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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

Wednesday 12 June 2024

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 U N 2 4 E C 0 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

Which one of the following is an example of price discrimination?

[1 mark]

A A cinema charging lower prices to customers aged 65 or over.



B A large firm cutting the price of its products to limit competition.



C A restaurant selling chicken burgers for \$4 and vegetable burgers for \$3.



D A supermarket charging less for a branded good than a competitor.



0 2

Table 1 shows the marginal revenue of a firm in monopolistic competition selling different quantities of hats.

Table 1

Quantity of hats sold	Marginal revenue (\$)
18	40
19	25
20	10
21	–5

Which one of the following statements is correct when the firm sells the 20th hat?

[1 mark]

- A** Average revenue is falling and demand is price inelastic.
- B** Average revenue is increasing and demand is price elastic.
- C** Total revenue and average revenue are both increasing.
- D** Total revenue is increasing and demand is price elastic.

☐
☐
☐
☒

Turn over for the next question

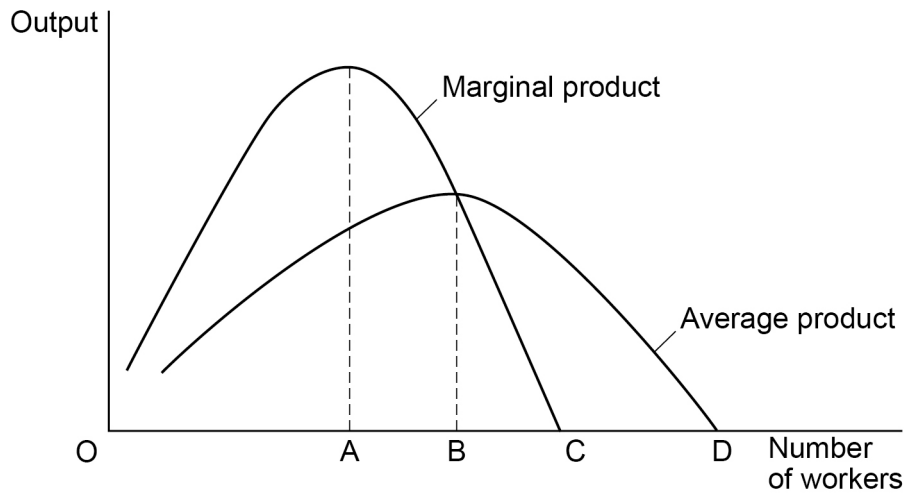
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0 3

Figure 1 shows how a firm's output changes as it adds more workers to its fixed capital.

Figure 1



How many workers should the firm employ if it wants to maximise its output?

[1 mark]

- A OA ☐
- B OB ☐
- C OC ☒
- D OD ☐

0 4

Which one of the following is most likely to help a trade union achieve a large wage increase for the workers in an industry?

[1 mark]

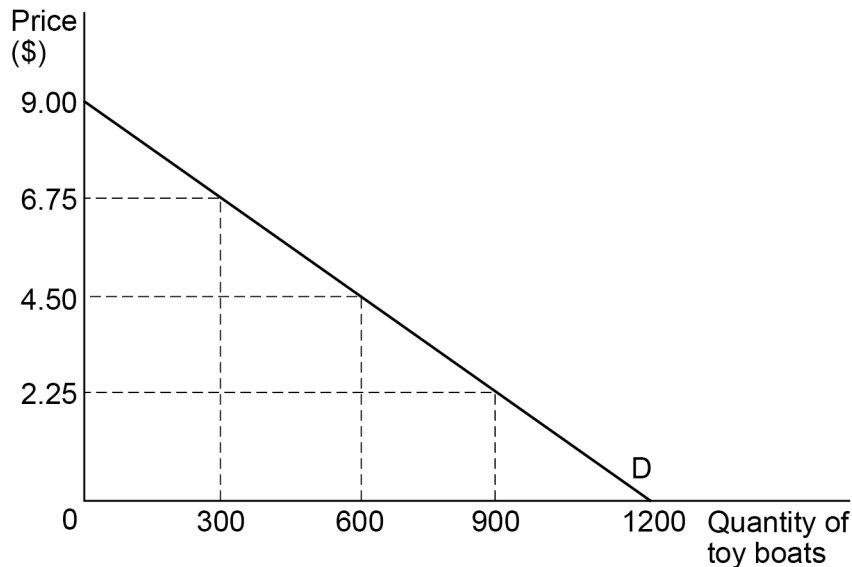
- A Demand for the industry's product is very price inelastic ☒
- B Few workers in the industry are trade union members ☐
- C There is only one employer in the industry ☐
- D Unemployment in the economy is high ☐



0 5

Figure 2 shows the demand (D) curve for Fang's toy boat business.

