ANGLO-CHINESE JUNIOR COLLEGE

2021 JC2 PRELIMINARY EXAMINATIONS

ECONOMICS

9757/01

Higher 2

Paper 1

25 August 2021

2 hours 15 minutes

Additional materials: Answer paper

READ THESE INSTRUCTIONS FIRST

Write your exam index number and name on all the answers you hand in.

Write in dark blue or black ink pen on both sides of the paper.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid / tape in your answers.

Answer **all** questions.

Begin Question 2 on a **fresh** sheet of paper.

At the end of the examination, arrange your answers in order. Fasten your answers for Question 1 and Question 2 **separately** using the cover sheets provided.

The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **8** printed pages (excluding the cover sheets)

Please check that your question paper is complete.

Answer **all** Questions.

Question 1: Smartphone and Electronic Waste

Global smartphone market and operating profit share, 2019

Figure 1: Market share in units sales (%)

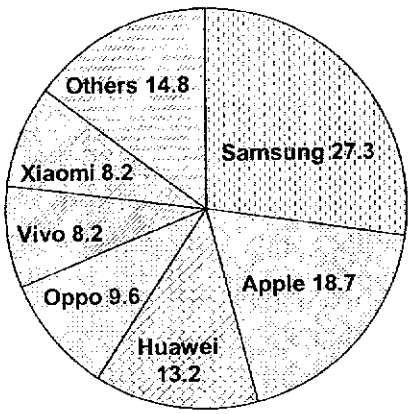
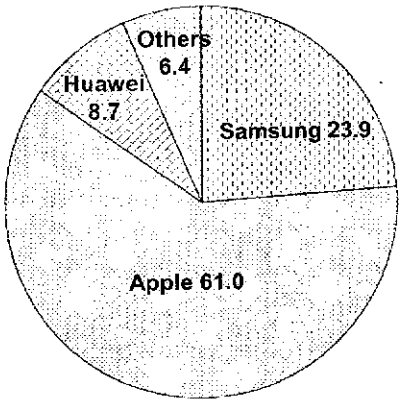


Figure 2: Operating profit share (%)



Source: https://www.statista.com

Extract 1: Apple shows the world it can push up price and still ensure demand

There is no other smartphone brand that plays only premium; the average selling price of Apple phones is over USD700. Over the years, Apple has been able to push up the price with this crowd.

If, over the next year or so, the price of flagship smartphones keeps going up, you can blame Apple. The tech giant has, over the past year or so, perfected the art of pushing up the price of its latest phones, but without any significant impact on demand. However, the best thing for Apple is that, with this strategy, even a drop in volumes will ensure good revenue.

Apple demonstrates it excels at extending the life-cycle of its product portfolio through incremental innovation, impressive technical specifications boosting performance of its devices, and smart marketing."

Source: Nandagopal Rajan, Financial Express, 17 September, 2018

Extract 2: Have flagship smartphone prices peaked?

Apple's announcement of the iPhone 11 at its annual product event last week largely centered on incremental improvements such as better camera and battery life, but the company's decision to lower the price of its base flagship smartphone caught our eyes.

Apple's decision to lower pricing can be seen as an acknowledgement that it has tested the upper limits of consumer acceptance. At a time when the company wants to expand its number of customers as it builds out its ecosystem of content and services, it's sensible that it slightly brought down the barriers for consumers to get their hands on the new device. The Apple

ecosystem is the special features of Apple devices (like iPad, iWatch, Airpods, AirTags) and services (like Apple Music, Apple TV+, Apple Arcade, iCloud) that take user experience to another level because of interaction between them.

In light of Apple's pricing announcement, there's little doubt that Samsung, along with Google, Huawei, LG and other flagship brands, will need to look at their numbers again, examining component prices and margins.

Google, as it prepares to launch its next-generation Pixel phones in October 2019, will be paying attention on device pricing just as much as specifications. And Samsung, which plans to bring out its Galaxy S11 series in March 2020, must also be evaluating its device pricing strategy.

Smartphone prices have reached levels few had predicted, but as much as people love their phones, fundamental economic rules do matter. Price elasticity seems to have kicked in and it will be interesting to see if prices have peaked indefinitely.

Source: Ben Wood, CCS Insight, 17 September 2019

Extract 3: Singapore's mountain of e-waste

Singapore generates more than 60,000 tonnes of electrical and electronic waste (e-waste) each year, and the rate of e-waste generation is expected to increase in tandem with economic growth and the prevalence of electrical and electronic equipment (EEE) among consumers and businesses.

Each person in Singapore generates 5.5kg of electrical and electronic waste every year - the equivalent of 36.5 smartphones.

Many people have no clue what to do with old and obsolete electrical and electronic equipment. The consumer survey had found that e-waste was generally given to deliverymen to cart away, or thrown down the chute, or leave them at rubbish bins and bin centres.

But such items often end up in the hands of scrap traders and rag-and-bone men, who lack the skills to recycle them safely and may unknowingly discharge chemical compounds which are harmful to both their health and the environment.

Long-term exposure to these compounds can affect the nervous system, kidneys, bones, hormonal balance and reproductive system. The chemicals are also not biodegradable and can persist in the environment for long periods of time. If e-waste is incinerated, it would add to carbon emissions and contaminate the ash at the Semakau landfill, NEA warned

To turn things around, the Government is looking to countries like Sweden - which has a sterling 52 per cent recycling rate for e-waste, and Denmark, where the figure is 43 per cent.

Both countries harness an "Extended Producer Responsibility" (EPR) strategy, where producers such as brand owners and manufacturers are required by law to ensure that their products are collected and recycled. Large retailers provide collection points at their stores and one-for-one take-back services upon the purchase of a product. They also have to pay an "environmental fee" to recycling companies to fund their services. The NEA said this will ensure that e-waste collected is recycled safely at proper recycling facilities.

