.80 per hour.

[2 marks]

$$PES = \% \text{ change in quantity of labour supplied} \div \% \text{ change in wage rate}$$

$$\% \text{ change in quantity supplied} = (42.9 - 33) \div 33 \times 100 = 30\%$$

$$\% \text{ change in wage rate} = (4.80 - 4.00) \div 4.00 \times 100 = 20\%$$

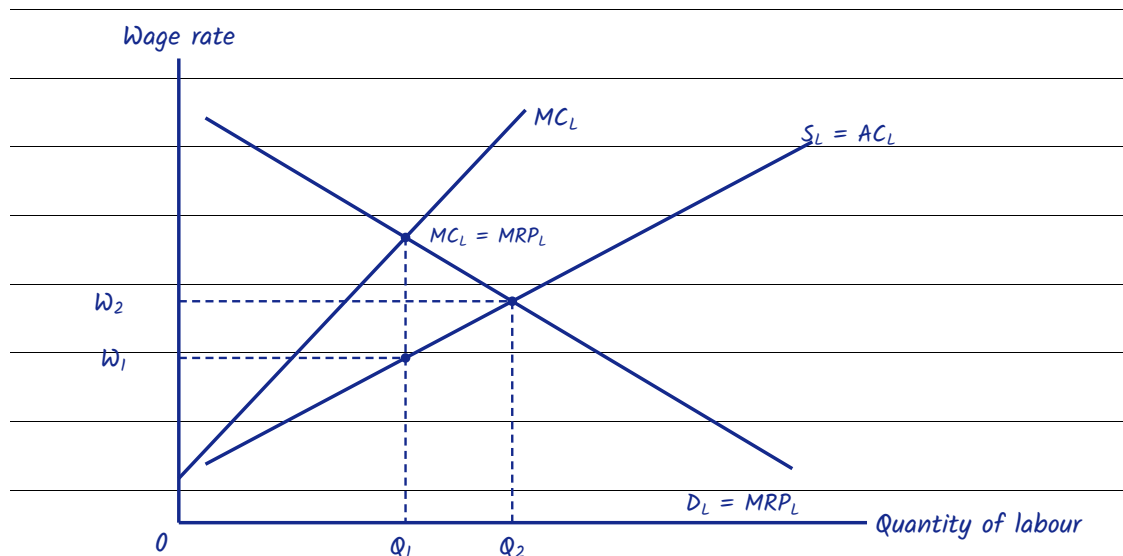
$$PES = 30\% \div 20\% = 1.5$$



1 1 3

Explain, using a diagram, why the wage rate in a monopsony labour market is likely to be lower than if the labour market was perfectly competitive.

[6 marks]



A monopsony is a single (dominant) buyer of labour. Because it faces the whole upward-sloping market supply curve of labour, to hire one more worker it must raise the wage for that worker and for all existing workers, so the marginal cost of labour (M_C_L) is above the average cost of labour ($A_C_L = S_L$). In a perfectly competitive labour market there are many buyers and sellers, so $M_C_L = A_C_L$. Firms hire until $M_R_P_L = A_C_L$, where demand equals supply, so employment is Q_2 and the wage w_2 is paid to all workers.

The profit-maximising monopsonist hires where $M_C_L = M_R_P_L$, at Q_1 , which is fewer workers than Q_2 . It then only needs to pay the wage on the supply curve that attracts Q_1 workers, w_1 , which is below w_2 and below the MRP of the last worker. So both the wage and employment are lower than under perfect competition.



Section C

Look at the Source Booklet and answer **all** questions in the spaces provided.

Do **not** write in the Source Booklet.

1 2

Extract A shows research and development (R&D) spending as a percentage of global GDP and the number of annual global patent applications from 2016 to 2021.

1 2 . 1

Explain why spending on R&D as a percentage of global GDP may affect the number of global patent applications.

[4 marks]

R&D is spending on research into new knowledge and the development of new products and production processes, for example pharmaceutical firms testing new drugs. A patent is a legal right that protects intellectual property, giving the inventor the sole right to use or sell an invention for a period of time (often 20 years).

If global GDP stays the same, a rise in R&D as a percentage of GDP means more is spent on R&D in total; if GDP grows and the same percentage is spent, total R&D also rises. More R&D increases innovation, so more new technologies, products and process improvements are discovered. Firms will want to protect these new ideas from being copied, so that they can earn supernormal profits from them and recover the high costs of the research.