Figure 2



Which one of the following can be concluded from the diagram?

[1 mark]

- A** Marginal revenue is decreasing when price falls from \$4.50 to \$2.25
- B** Profit is increasing when price falls from \$6.75 to \$4.50
- C** Total revenue increases when price falls from \$6.75 to \$2.25
- D** Total revenue increases when price rises from \$4.50 to \$6.75

☒
☐
☐
☐

0 6

Hibo grows coffee beans on her farm. She can increase her production and the quantity she sells without affecting the market price.

In order to maximise profits she should

[1 mark]

- A** produce as much coffee as she can sell at the market price.
- B** produce the level of output where marginal cost is rising and equals price.
- C** produce the level of output which minimises her marginal costs.
- D** produce the same level of output as before but increase the price.

☐
☒
☐
☐

Turn over ►



0 7

There has been a fall in **both** producer and consumer surplus in the market for cars.

Which one of the following is the most likely reason for these falls?

[1 mark]

A A large firm has begun to use third-degree price discrimination.

☐

B A tariff has been placed on components used to make cars.

☒

C There has been a fall in the cost of producing cars.

☐

D There has been an increase in the price of a substitute for cars.

☐
0 8

Pamela pays a monthly fee that allows her to visit a gym as many times as she wants.

Table 2 shows how her total utility is affected by the number of times she visits the gym in a particular month.

Table 2

Number of gym visits	Total utility (units)
5	38
7	54
10	72
13	78

Which one of the following can be concluded from the information provided?

[1 mark]

A Marginal utility is highest for the 10th gym visit

☐

B The 11th gym visit provides 2 units of utility

☐

C The average utility from 13 gym visits is 6 units

☒

D The total utility from 6 gym visits is 46 units

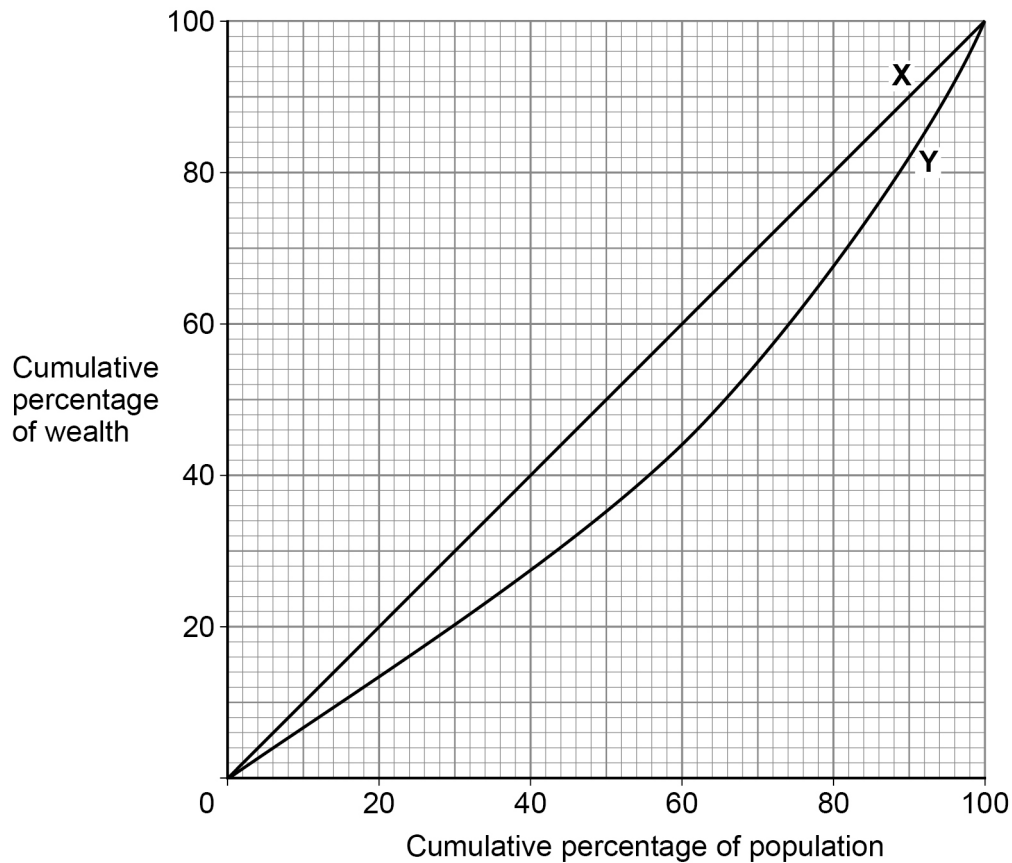
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0 9