Source: Straits Times, 19 January, 1 February 2018

Extract 4: E-waste mining could be big business - and good for the planet

At the University of New South Wales (UNSW), Professor Veena Sahajwalla's "urban mine" produces gold, silver and copper, it extracts these materials not from rock, but from electronic gadgets. "Research shows the cost of around USD360,000 for a micro-factory pays off in two to three years, and can generate revenue and create jobs," she says. "That means there are environmental, social and economic benefits."

In fact, research indicates that such facilities can actually be far more profitable than traditional mining. Academics examining data from eight recycling companies in China worked out the cost for extracting these metals from electronic waste. Expenses included the costs of waste collection, labour, energy, material and transportation, as well as capital costs for the recyclers' equipment and buildings. And when these costs - and the effects of Chinese government subsidies for recycling - were taken into account, the team found that mining from ore was 13 times more expensive than e-waste mining. The mining of e-waste, and production of pure metal ingots from it of copper or gold, promises to be a very profitable business.

Apple, meanwhile, is trying to counter criticisms that its phones are difficult to recycle with the recent demonstration of a robot - called Daisy - that can disassemble up to 200 iPhones an hour. Daisy can handle nine different models of the phone, separating parts and removing useful components.

Prof Mathews says more manufacturers should be making an effort to ensure their products can be mined at the end of their useful life. "One of the best policy supports for e-waste will be payment of a deposit to consumers who return their e-products like cell phones to central collection points," he says. "There could also be incentives paid to manufacturers to make their products more easily disassembled."

Source: Emma Woollacott, BBC News, 6 July 2018

(a) With reference to Figure 1 and 2 and Extract 1,

(i) Compare the market share in units sales and operating profit share for smartphone producers Apple and Samsung. **[2]**

(ii) Using economic analysis, suggest a possible reason for your observations in **a(i)** above. **[4]**

(b) Using evidence from the data given, explain the likely market structure for the global smartphone market. **[3]**

(c) **(i)** Explain the cross elasticity of demand between Apple's iPhone and Samsung's Galaxy and between iPhone and Airpods (wireless headphone). **[3]**

(ii) Discuss whether Samsung should follow Apple's pricing strategy to increase its total revenue from smartphone sales. **[8]**

(d) Extract 3 states that "the rate of e-waste generation is expected to increase in tandem with economic growth".

In the light of a looming e-waste crisis, discuss the measures the Singapore government can implement to raise society's welfare and whether there will be a trade-off in economic growth. **[10]**

[Total: 30]

Question 2: The Fourth Industrial Revolution

Extract 5: What is the fourth industrial revolution

The Fourth Industrial Revolution (FIR), also known as Industry 4.0, refers to how technologies like artificial intelligence (AI), virtual reality, augmented reality and the Internet of things (IoT) are merging with humans' physical lives. It focuses on the use of technology to provide increased automation, improved communication and monitoring, as well as smart machines that can analyse and diagnose issues without the need for human intervention.

Source: World Economic Forum, 14 January 2016

Table 1: Selected Indicators for the Indian Economy

	2014	2015	2016	2017	2018	2019
Annual real GDP growth (%)	7.4	8.0	8.2	6.8	6.5	4.0
Annual inflation (%)	6.7	4.8	4.9	3.9	3.7	3.3
Unemployment (%)	5.6	5.6	5.5	5.4	5.3	5.3
Youth unemployment (%)	21.7	22.3	22.6	22.7	22.9	23.0
Total labour force (millions)	473.3	477.3	481.2	484.5	487.6	494.7
Population growth (%)	1.2	1.1	1.1	1.2	1.0	1.0

Source: The World Bank, 15 June 2021

Table 2: Singapore and India literacy rate (% of people age 15 years and above)

Country	Literacy Rate (%)
India	74.3
Singapore	97.3
World	86.2

Source: The World Bank, 2018

Extract 6: Fourth Industrial Revolution in India

India is one of the fastest growing economies in the world and has acquired a global reputation for exporting services. FIR technologies has enabled India's structural transformation from agriculture to service-led growth without an expansion in manufacturing. It has given India the opportunity to improve its AI capabilities and digital communication to become not only just a leading sourcing destinations for global IT industry, but also one of the world's fastest growing e-commerce market.

To further increase its economic growth through FIR technology, the government has committed to build the infrastructure needed to support FIR, such as setting up of 5G network, with the aim to increase the manufacturing sectors' contribution to 25% of GDP by 2020.
Investments in both physical and human infrastructure matter greatly in supporting the new drivers of growth in the various industries and job creation. Hence, the government has also planned to set up a countrywide workplace training-based vocational education system.

Unfortunately, these government initiatives have not produced results. Its real GDP fell below 5% this year, lower than the annual 7% real GDP growth over a decade ago.

The reality is that government spending on infrastructure like roads and other agricultural infrastructure has remained insufficient. The existing vocational training programs are faced with outdated curriculum, shortage of qualified teachers and trainers and unavailability of proper infrastructure (building and equipment). India's overall literacy rate of almost 70% remains one of the highest in the world, and only 2% of its labor is skilled. Nearly 49% of its workers are still in the agricultural sector, engaging in traditional small-scale low-productivity agricultural methods due to lack of funds and capabilities to adopt the FIR technologies.

India has yet to take advantage of its large young working population. The adoption of FIR technology will lead to the creation of highly skilled and highly productive jobs that can provide higher per capita real income for the households. At the same time, FIR can also result in elimination of lower skilled jobs. Hence there is a need to increase training to increase labour productivity, both in manufacturing and agricultural sectors. And, with 70% of its population below 35 years old, 10 million additional jobs need to be created per year need to ensure adequate opportunities for the young population.

Source: Various, 2019

Extract 7: Impact of FIR on economic growth and distribution of income

The FIR technologies will provide an unprecedented boost to productivity and profit, and increase economic growth and job creation. However, it could also increase inequality between the low-skilled workers and the high-skilled workers.