Therefore, ceteris paribus, a higher share of GDP spent on R&D is likely to lead

Extra space *to more global patent applications.*



1 2 . 2

To what extent do the data suggest that spending on R&D as a percentage of global GDP affected the number of annual global patent applications between 2016 and 2021?

Use the data in **Extract A** to support your answer.

[4 marks]

The data suggest a strong positive relationship. Between 2016 and 2021 R&D spending rose from 2.17% to 2.71% of global GDP (an increase of 24.9%), while global patent applications rose from about 12.18 million to 16.55 million (35.9%), and patent applications increased in every year.

From 2017 onwards R&D rose every year, from 2.16% to 2.71% of GDP (25.5%), and patent applications rose by 26.5% (from about 13.08 million to 16.55 million), almost the same proportion, which supports a direct link.

However, in 2017 R&D fell from 2.17% to 2.16% of GDP but patent applications still rose to about 13.08 million, which is not consistent with the link. Also, the data are a percentage of GDP: when global GDP fell in 2020, total R&D spending may have fallen, yet applications still increased. There may be a time lag between R&D and new patents, and other factors such as the

Extra space *length of patent protection or how easy it is to apply also matter, so correlation does not prove causation.*

Overall, the data suggest that, on balance, R&D spending as a percentage of GDP had a strong, positive effect on patent applications, although not in every year.



1 3

Extract B (line 1) states: 'Some firms charge different prices to different customers for the same product.'

Explain the conditions that are necessary for firms to benefit from price discrimination. **[12 marks]**

Price discrimination occurs when a firm charges different prices to different consumers for the same good or service, where the price differences are not due to differences in the cost of supply, for example airlines, cinemas and rail companies charging different fares for the same journey or film. Firms benefit because charging each group a price closer to what it is willing to pay converts consumer surplus into producer surplus, raising total revenue and profit compared with charging a single price.

First, the firm must have price-setting power and control over supply. A firm in perfect competition is a price taker, so it cannot charge more than the market price. The firm therefore needs some monopoly power, for example from a high market share, a lack of close substitutes or a collusive agreement. A motorway service station can charge more than a supermarket because travellers have few alternatives nearby.

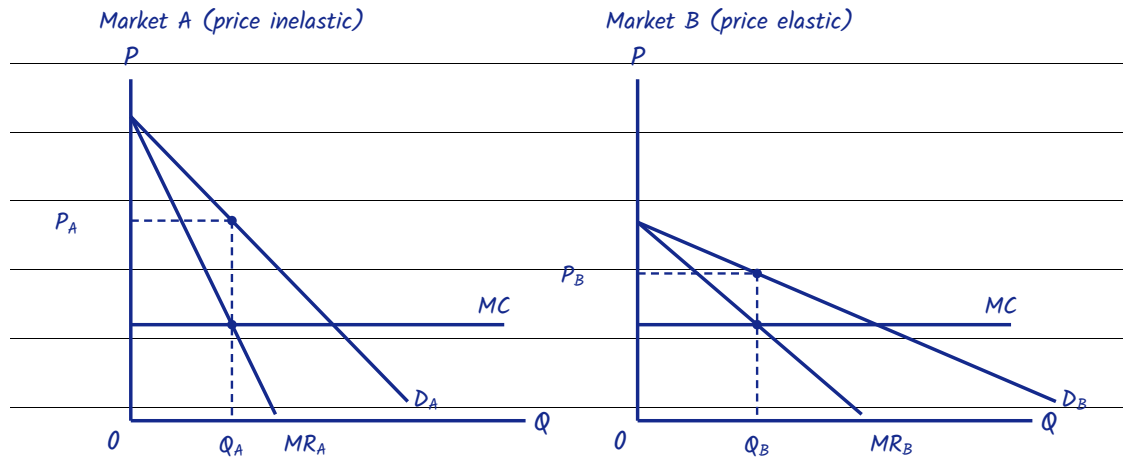
Second, the firm must be able to separate customers into distinct groups or markets. It can use characteristics such as age, income, student or working status, whether the buyer is a business or a consumer, location and time of purchase. Proof of identity can be used to give student or pensioner discounts, proof of residency can separate local and foreign customers, and peak-time pricing on public transport separates commuters from leisure travellers. Budget airlines separate early bookers from those buying close to the date of travel.