Figure 3 shows a Lorenz curve X for a country that had a perfectly equal distribution of wealth. Lorenz curve Y shows a change in the distribution of wealth for this country.

The country has 8 million households and a total wealth of \$240bn.

Figure 3



All other things being equal, by how much does this change reduce the mean wealth owned by the poorest 50% of the population?

[1 mark]

A \$9 000

☒

B \$10 500

☐

C \$18 000

☐

D \$21 000

☐

Turn over ►



1 0

Table 3 shows how the marginal income tax rates in a country changed between 2022 and 2023.

Table 3

Income (\$/year)	Income tax rate in 2022	Income tax rate in 2023
0 – 10 000	0%	0%
10 001 – 40 000	20%	15%
40 001+	35%	50%

All other things being equal, which one of the following is the most likely effect of the change to marginal income tax rates introduced in 2023?

[1 mark]

- A** A reduction in relative poverty
- B** An increase in absolute poverty
- C** An increase in income inequality
- D** Reduced labour supply to unskilled jobs

☒
☐
☐
☐
10

Turn over for Section B

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Section B

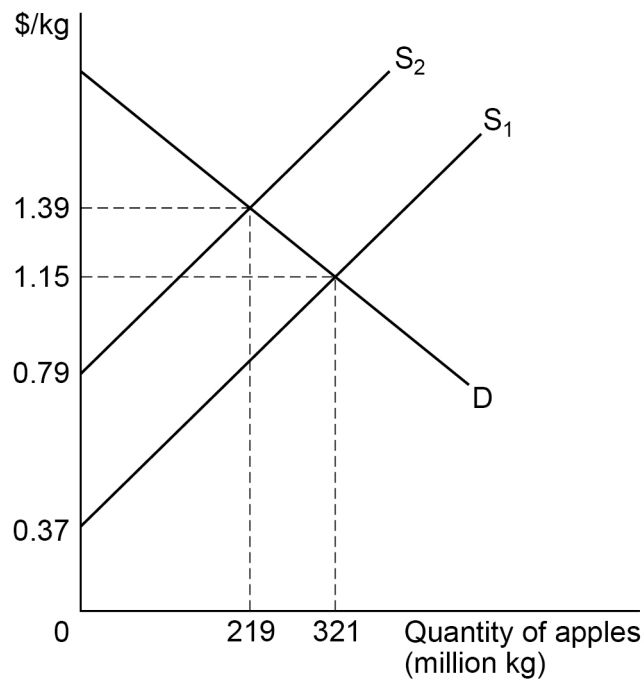
Answer **all** questions in the spaces provided.

1	1
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Figure 4 shows the original market supply (S_1) and demand (D) curves for apples which are sold to make fruit juice. There are many thousands of farms supplying apples that are homogeneous (the same).

Bad weather causes the supply curve for apples to shift from S_1 to S_2 .

Figure 4



1	1	1
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Identify **two** functions of prices in the allocation of resources in a market economy.

[2 marks]

Function 1 Signalling: price changes signal to producers and consumers where resources are wanted, e.g. a rise in the price of apples.

Function 2 Rationing: a higher price rations a scarce good among the buyers most willing and able to pay.



1 1 . 2

Use **Figure 4** to calculate the producer surplus after the supply curve for apples shifts from S_1 to S_2 .

You are advised to show your working.