In the era of the FIR, manufacturing will be developed in small quantity production systems of various kinds. Setting up factories in developing countries such as India are no longer attractive because low-wage workers can be replaced by automated robots. Rather, it is advantageous to relocate the production plant near the main market to quickly produce and distribute products to consumers. In order to retain those multinational firms in the economy, developing countries might see poorer and riskier working environment to secure cost competitiveness. In keeping with cost efficiencies, there has been a substantial increase in the hiring of contractual workers across manufacturing and other services. The increase in contract workers constituted for about 47 per cent of the total increase in employment in the manufacturing sector. As hiring contractual worker is cheaper and does not incur any extra cost such as insurance and employment benefits, this will further deteriorate the working conditions in the labour market.

While FIR provides opportunities, it could also pose threats to India's economic growth and distribution of income. Thus, India would have to manage the full extent of impact of the FIR.

Source: Mint, 4 November 2019

Extract 8: Singapore's approach to Industry 4.0

Driven by rising operational costs and a human resources crunch, the local industry in Singapore understands that it is imperative to adopt Industry 4.0. Its industries' technological advances, for example in Aerospace business, are driven by our longstanding goal to improve productivity and capture efficiencies.

Government support is not lacking for Industry 4.0. It has launched 6 clusters of 23 sector transformation maps covering 80% of Singapore's economy to provide opportunities for companies and the government as well as encourage partnerships between firms in related sectors, to work together to promote innovation and deepen capabilities. For example, firms in

hotel services and food services can use their own unique technological capabilities to work together to bring major events and conferences to Singapore, as well as improve experiences for tourists.

Singapore's approach to training and retraining of its workforce is multi-pronged. All workers from the top executives to the very low-skilled workers are to be trained in various aspects of Industry 4.0. Relevant training on Industry 4.0 technology such as data analytics and cyber security is made available for all workers from the engineers and even the lower skilled workers. Executive workshops are also provided for top managers to increase their awareness and possibly shift in mindset towards learning and the use FIR technology.

Even as the government invests time and resources to move the industry, the private business owners need to have the mindset to embrace FIR technology too. Managers and employees need to think more strategically and with a future-oriented view to consider the opportunities that Industry 4.0 can bring, and how best the business can harness these. They need to build the business and economic case, and not simply pursue technology for technology's sake.

Source: Business Times, 25 October 2018

(a) Explain a possible reason for the trend in India's youth unemployment between 2014 and 2019. [3]

(b) Using Table 1, explain how the data might be used to estimate changes in the standard of living in India over the period of 2014 – 2019. [3]

(c) Explain one factor that determines the impact of an increase in investment on the change in national income. [2]

(d) Using aggregate demand and aggregate supply analysis, explain how more young people joining the labour force would impact India's actual national output. [4]

(e) Consider the possible impacts of the Fourth Industrial Revolution on India's economy and assess whether it is likely to be of overall benefit to India. [8]

(f) Discuss whether India should adopt Singapore's approach to Industry 4.0 in order to achieve inclusive economic growth. [10]

[Total: 30]

End of paper

2021 Preliminary Examination – H2 Economics

(a) With reference to Figure 1 and 2 and Extract 1,

(i) Compare the market share in units sales and operating profit share for smartphone producers Apple and Samsung. [2]

Apple's share in units sales for smartphone is smaller than Samsungs's but its operating profit share is higher than Samsung's.
Or
Apple's share in units sales for smartphone is smaller than Samsungs's.
Apple's operating profit share for smartphone is higher than Samsung's.

(ii) Using economic analysis, suggest a possible reason for your observations in a(i) above. [4]

Students need to explain why Apple's share in units sales is smaller than Samsungs's but its operating profit share is higher than Samsung's.

Possible economic reason: Difference in price elasticity of demand for their smartphones

- Demand for Apple's smartphone is price inelastic while demand for Samsung's smartphone is price elastic.
- brief reasoning for respective PED
    - Apple: *'no other smartphone brand that plays only premium', 'perfected the art of pushing up price..... without significant impact on demand' or any other acceptable reason e.g. iOS*
    - *Samsung: close substitutes, all other (Android) smartphones, Huawei, Xiaomi, using Android OS*

Economic Analysis:

- demand for Apple's smartphone is price inelastic hence able increase its price [charge a higher price] to increase its total revenue.
    - increase in price though leads to a lower quantity demanded (sold) hence a lower share in unit sales, its increase in revenue gained from higher price is greater than the revenue loss due to lower quantity sold
- demand for Samsung's smartphone is price elastic hence charges a lower price than Apple as it has to reduce its price to increase her revenue
    - decrease in price led to a higher quantity demanded (sold) hence a higher share in unit sales to increase its revenue
- average (unit) cost of production can be assumed to be similar for both firms as the production technology and process are easily accessible and both firms enjoy economies of scale in production
- Apple's revenue can be expected to be much higher than Samsung with its premium (high) price charged compared to Samsung's lower price but higher units sold
- Profits being the difference between revenue and cost, Apple, with a higher revenue than Samsung and having similar average (unit) cost,

Apple's profits is thus much higher than Samsung's hence Apple having a larger operating profit share than Samsung.

(b) Using evidence from the data given, explain the likely market structure for the global smartphone market. **[3]**

3 - firm concentration ratio - top three firms take up **about 60%** of market share **OR**

- **6 firms** take up **about 85%** of global market share
- interdependency amongst firms or price leadership
  - Apple is the price leader and the rest of the firms respond or adjust their prices based on Apple's pricing
  - from extract 1: *If, over the next year or so, the price of flagship smartphones keeps going up, you can blame Apple.*
  - from extract 2: *In light of Apple's pricing announcement, there's little doubt that Samsung, along with Google, Huawei, LG and other flagship brands, will need to look at their numbers again, examining component prices and margins.*

(c) (i) Explain the cross elasticity of demand between Apple's iPhone and Samsung's Galaxy and between iPhone and Airpods (wireless headphone). **[3]**

- positive inelastic cross elasticity of demand between Apple's iPhone and Samsung's Galaxy since there are substitutes to each other, perform the similar functions but they are weak substitutes due to the strong brand loyalty Apple enjoys
- negative elastic/inelastic cross elasticity of demand between iPhone and Airpods as they are complementary goods – Airpods are used with iPhone, a smartphone, for as a wireless headphone for handsfree voice calls or to listen to music stored on the smartphone
  - elastic (strong complement) – works best together to enhance user experience to a higher level or brand loyalty to Apple
  - inelastic (weak complement) - iPhone can be paired with any other brands' wireless headphones

