ANGLO-CHINESE JUNIOR COLLEGE

2024 JC2 PRELIMINARY EXAMINATIONS

ECONOMICS	**9570/01**
Higher 2	19 August 2024
Paper 1	2 hours 30 minutes
Additional materials: Writing papers 2 cover sheets	

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 writing paper.

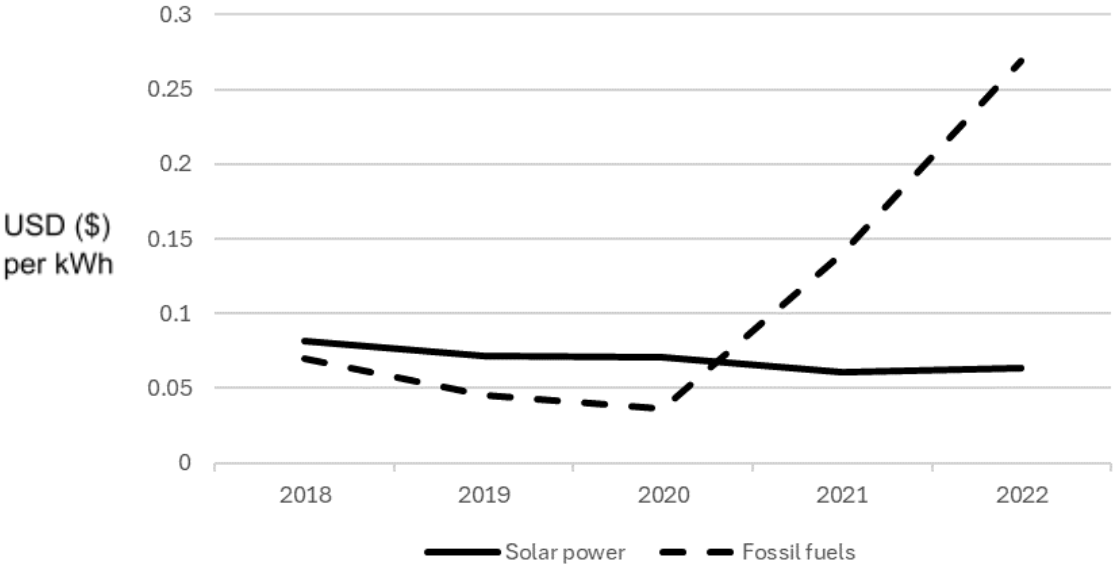
At the end of the examination, arrange your answers in order.
Fasten your answers for Question 1 and Question 2 **separately** using the cover sheets provided.

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

Answer **all** questions

Question 1: Sustainable Development in Singapore

Figure 1: Cost of energy generated from solar power vs fossil fuels:



Source: International Renewable Energy Agency

Extract 1: Renewables increasingly beat even the cheapest coal competitors on cost.

Renewable power, or collectively known as renewables, is increasingly cheaper than fossil fuels, a new report by the International Renewable Energy Agency (IRENA) published today finds. The report highlights that new renewable power generation projects now increasingly undercut existing coal-fired plants. On average, solar power and wind power cost less than keeping many existing coal plants in operation.

Renewable electricity costs have fallen sharply over the past decade, driven by improving technologies, economies of scale, increasingly competitive supply chains and growing developer experience. Since 2010, solar power has shown the sharpest cost decline at 82%, followed by wind at 39%.

Renewables offer a way to align short-term policy action with medium- and long-term energy and climate goals. Renewables must be the backbone of national efforts to restart economies in the wake of the COVID-19 outbreak. With the right policies in place, falling renewable power costs can shift markets and contribute greatly towards a green recovery.

Source: International Renewable Energy Agency, 2 June 2020

Extract 2: 'Long Island' along East Coast being studied as part of URA's plans for coastal protection, housing needs.

A reclaimed 'Long Island' along the south-eastern coast of mainland Singapore may one day not only offer protection against floods and rising sea levels, but also a new spot for leisure and recreation, much like the Marina Barrage. Living on the "island", which is envisioned to stretch around 15km from Marina East to Changi, may also be a possibility.

The Long Island concept was one of the possible options laid out as part of Singapore's S$100 billion plan to protect itself from rising sea levels. The Urban Redevelopment Authority (URA) said that it is studying ways to integrate coastal protection measures such as Long Island with future reclamation that are in the works.

"This could include creating a new reservoir to enhance our flood and water resilience. The 'Long Island' can be developed for new homes and integrated with coastal parks and recreational spaces," it added.

Source: Today Online, 7 June 2022

Extract 3: Can a higher carbon tax lead Singapore to the promised green land?

Back in 2019, when Singapore became the first South-east Asian country to implement a carbon tax — touted as a cost-effective way to combat global warming — many viewed the current rate of S$5 per tonne of carbon emissions as too low.

However, the impending hike in carbon tax, which will be raised to a more "respectable level" of S$25 per tonne in 2024, will give Singapore a seat alongside serious carbon tax users. The tax will be further increased progressively to S$45 per tonne in 2026, with a view to reach S$50 to S$80 per tonne by 2030.