[2 marks]

Producer surplus = area above S_2 and below the price, up to 219m kg

$$= \frac{1}{2} \times (\$1.39 - \$0.79) \times 219\text{m kg}$$

$$= \frac{1}{2} \times \$0.60 \times 219\text{m} = \$65.7\text{m}$$

Producer surplus = \$65.7m

1 1 . 3

Use **Figure 4** to calculate the percentage change in total revenue following the shift of the supply curve from S_1 to S_2 .

Give your answer to **two** decimal places.

You are advised to show your working.

[3 marks]

$$\text{Original TR} = \$1.15 \times 321\text{m kg} = \$369.15\text{m}$$

$$\text{New TR} = \$1.39 \times 219\text{m kg} = \$304.41\text{m}$$

$$\text{Change in TR} = \$304.41\text{m} - \$369.15\text{m} = -\$64.74\text{m}$$

$$\% \text{ change} = (-\$64.74\text{m} \div \$369.15\text{m}) \times 100 = -17.537\ldots\%$$

Answer = -17.54% (total revenue falls by 17.54%)

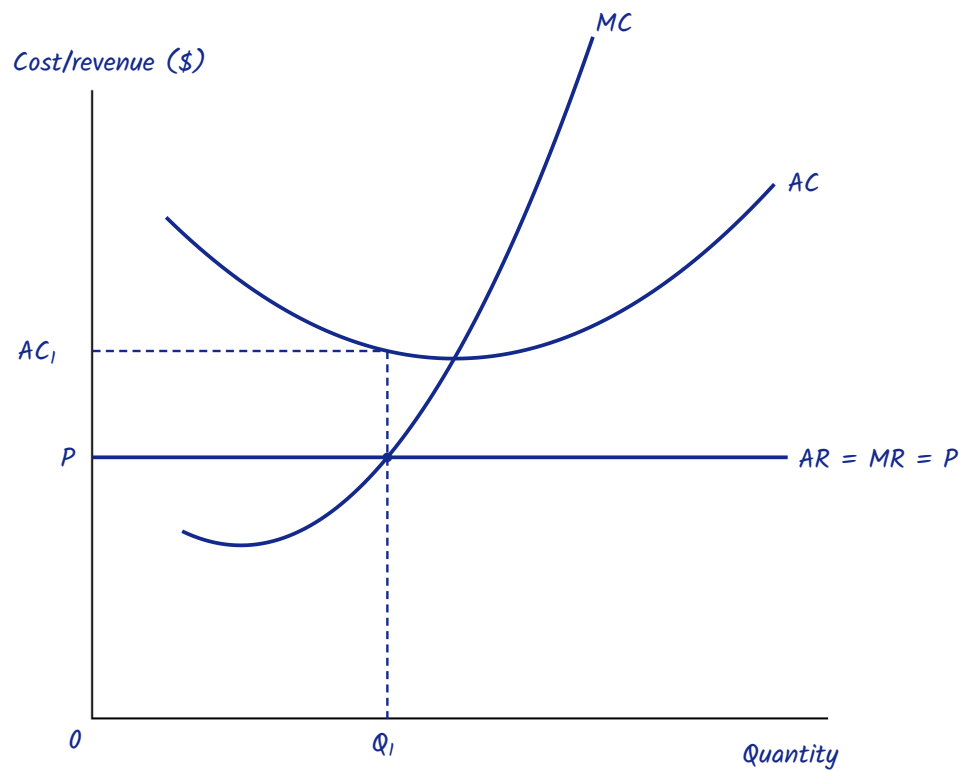
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1 1 . 4

Draw a diagram showing average revenue, average cost and marginal cost for a firm that would leave a perfectly competitive market in the long run.

[3 marks]



AR is below AC at every output, so the firm makes a loss (subnormal profit) even at its best output Q_1 where $MC = MR$, and leaves in the long run.

10



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 minimum monthly wage rates for supervisors and general cleaners and the Gini coefficient for income in Singapore.

1 2 . 1

Explain how increases in minimum wage rates are likely to affect the distribution of income in a country.