(ii) Discuss whether Samsung should follow Apple's pricing strategy to increase its total revenue from smartphone sales. **[8]**

Question Analysis:

- need to first establish Apple's pricing strategy
- discuss what will happen to Samsung's total revenue if it follows Apple's pricing strategy at this point in time
- consider whether Samsung should follow Apple, now? or in the future?
- what strategies should Samsung take to raise its revenue if it does not follow Apple

Introduction:

- establish Apple's pricing strategy
  - increasing and premium (charge a price much higher than competitors) pricing,
  - took a turn to lower their premium price when reaching US$1000

Body:

Apple is able to ***charge a premium price*** and ***keep increasing*** it to increase its revenue because it is able to create a price inelastic demand for its smartphone.

- Explain Apple's strategies to create a price inelastic demand for its product (from extracts)
  - innovation **leader**, impressive technical specifications boosting performance of its devices, and smart marketing *(need to paraphrase)*
  - create an Apple ecosystem - composite demand – to work seamlessly with other complementary Apple products (Apple ecosystem)

Though Samsung has a premium model in their range of smartphones, it is a poor substitute for the Apple's iPhone *(evidence from 1st sentence of extract 1)*, that is, positive inelastic cross elasticity of demand

The more popular Samsung smartphone is their cheaper and more substitutable model. The smartphone market is highly contestable and Samsung has yet to be able to differentiate itself to gain a strong distinctive edge from the other smartphone producers or newcomers (Huawei, Xiaomi, ...)

The demand for Samsung's smartphone is hence price elastic.

- in an oligopoly, Samsung's key competitors may not follow Samsung's increase pricing
- explain how if Samsung follows Apple to increase its price to charge their smartphone at a premium level (higher than main competitors), they will suffer a lower total revenue as gain in revenue from a higher price will be less than the loss in revenue from the more than proportionate fall in quantity demanded
- on the other hand, Apple is the price leader in this market, it is likely that there is tacit collusion amongst the other smartphone producers to increase their prices too as from Extract 1 it is mentioned that Apple is to be blamed for rising smartphone prices
- Samsung should thus follow Apple to increase its price with minimal impact on its quantity sold thereby increasing its total revenue
- pricing strategy should be at a competitive level, very similar to competitors, if possible, only marginally higher than competitors if Samsung has a slight edge over its competitors

As such, Samsung should ***not follow*** Apple's ***premium pricing*** strategy unless Samsung is able to significantly differentiate itself from its current competitors. Even that, it is only able to ***price its smartphones higher than its current competitors and not as high as Apple.***

Samsung should focus on non-price strategies to develop their premium model to increase its total revenue.

- Explain and elaborate
  - increase its expenditure on R&D to create unique features for its smartphone
  - increase expenditure on advertisement and celebrity endorsement to develop a strong brand image and build loyalty to its brand
  - leverage on Samsung's existing range of electronic products to develop a Samsung ecosystem

Samsung should follow Apple in their non-price strategies to reduce its cross elasticity of demand with its current competitors, Huawei and Xiaomi to achieve a price inelastic demand so it can increase its price, widening its premium pricing (against current competitors)

Only when Samsung is able to successfully differentiate itself from its current competitors can it follow Apple to adopt an increasing premium pricing.

In the event that the outcomes of Samsung's non-price strategies reaches a level that rivals Apple's, only then, should Samsung being to follow Apple in its level of premium pricing.

It must also be noted that the price elasticity of demand for smartphones may change to become price elastic when the price of smartphones goes beyond US$1000 as premium smartphones becomes a luxury and consumers will begin to prefer the lesser models. It is for this reason that Apple took a turn to decrease the price for its smartphone and focused on developing its ecosystem to create a negative elastic cross elasticity of demand between its smartphone and its devices and services.

Likewise, Samsung should also take the lead from Apple to develop their ecosystem to raise their total revenue from (increasing) smartphone sales through their complementary digital devices and services instead of solely from increasing prices.

Conclusion:

- make an overall stand on whether Samsung should follow Apple
  - now vs future
  - readiness to follow
  - what strategies to follow and what not to?

Level	Descriptor	Marks
L2	• comparison of pricing strategies between Apple and Samsung • discussion of strategies should have reference to increasing revenue • discussion of price and non-price strategies • good use of evidence from the extract	4 – 6
L1	• listing or explanation of strategies that Samsung can take but does not direct strategies to increasing its revenue • focus on either Apple's or Samsung's strategies • lack comparison of pricing strategies between Apple and Samsung	1 – 3
E	• good reasoned evaluative conclusion to address question • Reasoned judgement on the whether Samsung should follow Apple's pricing strategy	1 – 2

(d) Extract 3 states that "the rate of e-waste generation is expected to increase in tandem with economic growth".

In the light of a looming e-waste crisis, discuss the measures the Singapore government can implement to raise society's welfare and whether there will be a trade-off in economic growth. **[10]**

Question Analysis
- establish the relationship between e-waste from the consumption of electronic goods and society's welfare
- establish the objectives of the measures to raise society's welfare
- explain and evaluate the measures that can be implemented to achieve the objective which will then raise society's welfare
- consider whether the measures implemented will have a negative impact on economic growth

Introduction:
- explain how the consumption of electronic goods will generate e-waste hence an external cost
- market equilibrium consumption level is higher than social optimal level
- deadweight loss incurred by society
- useful to have a diagram
- lack of information on disposal of electronic goods pose a problem to increasing society's welfare

Body:

- to increase society's welfare, measures should decrease the deadweight loss incurred by society from e-waste generated from consumption of electronic goods
- ***objectives of measures*** to be implemented
  - ***reduce the consumption*** of electronic goods
  - ***reduce the external cost generated*** from e-waste [e-waste management] (reduce the distance between MSC and MPC to reduce deadweight loss)

The necessary measures to increase society's welfare should be able to ***reduce the external cost*** generated from the consumption of electronic goods and to reduce unnecessary consumption of electronic goods.