The hike is meant to send a signal to companies that carbon emissions have an explicit cost on the environment. They will now find it worthwhile to adopt sustainable measures to reduce their carbon tax.

While many view the impending hike in carbon tax as unavoidable, given the intensified concerns over climate change in recent years, some observers pointed out that consumers and businesses may feel the pinch in the form of higher prices and costs.

The effectiveness of carbon tax is contingent on its rate, which must be high enough to incentivise companies; the time period given for industries to adapt to the tax; and the availability of green technology for industries to tap, said experts.

Professor Euston Quah, who specialises in environmental economics at NTU, however, argued for adjustments to the carbon tax to be spread out over a longer time period, beyond 2030. He pointed to the constraints facing Singapore in switching to renewable energy. The use of solar energy, for instance, is hampered by limited space, while tapping energy sources through an international grid or pipeline would present energy security issues.

Source: Today Online, 5 March 2022

Extract 4: What firms are doing in response to the rise in carbon tax.

Big emitters which are subject to the carbon tax said that they have already implemented various decarbonisation measures to reduce their emissions over the last decade.

Petroleum company ExxonMobil Asia Pacific said that the firm has introduced a series of innovations since 2002, which have led to energy efficiency gains of more than 25 per cent and reduced the carbon emissions of its Singapore facility.

These initiatives include the operation of three cogeneration facilities that produce both electricity and steam concurrently. Cogeneration recovers heat energy after electricity is generated to produce steam. The steam is then used for ExxonMobil's plant operations in Singapore. This process requires less fuel and emits less carbon than if the steam and electricity were produced separately.

However, given Singapore's open economy, it is important that the carbon tax framework safeguards the competitiveness of trade-exposed industries. They are competing with other industrial facilities globally that have either no, or a lower price on carbon domestically or on their exports.

Source: Channel News Asia, 7 March 2022

Extract 5: Large emitters can buy carbon credits to offset carbon tax bill from 2024

Large emitters in Singapore will from 2024 be able to buy international carbon credits[1] to reduce the carbon tax they have to pay.

Finance Minister Lawrence Wong said that businesses will be able to use "high-quality, international carbon credits" to offset up to 5 per cent of taxable emissions, in lieu of paying the carbon tax.

"This will moderate the impact for companies," he said. "It will also help to create local demand for high-quality carbon credits and catalyse the development of well-functioning and regulated carbon markets."

Partially offsetting tax liabilities with international carbon credits would mean that firms can shrink their tax bill if they buy credits generated by, say, a forest conservation project in Indonesia. Essentially, it means that a company here would have the option to pay another entity to reduce emissions in another country where it may be cheaper to do so.

Source: The Straits Times, 27 February 2022

[1] Carbon credits are tradeable permits that allow the owner to emit a certain amount of carbon dioxide or other greenhouse gases (GHGs).

Questions:

(a) Compare the change in the cost of energy from fossil fuels with the change in cost of energy from solar power between 2018 to 2022. [2]

(b) With the aid of diagrams, explain how the developments in renewable energy may affect the markets for renewable energy and energy from fossil fuels. [4]

(c) **(i)** Explain how the development of 'Long Island' will reduce the opportunity cost of building new homes. [2]

(ii) Explain why coastal protection measures such as 'Long Island' must be provided by the government. [4]

(d) Discuss whether the benefits of a carbon tax outweigh the costs to society. [8]

(e) Discuss whether firms should use innovation or purchase carbon credits when faced with an increase in carbon tax. [10]

[Total: 30]

Answer **all** questions

Question 2: The challenges in a post-pandemic world

Table 1: Selected Key Economic Indicators for United States, 2019 - 2023

	2019	2020	2021	2022	2023
Real Effective Exchange Rate Index (USD)	116.4	118	115.6	126.6	127.3
Net current account (in USD billions)	- 441.7	- 597.1	- 831.4	- 971.6	- 818.8
Unemployment Rate (in %)	3.7	8.1	5.3	3.6	3.6
Government Debt (as a % of GDP)	100.1	124.7	118.9	114.7	No data available

Source: data.worldbank.org, accessed on 23 July 2024

Table 2: Selected Key Economic Indicators for Singapore, 2019 - 2023

	2019	2020	2021	2022	2023
Current account as a % of GDP	16.0	16.6	19.8	18.0	19.8
Consumer Price Index (base year 2019)	100	99.8	102.1	108.4	113.6
Unemployment rate (in %)	2.3	2.9	2.7	2.1	1.9
Gini coefficient value (before accounting for tax and transfers)	0.452	0.452	0.444	0.415	0.412

Source: Singstat.gov.sg

Extract 6: America's CHIPS Act

Signed into America's law in August 2022, the **C**reating **H**elpful **I**ncentives to **P**roduce **S**emiconductors (CHIPS) Act is intended to lure microchip manufacturing back to the United States (US) after decades of companies offshoring this technology to cheaper countries such as China. Although the US produced close to 40 percent of the world's semiconductor supply in the 1990s, this has now since fallen to just 12 percent, with Taiwan on the other hand, producing more than 60 percent of the world's supply of semiconductor chips now.