[4 marks]

A minimum wage is a legal floor below which employers cannot pay workers. A rise mainly raises the pay of the lowest-paid, such as cleaners, who are in the bottom income deciles. If higher wages are unchanged, the gap between high and low earners narrows, so income is more equally distributed: the Lorenz curve moves towards the line of equality and the Gini coefficient falls. Some of firms' revenue is redistributed from owners' profits to low earners, and workers just above the minimum may bargain for rises to restore differentials. However, if the minimum is above the equilibrium wage, demand for labour contracts and some low-skilled workers lose their jobs, so their income falls to benefits or zero, which widens inequality. The net effect depends on the elasticity of demand for labour and whether the minimum covers all sectors or only some.

Question 12 continues on the next page

Turn over ►



1 2 . 2

To what extent do the data suggest that increases in minimum wage rates affected the distribution of income in Singapore between 2018 and 2022?

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

[4 marks]

The data suggest some link. From 2018 to 2022 minimum monthly wages rose from S\$1660 to S\$1910 for supervisors (15.1%) and from S\$1060 to S\$1274 for cleaners (20.2%), while the Gini coefficient fell from 0.403 to 0.378, so income became more equal; the lower paid gained most. The largest rise, S\$80 (4.65% and 7.14%) from January 2019 to 2020, matched the largest fall in the Gini, from 0.398 to 0.375. However, from 2020 to 2021 the supervisor minimum rose 3% to S\$1854 yet the Gini rose from 0.375 to 0.385. Only two occupations are shown, there are time lags, and Covid, taxes and benefits also affected incomes, so correlation is not proof. On balance there is some, but limited, evidence that higher minimum wages made income more equal.

8



1 3

Extract C (lines 1–2) states: 'Governments around the world are making more use of behavioural policies to achieve their objectives.'

Explain, using examples, how governments can use behavioural policies to influence decision making.

[12 marks]

Behavioural policies are government interventions based on behavioural economics, which recognises that people often do not act as the rational, utility-maximising agents of traditional theory. Individuals have bounded rationality (limited information and limited ability to process it), bounded self-control and use rules of thumb, so they are affected by biases such as inertia, anchoring, social norms and present bias. By understanding how choices are actually made, governments can design the 'choice architecture' to nudge people towards better decisions without banning options or significantly changing financial incentives.

First, governments can exploit inertia through default choices. Many people never get round to joining a pension scheme even though it is in their long-run interest, because of present bias. If workers are automatically enrolled and must actively opt out, as in the UK's workplace pension scheme, most stay in, so saving for retirement rises and future dependence on state pensions falls. Opt-out organ donation systems work the same way and raise the number of donors at almost no cost.

Secondly, governments can use social norms. People like to conform to what others do. Tax reminder letters stating that '9 out of 10 people in your area pay their tax on time' have increased payment rates, so tax revenue rises and enforcement costs fall. Similar messages can reduce anti-social behaviour or energy use, for example energy bills comparing a household's use with its neighbours. Appeals to altruism, such as 'protect others', have been used to raise vaccine uptake, which creates positive externalities. Combining this with

Turn over ►



Extra space *traditional approaches, such as telling taxpayers how their taxes are spent on schools and hospitals, can further increase compliance.*

Thirdly, anchoring. People rely heavily on the first figure they see. Central banks use forward guidance about future interest rates or an inflation target, which anchors firms' and households' expectations, so that wage and price setting and investment decisions are made consistently with low inflation, making monetary policy more effective.

Fourthly, governments can address bounded self-control and information failure by framing information clearly. Traffic-light labels and calorie counts on food make the long-run costs of unhealthy choices salient at the moment of decision, so consumption of demerit goods such as sugary foods falls, reducing obesity and the cost to health services. Graphic warnings on cigarette packets work in a similar way.

Fifthly, simplifying choices. Complex forms deter people from claiming benefits they are entitled to, so apps and pre-filled forms increase take-up, helping to reduce poverty. Governments can also change habits: building cycle lanes and subsidising bicycles makes cycling the easy option, so over time car use, congestion and pollution fall.

Firms are also subject to behavioural influences, as decisions are made by people who may satisfice rather than maximise profit, so nudges such as simple information on energy saving can change business decisions too. Overall, behavioural policies influence decision making by working with the way people actually behave, often at low cost, although their effect depends on how well the nudge is designed and may be smaller than that of taxes or regulation.



1 4

Extract B (lines 20–21) states: ‘Subsidies are available to help employers pay for training and minimum wage increases. A key focus of the PWM is that it should increase productivity in sectors where it applies.’