In the context of Singapore, the lack of information on disposal of electronic goods prevents the reduction of external cost from e-waste (e-waste management)

- explain what information is lacking on disposal of electronic goods
  - what to do with old and obsolete electronic goods
  - where are the collection and recycling centers
  - information on recycling (methods, technology)

Explain the measures needed to address the above problems (no diagram needed)

- public education, campaigns, roadshows for consumers on where they can do with their old and obsolete electronic goods
  - reuse – donate, sell to 2nd hand shops
  - recycle – recycle collection centers

Evaluation:
It is important that the government should address this lack of information on e-waste disposal as only when all e-waste can be collected can we begin to attempt to manage these e-waste safely to reduce external cost to increase society's welfare

Whilst consumers may now know what they should do with their e-waste, there must be sufficient easy and convenient collection centers to facilitate collection of e-waste. Consequently, the next area that requires as much government attention is to have an extensive and coordinated network of e-waste collection centers.

Explain measures:

- Extended Producer Responsibility strategy
- Collection points in malls

Evaluation:
Even if government is successful in implementing e-waste collection, if the e-waste is not sent for safe recycling, the problem of e-waste is yet to be fully addressed and increase of society's welfare is not as yet guaranteed.

These e-waste collected by firms can be recycled locally or by exporting them to e-waste recycling firms abroad. The e-waste recycling industry in Singapore is at its infancy and not at all coordinated and may not be using up-to-date technology to enhance firms' profitability

The government must implement measures develop the local e-waste recycling industry to ensure there sufficient firms to recycle them to effectively reduce the external cost of e-waste.

[***use diagram*** to show a reduced external cost, ***MSC closer of MPC*** and hence a reduced deadweight loss at market equilibrium]

Evaluation:
- increase in society's welfare with the same amount of electronic good consumed
- a longer term solution to decreasing consumption of electronic goods to increase society's welfare

Measures
- tax concessions to attract foreign e-waste recycling firms to set up in Singapore (to benefit from their e-waste processing technology e.g. e-mining)
- subsidies for R&D in recycling of e-waste
- subsidies, tax concessions and consultancy services to encourage and help local firms set up e-waste business – to develop new industry
- evaluation of measures

To ensure viability of these e-waste recycling firms and to address the issue of external cost, consumers and producers should be made to ***internalize these external costs***. The government can implement an 'environmental fee' when electronic goods are sent for recycling. Also the EPR strategy will raise the cost of retailing electronic goods that can be passed on to consumers to share the burden of internalising the external cost of e-waste disposal .

- economic explanation of how an 'environmental fee' will lead to an increase in price of electronic goods and consequently, a reduction in the quantity demanded for electronic goods (especially when they are not necessary) ***[Diagram needed]***
- with a lower quantity of electronic goods consumed, they will be a less e-waste generated, ***reducing the deadweight loss*** incurred by society, indirectly, raising society's welfare.

Consider whether there will be trade-off in economic growth
- possible trade-off
  - environmental fee: if sufficiently high,
  - will decrease the consumption of electronic goods
  - firms will produce fewer electronic goods
  - lower output from consumer electronic goods industry
  - negative impact on economic growth

- need not have a trade-off, in fact, may support economic growth
  - recycling e-waste can be profitable business with new technologies, innovations in producing electronic goods that can be recycled cost efficiently
  - develop a new industry: e-waste recycling industry
  - sunrise industry with increasing e-waste to be managed locally, regionally and globally
  - ability to export new technologies developed by local firms

Singapore, if it is able to put in place a comprehensive package of measures with strong responses from consumers and firms, increasing society's welfare will not have a trade-off in

economic growth. A successful solution to e-waste management will also contribute towards sustainable economic growth for Singapore.

Level	Descriptor	Marks

L2	• good reference to Singapore's context
	• good reference to question on raising society's welfare or trade-off
	• accurate economic analysis of measures with reference to reducing external cost or deadweight loss to raise society's welfare
	• comprehensive range of measures discussed
	  ◦ information failure (public education)
	  ◦ internalization of external costs
	  ◦ reducing of external costs (recycle and reuse)
	• good use of evidence from extracts to support the answer.
		5– 7

L1	• explanation of measures without reference to Singapore's context • poor or no reference to question of raising society's welfare or trade-off • limited use of economic concepts • Limited/poor use of evidence from extracts	1 – 4

E2	• reasoned evaluative conclusion on
	  ◦ range of measures to be implemented / package of measures
	  ◦ prioritization of measures to be implemented
	  ◦ on trade – off between increasing society's welfare and economic growth
		2 – 3

E1	• Judgement may not be supported by analysis.	1

2021 H2 Economics Prelim Paper 1

Question 2: The Fourth Industrial Revolution

(a)	Explain a possible reason for the trend in India's youth unemployment between 2014 and 2019. [3]
	Table 1 shows that India's youth unemployment has been rising between 2014 – 2019 Possible reasons: • There is a mismatch between the skills the young population has acwuire from school and the skills demanded by the firms in the job market. The young population are low educated and lacks skills required in the current labour market due to lack of education and proper training. With the rising use of technology in production, the firms require more workers with specific skills that are relevant to these technology. However due to the outdate curriculum in the schools, the young population graduate from schools with inadequate skills to match the increasing demand for workers with the relevant skills. • Not enough jobs for the rising number of young school leavers entering the job market. Over 70% of India's population are below 35 years old, and given that the country's population rate is around 1%, the number of young people entering the labour market adds to the increase in labour force every year (as seen in Table 1). With the increase in technology, production is now automated requiring less manpower. Hence the number of jobs created is not enough to meet the increase in the number of young population entering the labour market. Extract 6 states that 10 million additional jobs are needed annually to provide sufficient job opportunities for the young population.
(b)	Using Table 1, explain how the data might be used to estimate changes in the standard of living in India over the period of 2014 – 2019. [3]
	Annual real GDP growth had fallen from 7.4% in 2014 to 4% in 2019, indicating that the country's real GDP has increased at a decreasing rate. Population growth has increased by about 1% annually. This is slower than the rate of increase in real GDP, albeit at falling rate. This indicates slow increases in India's real GDP per capita between 2014 and 2019, suggesting that the households' income has been rising at falling rate, implying that material SOL increased very slowly between 2014 and 2019. Another possible answer: India's falling unemployment rate and its rising total labour force between 2004 and 2019 indicate that more people working and earning income, hence the ability to increase spending leading to increase in SOL.