Third, the price elasticity of demand must differ between the groups. As the diagram shows, the firm maximises profit by producing where $MR = MC$ in each market. In Market A demand is price inelastic, for example business travellers or commuters who must travel at peak times, so a higher price P_A is



charged. In Market B demand is price elastic, for example students or leisure travellers with lower incomes and more substitutes, so a lower price P_B is charged. If elasticities were the same, $MR = MC$ would give the same price in both markets and there would be no gain.

Extra space Fourth, the firm must prevent arbitrage (market seepage), where



customers buy at the low price and resell to those in the high-price market.

This is easiest for services that are consumed on the spot, such as haircuts or concerts. Airlines register tickets in the passenger's name, and charge high fees for changes to cheap bookings, so tickets cannot be resold or switched. If arbitrage occurs, the higher price is undermined and the extra profit is lost.

Finally, the cost of separating markets, such as checking identity, must be less than the extra revenue gained. When all these conditions are met, the firm can increase its profit.



1 4

Extract C (lines 7–8) states: ‘This difference in income inequality is also reflected in the two countries’ wealth distributions.’

Discuss whether an unequal distribution of wealth is likely to be the most significant cause of an unequal distribution of income in a country.

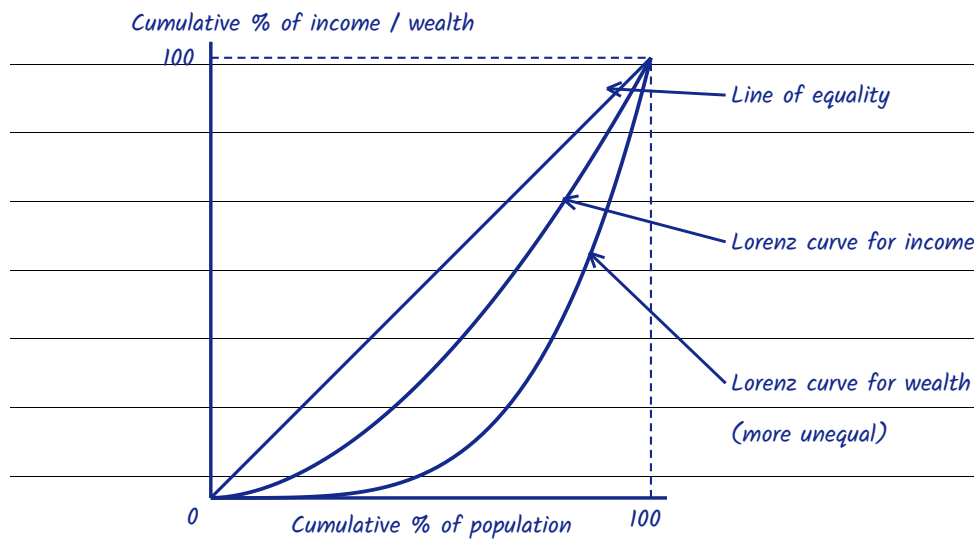
[25 marks]

Income is a flow of money received over a period of time, such as wages, rent, interest, dividends and state benefits. Wealth is a stock of assets owned at a point in time, such as property, shares, savings and land. Inequality of both can be shown by a Lorenz curve and measured by the Gini coefficient: the further the curve is from the line of equality, the higher the Gini coefficient and the more unequal the distribution. In most countries wealth is far more unequally distributed than income, as the diagram shows, and Extract C notes that the difference in income inequality between the two countries is reflected in their wealth distributions.

There are strong reasons why unequal wealth causes unequal income. Wealth generates income: those who own shares, property and savings receive dividends, rent and interest, which are unearned incomes received without working. As the returns on assets have tended to grow faster than GDP and wages, the incomes of the wealthy grow faster than those of people who rely on wages, so inequality widens. Wealth is also passed on through inheritance, so inequality persists across generations, whereas income from work must be earned again each year. In addition, wealth is often taxed at lower marginal rates than income, which allows wealth, and the income from it, to accumulate further. Wealth also buys opportunity: wealthy families can pay for private education, training and business start-up capital, so their children gain higher human capital and higher future earnings. This creates a cycle in which wealth inequality causes income inequality and vice versa.

However, how significant this is depends on how much of total income comes





from wealth. For most households the main source of income is wages, so the distribution of earnings is likely to matter more. Wage differences arise from differences in skills, qualifications and productivity, so workers with a high marginal revenue product earn far more than unskilled workers. Education is therefore a key cause: in countries where access to good education is unequal, earnings are unequal. Extract C suggests that the EU's education strategy aims to raise skills, which could reduce income inequality even if wealth stays unequal. Labour market imperfections also matter: monopsony employers, weak trade unions, discrimination and the absence of an effective minimum wage can keep wages low for some groups, while powerful unions or professional bodies raise the pay of others.