Evaluate the likely effects of increased education and training on the demand and supply of labour in Singapore.

[25 marks]

The demand for labour is the number of workers firms are willing and able to employ at each wage rate. It is a derived demand and, according to marginal revenue product theory, equals the MRP of labour ($MPP \times MR$). The supply of labour is the number of workers willing and able to work in an occupation at each wage rate. Education and training build human capital, the skills and knowledge that make workers more productive. Singapore's Progressive Wage Model (PWM) links wage increases to training, with subsidies for employers, aiming to raise productivity.

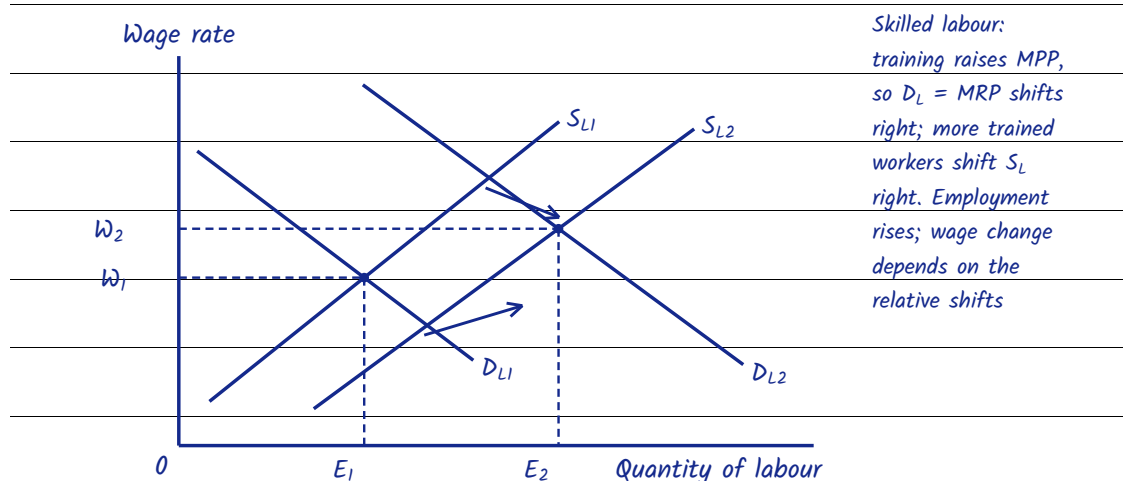
The main effect on demand is through productivity. Training raises the marginal physical product of each worker, so the MRP curve shifts right from D_{L1} to D_{L2} : at any wage firms want more workers. In Singapore this matters because unemployment is very low and the government strictly controls the hiring of foreign workers, so firms cannot easily expand by hiring more people; raising the productivity of existing workers is the main way to increase output. Better-trained cleaners or supervisors using new equipment complete more work per hour, so firms can afford the higher PWM wages without cutting jobs.

Higher productivity also lowers unit labour costs, making Singapore's firms more internationally competitive, which raises demand for their output and so the derived demand for labour. Trained workers are also often more motivated, with lower labour turnover, and cheaper to recruit.

However, the size of the effect on demand is uncertain. Singapore is already rated the highest in the world for human capital development, so further training may bring diminishing returns: the extra MPP from each extra course

Turn over ►





may be small, especially in low-skill jobs such as cleaning, where the scope to raise output per hour is limited. Training is also costly: if the rise in marginal costs (fees, time off work and the higher wages trained workers demand) outweighs the rise in MRP, firms will not employ more workers. This is why subsidies matter; how much of the cost the government is willing to subsidise, and for how long, will largely determine the effect on labour demand. In addition, highly skilled workers using technology may be complements to capital, raising their demand, but training workers to use automated equipment could also make it easier to substitute capital for some low-skilled labour, reducing demand for them.

Education and training also affect the supply of labour. More people gaining qualifications increases the supply of labour to skilled occupations such as technology, engineering and finance, shifting S_{L1} to S_{L2} . Training also makes workers more occupationally mobile, as skills can be transferred to similar jobs, so labour supply becomes more elastic and shortages in growing sectors are filled faster. Formally recognised qualifications or training linked to a clear career and wage ladder, as in the PWM, give an incentive for people to enter or stay in low-paid sectors that were previously unattractive, increasing supply there.