(c)	Explain one factor that determines the impact of an increase in investment on the change in national income. [2]
	Possible factors: • Value of multiplier The multiplier is the magnitude of a change in NI when there is a change in AD. An increase in investment will directly increase AD. The increase in AD will lead to a larger increases NI through the multiplier process. The larger the value the multiplier, the larger is the effect of an increase in investment on national income. The size of the multiplier depends on the size of the country's withdrawal. A country with high savings and imports has a small multiplier, hence a change in investment will have a smaller change in national income than another country with low withdrawals. • Availability of unemployed resources to increase production to meet the increase in AD. o With availability of resources in the economy, increasing production to meet the in higher demand for goods and services will be easier than when the economy is already at full employment. At full employment, national output cannot increase very much to meet the higher AD caused by the increase in I. o The effect of an increase investment on national income depends on availability of workers with the relevant skills required in the new investments. Lack of skilled workers → the newly investment machinery will not be efficiently utilized or remain idle. Hence the effect of the increase in investment on national income is limited • Proportion on Investment to overall AD. For a country where I makes up large proportion of AD, a change in I would have a greater impact than another country that has a smaller proportion of I to its overall AD.
(d)	Using aggregate demand and aggregate supply analysis, explain how more young people joining the labour force would impact India's actual national output. [4]
	<u>Increase in SRAS</u> More young people enter the labour force will increase the size of the country's labour force. This increase in labour supply will lower the wage rate in the labour market. Furthermore, due to their lack of experience, these young workers command lower wages. Hence the supply of cheap labour increases. This leads to lower labour cost. Firms now are able to increases production at lower AC →increases SRAS. This Leads to increase in India's actual national income, <u>Increase in AD</u> As more young people enter the labour market, the number of people earning income increases, increasing the economy's consumption thereby increasing AD. This leads to an increase in production and, through the multiplier process, increases NI The increase in National income due to more AD further increases the national output due to the increase in SRAS, leading to a large overall increase in real national income in India

(e) Consider the possible impacts of the Fourth Industrial Revolution on India's economy and assess whether it is likely to be of overall benefit to India. [8]

Approach:

Command	(i) Explain and analyse (ii) Assess whether i.e. evaluate whether the positive impact outweigh the negative impact
Focus	The impact of FIR on India's economy, i.e. on economic growth, unemployment, standard of living – positive and negative impact in the short-run and in the long-run
Context	India

Introduction:

FIR refers to the use of smarter technology that can do more production functions and increase efficiency. Such that technology can be expected to lead to overall benefit for India as it can increase India's economic growth, job opportunities and hence improves standard of living for its people. However FIR has some negative impact on India.
Hence FIR is likely to be of overall benefit to India if these negative impact is addressed.

Positive impact of FIR

P: **FIR increases economic growth and job creation and hence improves SOL**

- Firms embracing the FIR technologies adds the whole country's increase in investment hence increasing the country's AD. This increases national income through the multiplier process, thereby increasing economic growth.
- The increase in investment in FIR technology increases productivity as production becomes more capital-intensive, thus increasing India's productive capacity, hence increasing its LRAS. This has the capacity to increase India's national output, hence increases India's potential economic growth.
- As mentioned in extract 6, FIR has enabled India to develop its services sector, creating job opportunities in this sector, reducing the country's level of unemployment and increasing the country's economic growth.
- FIR technology has also led to creation of jobs as manpower is need in manning and maintaining the FIR machineries.
- With increase in employment → more people income → increase of household income → increase material SOL

Transition:

Unfortunately the benefits of FIR is not spread out equally throughout the whole economy. FIR benefits industries that are developed in the use of FIR technologies and workers with the relevant skills required in the FIR.

Negative impact of FIR

P: FIR leads to unemployment among low skilled workers

- Although FIR leads to more job creation and has the potential to provide more job opportunities, unfortunately it causes loss of jobs for the lower-skilled workers as their jobs are easily taken over by automated robots. This leads to structural unemployment.
- Given India's low literacy rate (Table 2), implying that India's labour is largely made up of low-skilled workers, the increase in structural unemployment among the low skilled workers is likely to be greater than the increase in employment from the new job opportunities that arise from the FIR. Hence FIR may not lead to significant fall in unemployment in India. There is a possibility for FIR to lead to high overall unemployment.
- The availability of FIR technology can lead to foreign multinational firms moving their production out of India as cheap unskilled labour are no longer required to be cost efficient. This reduces the availability of job opportunities for the Indian workers, especially the young workers who just entered the labour market.

P: **Poor working condition**

- FIR involves the streamline of production to increase firms' productivity and lower their cost of production by lowering the use of labour. As they are no longer reliant on labour, the workers now have less bargaining power and are more commonly employed as contract workers. In fact, with the use of FIR, 47% of the increase in employment in the manufacturing sector are hired on contractual basis (Extract 7). These workers do not get to enjoy employment benefits such as health benefits and other job securities and safety. Therefore,-although FIR lead to more jobs for workers with the necessary skills, these workers may not in favorable working conditions.

P: **FIR widens income gap**

between the low-educated and low-skilled workers and the highly skilled workers, especially workers with the skills required in the FIR

FIR also widens the income gap between workers working in sectors that are more developed in the FIR technology such as the services sector, and the workers working in the poorly developed agriculture and manufacturing sectors.