Unemployment and the ability to work are another major cause. People who are unemployed, sick or disabled, or who have caring responsibilities, receive little or no earned income. Health care therefore affects income distribution: better access to health care improves the ability to work and earn. The age structure of the population is also important: countries with many young or elderly dependants have more people without earned income, though the effect depends on the generosity of state and private pensions. Social and cultural factors,

Turn over ►



Extra space *such as attitudes to women working, can also limit the earnings of certain groups.*

Government policy may be the most significant influence of all. Progressive income taxes, transfer payments and spending on public services such as health and education redistribute income. Extract C suggests that the EU has higher average levels of government spending and taxation, which is likely to reduce income inequality regardless of the distribution of wealth. If a government has a weak tax and benefit system, income inequality is likely to be high even if wealth is not especially concentrated. The level of development also matters: Extract C suggests that Luxembourg, a high-income country, has lower income inequality than Bulgaria, which may reflect its higher average incomes, better-funded public services and more skilled workforce rather than wealth alone.

Cause and effect are also hard to separate: high incomes allow people to save and build wealth, so unequal income may cause unequal wealth, and the pattern in Extract C is a correlation, not proof of causation.

In conclusion, an unequal distribution of wealth is a significant cause of income inequality, especially at the very top, because unearned income and inheritance allow inequality to persist and grow over time. However, I judge that it is not usually the most significant cause, because most income comes from work.

Differences in education and skills, employment and the labour market, and above all the extent of government redistribution, are likely to explain more of the differences between Luxembourg and Bulgaria. The importance of wealth depends on how concentrated it is, how heavily it is taxed and how much income it generates, so it is likely to be most significant in countries with low taxes on wealth and weak redistribution.



Section D

Answer **EITHER** Question 15 **OR** Question 16.

Shade the circle below to indicate which optional question you have answered.

Question 1 5 ☒Question 1 6 ☐CORRECT METHOD ☒

WRONG METHODS

**Either**

1 5

Monopoly power can be a cause of market failure. Some governments try to control the behaviour of large firms, for example through investigation, regulation or price controls. Other governments focus more on encouraging competition.

Evaluate measures that a government can use to try to prevent dominant firms from abusing their monopoly power.

[25 marks]**or**

1 6

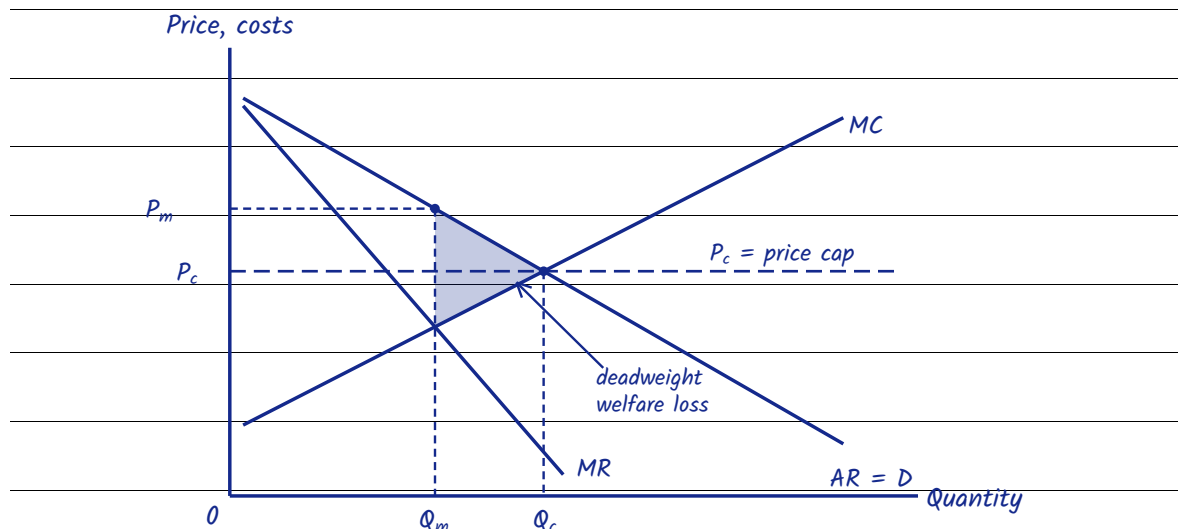
The market for luxury chocolate contains many small firms. Most make use of behavioural ideas to try to increase sales of their products. For example, if a firm can persuade a customer to make a regular order, then inertia means that the customer is unlikely to cancel and buy from a competitor.