On the other hand, training can reduce supply to some occupations. Once workers are more skilled they may leave low-paid jobs for better-paid ones, reducing the supply of cleaners and other unskilled workers and pushing up their wages. Supply also takes time to respond: degrees and professional qualifications take years to complete, so in the short run supply of skilled labour is inelastic.

The overall effect on wages and employment depends on the relative size of the two shifts. In the diagram both demand and supply shift right, so employment rises from E_1 to E_2 ; the wage rises from w_1 to w_2 because demand increases by more than supply. If supply increases more, the wage may fall even as employment rises.

The effects also differ between sectors. Education is most significant in high-skill sectors, where specific qualifications are essential and the government and employers are focusing on technology-related skills, so demand for skilled labour is likely to rise strongly. In PWM sectors such as cleaning and security, on-the-job training is more relevant than formal education, and its effect on productivity, and so on demand, is likely to be smaller.

In conclusion, increased education and training are likely to increase both the demand for and supply of labour in Singapore, raising employment and productivity and making labour more mobile. The demand effect is likely to be the stronger in skilled, technology-based sectors, given the tight labour market and limits on foreign workers, so wages there should rise. However, the size of the effect depends on how much training actually raises MPP when human capital is already very high, on the level of subsidies relative to training costs, and on the time taken for qualifications to be gained. I judge that the effects will be positive but modest in low-paid PWM sectors and much larger in high-skill sectors in the long run.



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

Governments in many countries have research and development agencies that are state controlled and financed. These agencies have contributed to important technological advances in areas such as satellites, computer networks, and cars that do not need drivers.

Assess the role of governments in generating technological change in an economy.

[25 marks]**or**

1 6

An important way that producers of smartphones compete is by differentiating their products. However, in other oligopolistic industries, such as supermarkets in many countries, price competition is more significant.

Evaluate whether the use of price competition is likely to be the most effective way for firms in oligopolistic markets to increase their profits.

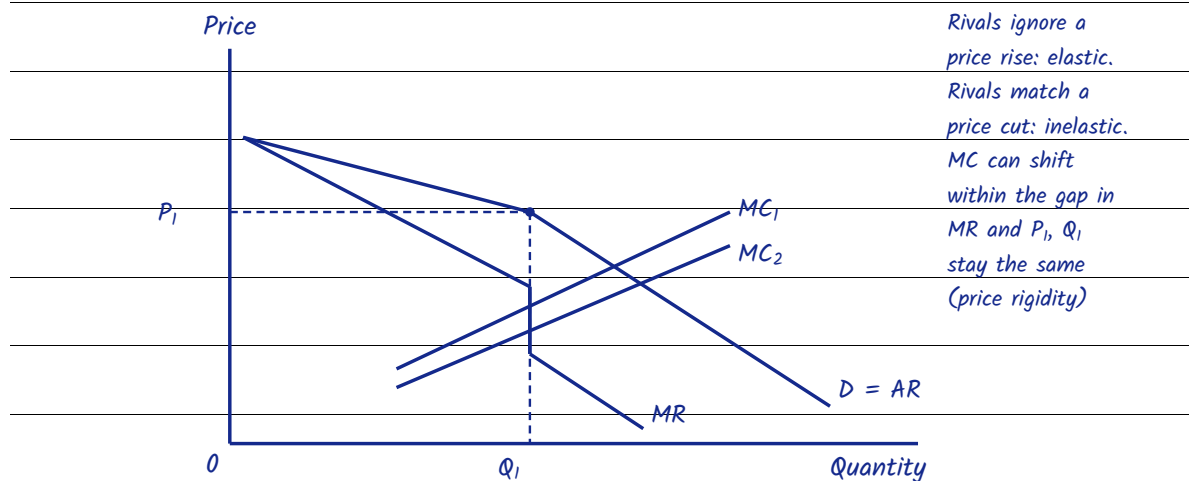
[25 marks]

Profit is total revenue minus total cost, and firms maximise it where $MC = MR$.

An oligopoly is a market dominated by a few large firms, with a high concentration ratio, high barriers to entry and interdependence, so each firm must consider rivals' reactions. Price competition means trying to win customers by charging lower prices, while non-price competition includes product differentiation, advertising and branding, quality, customer service and innovation.