<u>Overall evaluation:</u>

- FIR does indeed benefit India's economy as it has the potential to increase both actual and potential economic growth. Extract 6 stated that FIR has enabled India to develop its services sector in both the global IT industry and e-commerce market. If the use of FIR is successfully transferred to the manufacturing and agriculture sectors, India's economic growth can increase exponentially, and sufficient jobs will be created to absorb its large labour force.
- There is a need to develop the country's basic infrastructure such as roads as well as the relevant infrastructure needed to support FIR in the manufacturing and agriculture sector so that the firms, especially in the agriculture sector can fully access FIR technology. This will increase efficiency and hence production in the rural area, hence add to the country's economic growth.
- The FIR could lead to overall benefit to India's economy if the country's educational level is improved so that the workers are more educated and trained in the skills required in the FIR technology. This will increase the workers' employability and also give reasons for multinational firms to remain in India and attract new ones to provide

the job opportunities for India's growth labour force. This will not only reduce India's unemployment rate but also increases its economic growth.

- However, FIR will not be of overall benefit to India if the move towards FIR is too fast. For example, forcing FIR into the various sectors without addressing the low literacy rate will lead to ineffective training of FIR skills and further increase the structural unemployment. Hence, given India's low literacy rate, very limited skilled labour (only 2% of its labour is skilled) and insufficient infrastructure, moving towards FIR too fast will worsen the challenges of FIR, hence not lead to an overall benefit to India.

Level	Description	Mark
L2	Clear explanation on positive and negative impact of FIR on India's economy (economic growth, unemployment, standard of living, income equity) Good use of relevant economic analysis and relevant information from the data.	4 - 6
L1	An answer that superficially explains the impact of FIR on India's economy, without use of economic concepts or economic framework No references to the relevant information in the data. Many conceptual errors	1 - 3
E	Example: weigh the positive and negative impacts of FIR on India's economy to make an evaluative judgement on whether FIR is likely to be an overall benefit to India Examples: i. FIR is likely to be of overall benefit to India because its benefits on economic growth and unemployment outweigh problems of income inequity and lower SOL ii. FIR is likely to be of benefit to India if the country's literacy rate is increased or if there is greater government provision for training.	1 - 2

(f)	Discuss whether India should adopt Singapore's approach to Industry 4.0 in order to achieve inclusive economic growth. [10]

Command	Discuss o consider the strengths and limitations of Singapore's policy approaches; o the extent to which these policy approaches can help India achieve inclusive economic growth
Concepts	Supply-side policies, inclusive growth
Focus	Can India adopt the policy approaches to Industry 4.0 adopted by Singapore be used in India to achieve inclusive economic growth
Context	India

Introduction:

Singapore has adopted several supply-side policies involving partnerships between firms and training of workers to take advantage of Industry 4.0. This has led to increase in economic growth

Inclusive growth is an economic growth that takes income distribution into consideration and does not contribute to worsening income inequality, hence ensuring that economic growth benefits everyone in the country.

Whether India is able to achieve inclusive growth by adopting Singapore's approaches to Industry 4.0 depends on several factors, such as the similarity between the two economies.

Singapore's approach 1: Government providing support and opportunities for partnership between firms on related industries.

- This allows firms to increase efficiencies in production through tapping into each other's technology and sharing of resources in research and development.
- Partnership will enable the firms to share resources, hence reducing their labour crunch and operational costs → allowing them to be more competitive in the global market.
- Their combined innovations towards improving the quality and increasing the variety of their products, enable them to increase the firms' capability in catering to different tastes and preference and venture into new markets, boosting the demand for their products in the global market
- Hence such partnerships will not only lead to increase in investment and export leading to increase in AD, but also will lead lower production costs thereby increasing SRAS, and increase the economy's productive capacity leading to increase in LRAS. This will increase national income and hence economic growth both in the short run and in the long run (actual growth as well as potential growth).

- Relevance to India and effectiveness in achieving inclusive economic growth
  - This approach of supporting and providing opportunities for firms from different sectors to work together can help India's poorly developed sector such as the agriculture sector where most of the workers are probably earning lower income.
  - For example, the agriculture sector could be developed with the help of the more developed firms in the services sector. Through the use of artificial intelligence, the services firm can work with the farmers in areas of the transportation, storage and retailing of the agriculture products, thereby reducing wastage and transport

and storage costs. This can help increase productivity in the agriculture sector and hence increase the farmers' and their workers' income, thereby narrow the income gap between the workers in the agriculture sector and those in the services sector.

Evaluation:

- This require government's financial and infrastructure support. The setting up 5G network is good for the firms to communicate with one another in their partnership. However, such infrastructural support from the government is insufficient.Increasing basic infrastructure like roads in the rural would increase the effectiveness of the partnerships between the firms in the services and the agricultural firms in developing the rural sectors and narrow the income gap between workers in the different sectors of the economy.
- For the partnership between firms to be effective in achieving inclusive growth, there is need for the 2 sectors to be somewhat equally developed. Without reliable transport and communication infrastructure firms in the developing sectors will not be able to benefit fully from the partnership with other firms.There is also a need for there to be common objectives between the firms, i.e. increase profits through the use of Industry 4.0, and a willingness to share technology with each other. Otherwise, the partnership may lead to exploitation of the weaker firms by the more tech-savvy firms, hence worsening the income gap between workers in in the different sectors.
- Partnership with farmers in the agricultural sector may be challenging, given that many of the farmers are small-scale farm owners engaged in traditional farming methods. The lack of knowledge and the lack of funds may affect their willingness and ability to embrace Industry 4.0 respectively. Hence there is a need for the government to provide the financial support and encourage the firms to participate in partnerships firm firms in other related sectors.

Singapore's Approach 2: A multi-pronged training of all workers from all levels, from top executives to the low-skilled workers, to ensure that everyone is trained in various aspects of Industry 4.0.

- This will ensure that every worker has a role to play in adding to the country's national output and hence to the country's economic growth.
- Through training, structural unemployment will be reduced as more workers acquire the skills required in Industry 4.0. They are more employable as their productivity increases → and able to earn higher income, hence narrow the country's income gap

Relevance to India and effectiveness in achieving inclusive economic growth

- India has large young working population that are eager to learn. Government provision for training will increase the workers' productivity → increases productive capacity →increases NI and economic growth.
- Training will also increases the young workers' employability and ability to earn higher income. This is especially for the lower skilled workers

Evaluation

Training India's low skilled workers will be challenging for the government.