Discuss whether firms in monopolistic competition are likely to benefit from using behavioural influences to increase their sales.

[25 marks]

Monopoly power is the ability of a firm to set prices above the competitive level, for example because it has a large market share and there are high barriers to entry. A dominant firm abuses this power when it uses it against the interests of consumers or competitors: charging excessive prices, restricting output, predatory pricing to drive out rivals, refusing to supply, exclusive dealing or colluding in a cartel. As the diagram shows, a profit-maximising monopolist produces where $MR = MC$, at Q_m , and charges P_m , which is above MC . Output is lower and price higher than in a competitive market (Q_c, P_c), so the firm is allocatively inefficient and there is a deadweight welfare loss, which is a form of market failure. Lack of competition may also cause X-inefficiency and less choice and quality.

Turn over ►



One measure is investigation by a competition authority, which can examine dominant firms, order them to change their behaviour and fine them, for example up to 10% of global turnover. Fines for abuse, such as the large fines imposed on technology firms for favouring their own services, deter other firms. However, investigations are slow and costly and require expertise, and by the time a decision is made rivals may already have left the market. Fines may also be small compared with the profits made, so their effectiveness depends on their size and on how likely firms think they are to be caught.

A second measure is the regulation of mergers and takeovers. The authority can block mergers that would create a dominant firm, for example where the combined market share would exceed 25%, or allow them only if the firms sell off parts of their business. This prevents monopoly power arising in the first place, which may be better than trying to control it later. However, mergers can bring economies of scale, so lower average costs might lead to lower prices, and blocking them could reduce dynamic efficiency and international competitiveness.

A third measure is price and profit controls, often used for natural monopolies such as water, energy and rail. A price cap such as $RPI - X$ forces the firm to cut real prices by $X\%$ a year, which, as shown by P_c in the diagram, can move output

towards Q_c and reduce the welfare loss, while still giving the firm an incentive to cut costs, because it keeps any extra profit. Rate of return regulation limits profit instead. However, the regulator suffers from asymmetric information: it does not know the firm's true costs, so it may set the cap too high, giving little benefit, or too low, reducing investment and quality. There is also a risk of regulatory capture, where the regulator acts in the interests of the firms it regulates. Industry regulators are also costly to run, so this approach is best suited to essential services where competition is not possible.

A fourth approach is to promote competition by lowering barriers to entry, for example through deregulation, privatisation, removing licences or legal monopolies,

Extra space and requiring shared access to infrastructure, such as letting rival firms use the national rail or telecoms network. This makes markets more contestable, so the threat of entry forces dominant firms to keep prices close to average cost and to innovate, which avoids the information problems of regulation. However, it is less effective in natural monopolies, where very high fixed costs and economies of scale mean one firm is most efficient, and in markets with strong network effects, such as social media, where users stay with the largest firm. Contestability also takes time to develop.

Governments can also use other measures, such as banning restrictive practices like cartels and exclusive dealing, consumer protection laws, removing a firm's licence to operate, breaking up a dominant firm or, in extreme cases, nationalisation, so that the industry is run in the public interest. Nationalisation can set price equal to MC, but state firms may lack the profit motive, leading to X-inefficiency and government failure.

In evaluating these measures, the best choice depends on the type of industry. For utility markets that are natural monopolies, regulation and price caps are likely to be most appropriate, while in markets such as computer games or retailing,

Turn over ►



encouraging competition and controlling mergers are more effective and less costly.

It also depends on the quality of information available to government, the resources and expertise of the regulator, and whether intervention reduces the incentive to invest and innovate. Large firms may earn supernormal profits that fund R&D, so too much intervention could harm dynamic efficiency.

In conclusion, no single measure is best. I judge that measures which promote competition, together with strict control of mergers and the threat of large fines, are the most effective in most markets, because they deal with the cause of the problem and avoid the risk of government failure. However, where natural monopoly or network effects make competition unrealistic, price regulation by an independent, well-resourced regulator is necessary to protect consumers. The most effective approach is therefore a combination of measures suited to each industry.

END OF QUESTIONS



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2 8



2 5 1 X E C 0 3