Price competition can increase profits. If a firm's demand is price elastic, a price cut raises total revenue, and if it has lower costs than rivals, for example through economies of scale, it can cut prices and still make a supernormal profit while taking market share. Supermarkets sell fairly homogeneous products and shoppers





can easily compare prices, so demand for each supermarket is elastic, which is why discounters such as Aldi and Lidl have grown profitably through low prices. Firms can also use strategic pricing: predatory pricing (below average variable cost to drive rivals out, then raising prices) and limit pricing (keeping price low enough to deter entry) can protect long-run profits even though short-run profits are sacrificed.

However, the kinked demand curve model suggests price competition is often ineffective. If a firm cuts its price, rivals are likely to follow to protect their market share, so demand below P_1 is inelastic and total revenue falls. If it raises its price, rivals do not follow, so demand above P_1 is elastic and it loses many customers. There is a gap in MR, so even when costs change from MC_1 to MC_2 the profit-maximising price stays at P_1 . Price cuts can trigger a price war, where all firms cut prices and profits fall for the whole industry, as has happened between supermarkets. The model does not explain how P_1 is set, but it shows why oligopolists avoid price competition and why prices are sticky.

Instead, firms may increase profits by avoiding price competition through collusion. In a formal cartel or a price agreement, firms act like a joint monopoly, restricting output and raising prices, which maximises joint profits. Tacit collusion, such as price leadership, where firms follow the price set by a dominant firm, achieves

Turn over ►



similar results without an explicit agreement. Game theory shows the incentive to cheat (the prisoners' dilemma), and formal cartels are illegal in most countries, with heavy fines from competition authorities, so collusion is risky.

Non-price competition may be more effective. Smartphone producers such as Apple differentiate their products through design, cameras, software and brand image.

This creates brand loyalty, so demand becomes less price elastic, allowing the firm to charge a higher price without losing many customers; Apple earns very high profit margins on iPhones. Innovation can also give a temporary monopoly protected by patents, and heavy advertising raises barriers to entry. Unlike a price cut, which rivals can match immediately, a successful new feature or a strong brand is hard

Extra space to copy, so the gain in market share is more lasting. Supermarkets also use non-price methods such as loyalty cards, own-label ranges, quality, online delivery and store location.

However, non-price competition is costly. Advertising and R&D raise fixed costs, and there is no guarantee of success: a failed product or advertising campaign reduces profit. Rivals can respond with their own campaigns, so spending may simply cancel out, raising costs for all. The effectiveness also depends on whether the firm can fund it: firms with large retained profits can afford R&D and marketing, so profits themselves determine strategy.

Which strategy is most effective depends on several factors. First, the nature of the product: where products are homogeneous and buyers are price sensitive, as with groceries during a cost-of-living crisis, price competition matters more; where products can be differentiated, as with smartphones, non-price competition is more profitable. Secondly, market structure and costs: a firm with a clear cost advantage can win a price war, while a firm with higher costs cannot. Thirdly, rivals' strategies: price competition only works if rivals do not or cannot match the cut. Fourthly, the time period: price cuts may raise short-run sales but reduce long-run



profits, while investment in brands and innovation reduces short-run profit but raises long-run profit. Finally, the strategies are linked: low prices are often combined with advertising, and a strong brand allows prices to be set above rivals'. Price competition can also be used without starting a price war. Supermarkets often cut prices on a small number of 'known value items' such as bread and milk to create a low-price image while keeping higher margins on other goods, and price-matching promises signal to rivals that any cut will be matched, which can actually keep prices and profits high. So the effectiveness of pricing depends greatly on how the strategy is designed.

In conclusion, price competition can increase profits for a low-cost firm selling a fairly homogeneous product, as in supermarkets, or when used strategically to deter entry. However, because oligopolists are interdependent, price cuts are usually matched, leading to price wars and lower profits for all, as the kinked demand curve suggests. Therefore I judge that price competition is not usually the most effective way for oligopolists to increase profits; non-price competition, especially product differentiation and innovation, or tacit collusion through price leadership, is generally more effective because it reduces the price elasticity of demand and is harder for rivals to copy. The best strategy, though, depends on the product, the firm's costs relative to rivals and how rivals respond.

END OF QUESTIONS



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