- For Singapore, it is easier for training to take place regardless of the workers' educational level, given its high literacy rate. For India, training its large number of low-educated workers alone is very costly and challenging for the government.
- The low literacy rate indicate in India shows that many of its workers are illiterate. Hence it would be very challenging to train the low skilled workers who can hardly

read and write on Industry 4.0 technology, much less understand the complexities of Industry 4.0. Hence there is a need to equip these workers with the basic 3Rs of learning (reading, writing and Math) and improve the country's education system

- Ideally, India should work on improving the country's literacy rate and provide training on Industry 4.0 simultaneously so as not to lose out on gaining the benefits of Industry 4.0 to achieve inclusive growth. However, this may proof very challenging for India due to financial and structural limitations.

Overall evaluation

Adopting Singapore's approached has the possibility for India to increase economic growth. However its effectiveness in achieving inclusive growth depends on

i. mindset of the firms and workers in the different industries in embracing Industry 4.0. Workers need to be willing to learn to read and right and be trained. Given the opportunities to access industry 4.0 technology, farmers need to be willing to change their farming methods to improve their output.

ii. the country's literacy rate and the availability of infrastructure support FIR technology as well as infrastructure to increase training

Level	Description	Mark
L2	Clear economic analysis of how Singapore's policies lead to higher economic growth and how India could use the policy to achieve inclusive growth Good relevant references to the information in the case study	5 - 7
L1	Superficial explanation on how Singapore's policies can lead to inclusive growth, but lacking economic analysis and lack references to the case No consideration to the state of India's economy	1 - 4
E2	For an answer that considers the relevance of Singapore's policies to India given the state of its economy, using relevant analysis based on at least 1 criteria / economic condition e.g. an answer that considers India's level of education affecting the relevance of using Singapore's approach towards training to achieve inclusive growth	2 - 3
E1	Superficial evaluation without explanation	1

ANGLO-CHINESE JUNIOR COLLEGE

2021 JC2 PRELIMINARY EXAMINATIONS

ECONOMICS

9757/02

Higher 2

Paper 2: Essays

31 August 2021

2 hours 15 minutes

Additional materials: Answer paper

READ THESE INSTRUCTIONS FIRST

Write your exam index number and name on all the answers you hand in.

Write in dark blue or black ink pen on both sides of the paper.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters or correction fluid in your answers.

Answer **three** questions in total, of which **one** must be from Section A, **one** from Section B **AND one** from **either** Section A or Section B.

Begin each question on a fresh sheet of paper.

At the end of the examination, arrange your answers in order.

Fasten your answers for each question **separately,** using the cover sheets provided. You should have three cover sheets in total, **one for each question.** Please indicate the **question number** you have chosen on each cover sheet.

The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of 3 printed pages (excluding the cover sheets)

Please check that your question paper is complete.

Answer **three** questions in total

Section A

One or **two** of your three chosen questions must be from this section

1 Recent wet weather conditions and COVID-19 movement restrictions in Malaysia have caused prices of vegetables in Singapore to double. In the midst of panic buying in supermarkets, the retail prices of fresh seafood, poultry and eggs have risen sharply even as the government assured the public that there are sufficient supplies of food.

Source: straitstimes.com, published Jun 12, 2021; accessed 20th July 2021

(a) Explain the demand and supply factors that may cause the prices of fresh food items like vegetables and poultry to increase sharply. [10]

(b) Discuss the policy measures that the Singapore government might take to keep prices of fresh food stable in the market. [15]

2 The companies behind Cathay Cineplexes and Golden Village have entered into an initial agreement for a possible merger that would create the largest cinema operator in Singapore. Data showed there were eight big and small cinema operators in 2020. Meanwhile, on-demand streaming services like Netflix and Disney+ have seen an increase in subscriptions since 2020.

Source: Channelnewsasia.com, 11th July 2021

(a) Explain why firms like cinema operators choose to merge. [10]

(b) In light of the rise of subscription-based streaming services, discuss if consumers or cinema operators are likely to benefit more from this merger. [15]

3 In Singapore, the most significant greenhouse gas emitted is carbon dioxide, primarily produced by the burning of fossil fuels such as oil and gas to meet our energy needs in the industry, building, household and transport sectors. Announced at Budget 2018, Singapore's carbon tax rate has been set at $5 per tonne of greenhouse gas emission from 2019 to 2023.

Discuss whether the introduction of a carbon tax by the Singapore government is sufficient to correct the market failure arising from carbon emissions. [25]

Section B

One or **two** of your three chosen questions must be from this section

4 In 2020, The World Economic Forum projected that by 2030 the ASEAN bloc will become world's fourth largest economy and third most populated. Domestic consumption, which makes up 60% of the bloc's GDP, will double with additional 140 million consumers, driven by expanding working-age population, rising number of middle-class households and digital adoption.

Source: The ASEAN POST, 4 Nov 2020

(a) Explain the possible impacts of economic growth on standard of living. [10]

(b) Discuss whether raising consumption is the most appropriate policy approach for countries to achieve sustainable and inclusive economic growth. [15]

5 The COVID-19 pandemic has caused both demand and supply shocks to economies all over the world, leading to negative economic growth, bursting unemployment and rising inflation.

(a) Explain the causes that might have led countries to face the twin ills of recession and inflation. [10]

(b) Discuss the considerations governments may have in their choice of policies when faced with these two macroeconomic problems. [15]

6 The U.S. trade deficit hit a fresh record high in March. The Commerce Department reported that the trade gap rose 57.6% from the same period a year ago to US$74.4 billion. Massive fiscal stimulus and economic recovery from the pandemic recession are fuelling demand for goods and services.

Source: CNBC, 4 May 2021

(a) Explain the possible causes of a deficit on the balance of trade of a country. [10]

(b) Discuss whether achieving a favourable balance of trade should be the key macroeconomic priority for a government. [15]

End of paper