The CHIPS Act allocated $53 billion in fiscal incentives for domestic semiconductor manufacturing and research and development, to build new and expand existing semiconductor facilities. Companies are also eligible for a 25 percent tax credit. The legislation is sparking a great deal of investment activity in the US semiconductor sector. Hundreds of companies have requested more than $70 billion in subsidies—nearly double the amount available. Private companies have meanwhile announced more than $200 billion in investment spending since the law passed.

There's a newfound realisation about the growing importance of chips and semiconductors because chips are one of the critical factor inputs to produce electric vehicles. With an increased global emphasis on reducing carbon footprint, this has made some supporters see this policy as a much-needed boost to America's trade and its investment in critical technologies.

However, some critics are sceptical about the effectiveness of this policy change. There are limits to how much semiconductor can be shifted to the United States from East Asia due to the cost of labour, construction cost and the lack of trained workforce in the US. Building a new chip manufacturing facility in US is estimated to be 'four or five times greater' than in Taiwan, which begs the question on the sustainability of the CHIPS act especially with a rising federal debt. Economists are worried that the CHIPS Act explicitly pulls investment away from East Asia and risks hollowing out[2] major tech industries in East and Southeast Asia region. This may have spillover effects on smaller Asia countries which rely on major East Asia economies for export growth. In the long term, such industrial subsidies invite retaliation from others, leading to an overall more inward-looking world.

Source: Adapted from Council on Foreign Relations, accessed on 14 July 2024 & East Asia Forum, 26 Nov 2023

Extract 7: The challenge of food security

With world food costs surging to all-time highs, several governments are taking steps to secure their own food supplies.

Indonesia's palm oil export ban kicked off in one of the most drastic cases of food protectionism since the war erupted in Ukraine. The global top exporter of palm oil imposed a sweeping ban on cooking oil exports, covering palm oil products across the value chain. This tropical oil is found everywhere today - in food, soap, lipstick and even printing ink - which makes Indonesia's move even more significant to the already disrupted global edible oil market.

Such export bans hurt small and resource-scarce countries like Singapore. Singapore, being a highly-import reliant country and a net importer of resources, will continue to face such global supply uncertainties and disruptions from time to time. While the government will do what it can to minimise the impact such as through stockpiling and import diversification, Singapore will not be able to completely remove the disruptions to our food supply.

Source: Adapted from Arvind Jayaram, The Straits Times, 10 September 2023

[2] Hollowing out refers to a deterioration of a sector when firms opt for lower-cost facilities overseas

Extract 8: Demographics changes in Singapore

With an ageing workforce and the fertility rate falling far below replacement rate, it will not be long before Singapore's workforce size plateaus. Ageing will also create additional manpower needs in the healthcare and aged care services. This could lead to manpower shortfalls in key sectors as workers retire and healthcare needs rise. As a fully globalised country, Singapore has been plugging the labour shortfalls by increasing the inflow of foreign workers, for example, earlier in 2023, Singapore announced that it would be stepping up recruitment of foreign nurses.

However, reliance on foreigners should not be the main or only strategy. The Covid-19 pandemic has underscored the risks of high foreign-worker dependence when borders close or travel is disrupted. Besides, it cannot be assumed that there will always be a ready supply of foreign manpower as job opportunities in other countries expand and these countries themselves undergo demographic transitions. In Singapore, there are limits to overall immigration, given our land and population constraints and the need for a core of local workers in essential jobs and sectors. Besides, bringing in too many foreign workers may create a depressing effect on wages, which puts off local workers from joining certain industries.

While the emergence of new technology such as generative artificial intelligence (AI) could help Singapore produce more with fewer people, it is also expected to put many existing job roles at risk. Even if AI can help boost productivity, it is unlikely to significantly reduce manpower needs in service industries like healthcare and hospitality. In fact, it is necessary to equip workers with the skills and adaptability to take up good jobs and thrive in their careers. As skill demands continually evolve, more than ever, education should be aimed at cultivating a love for learning, curiosity, teamwork, resilience and a tolerance for ambiguity.

Source: Adapted from Terence Ho, The Straits Times, 30 August 2023

Questions:

(a) Describe the trend in the USA's net current account balance between 2019 to 2023. [2]

(b) With reference to Extract 6, explain the factors affecting the US government decision to implement the CHIPS Act. [6]

(c) According to Extract 7, Indonesia imposes an export ban on edible oil. Using a diagram, explain what determines the size of the increase in global price of edible oil following the export ban. [4]

(d) Discuss whether domestic or external challenges are more damaging to the Singapore economy. [8]

(e) With reference to the extracts and/or your own knowledge, discuss whether the Singapore government should increase the immigration of foreign labour or rely more on artificial intelligence to improve the standard of living. [10]

[Total: 30]