



RAFFLES INSTITUTION
2025 YEAR 6 TERM 3 PRELIMINARY EXAMINATION
Higher 2

ECONOMICS

9570/01

Paper 1 Case Study Questions

2 September 2025

2 hours 30 minutes

Additional Materials: Answer Paper

READ THESE INSTRUCTIONS FIRST

Write your name, index number and civics class on all the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use a soft pencil for diagrams, graphs or rough working.
Do not use paper clips, highlighters, glue or correction fluid.

Answer all questions.

The number of marks is given in brackets [] at the end of each question or part question.
Start each Case Study on a fresh sheet of paper.
At the end of the examination, fasten your answers to Case Study 1 and Case Study 2 **separately**.
Detach this **cover page** and secure it in front of answers to **Case Study 1**.

Name: _____

Civics Class: _____

Economics Tutor: _____

Question	Marks
1	/30
2	/30

This document consists of **10** printed pages and **1** blank page.



Raffles Institution

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Question 1 Electric Vehicles

Table 1: EV Battery Price and EV Sales

	Average EV Battery Prices (US\$/kWh)	Global Electric Vehicle Sales (million units)
2019	\$120	2.08
2020	\$110	2.97
2021	\$99	6.60
2022	\$129	10.20
2023	\$139	13.7

Source: Various

Table 2: EV Firms – Profits (2023)

Firm	Country	Profits (US\$ billions)
BYD	China	\$4.23
NIO	China	- \$2.92
Rivian	USA	- \$5.43
Tesla	USA	\$15
XPeng	China	- \$1.46

Source: Various

Table 3: Lifestyle carbon emissions per km driven

Vehicle Type	C02 emissions /km
Battery EV	63g
Petrol car	235g
Diesel car	220g

Source: ICCT 2025

Extract 1: How China's Electric Vehicle Boom Powers Its Tech Rise

NIO is just one of an alphabet soup of Chinese brands—from AION, BYD, and Clever, to Maxus, Neta, and Onvo, to Xpeng, Yangwang, and Zeekr—dominating the global electric vehicle (EV) market today.

When it comes to EVs, China already accounts for nearly two-thirds of global sales (62%). NIOs are currently sold in six European nations as well as Israel and the UAE. BYD, meanwhile, is now undisputedly the world's top EV firm, present in over 70 countries and outselling Tesla globally for a second straight quarter. While Tesla delivered 336,681 vehicles worldwide for the January–March period, down 13% year-on-year, BYD delivered 416,388, up 38%.

China's success in vehicle electrification is attributable to supportive government policies that subsidise EV manufacturing. Experts say sales of EVs in China will help its government achieve its climate change goal to hit peak CO₂ emissions before 2030 and to reach carbon neutrality by 2060.

The U.S. and allies accuse China's industrial policies of massive subsidies that cause overcapacity and crowd out competitors. Chinese government support to its EV industry cumulatively totaled \$230.9 billion from 2009 to 2023, according to the Center for Strategic and International Studies (CSIS), a bipartisan D.C. think tank.

However, to simply blame state subsidies for China's mastery of EVs is reductive. Time and again, whether it's smartphones, solar panels, or 5G, China has been relying on a fiercely competitive and huge domestic market to command transformative technology.

Moreover, China's dominance in the EV battery supply chain is substantial. The country produces over 70 percent of the world's lithium-ion batteries, holding a similar share in refining, processing, and manufacturing stages. And China's control over crucial minerals such as cobalt and graphite further strengthens its position.

Source: Adapted from Time Magazine, 29 May 2025

Extract 2: BYD faces growing backlash over EV price war

BYD shares continued their plunge despite monthly sales climbing to the highest in 2025 as the steep discounts the industry uses to entice buyers draw scrutiny from Beijing.

BYD stock dropped almost 5 per cent in Hong Kong on June 2, which follows a more than 15 per cent slump last week, after a series of reports over the weekend indicated the industry's lengthy price war has caught the attention of the government.

In a commentary on June 1, the People's Daily warned that price wars can lead to low-quality products that would seriously damage the international reputation of "Made-in-China", it said, without naming any specific companies.

Over the weekend, China's automobile industry association warned against "vicious competition" that would hurt profit margins and hinder the healthy development of the industry.

Source: The Straits Times, 2 June 2025

Extract 3: BYD's annual sales top \$100bn

BYD's annual sales have topped \$100bn for the first time, as China's EV champion dominates its domestic market and presses ahead with an overseas expansion. Unlike its US rival Tesla, which only sells fully electric vehicles and reported revenue of \$98bn last year, BYD has benefited from resurgent demand in China for hybrid vehicles. BYD also pushed ahead with an aggressive expansion outside China, betting that it can undercut legacy carmakers such as Volkswagen and Toyota in markets from Europe to south-east Asia.

Following a years-long price war in China, the world's largest EV market, BYD has also started to shift from an aggressive pricing strategy that was designed to win market share to one focused on trying to boost its profitability.

"Leading players in the market, including BYD, have moved away from a 'price-for-volume' approach", said Serena Shen, an auto analyst at S&P Global Mobility. "Instead, they attempt to raise retail prices by innovating and updating their models."

Founder Wang Chuanfu last week unveiled a battery charging system that the company said would allow customers to charge EVs in five minutes, helping send its shares to a record high.

Source: Financial Times, 24 March 2025

Extract 4: How problematic is mineral mining for electric cars?

In the deserts of Chile, the Australian outback and the plains of the Democratic Republic of the Congo, the earth is being peeled back and the water sucked up and dried out to find the minerals needed to feed the world's need for electric cars.

The extraction of battery materials is due to expand on a grand scale. That will leave a trail of mining – often with local environmental degradation – in its wake. Mineral demand for heavy batteries will grow rapidly. The International Energy Agency estimated that EVs use 173kg more minerals such as lithium, nickel and copper than petrol cars. The data company Benchmark Mineral Intelligence forecasts global demand for lithium, the key battery metal, will quadruple to 3m tonnes in 2030, outstripping supply.

Yet overall, the mineral use for EVs is much, much lower than petrol and diesel as soon as oil enters the equation. Transport & Environment (T&E), a Brussels-based thinktank, found that a petrol car will burn an average of 17,000 litres of oil in its lifetime – about 12.5 tonnes.

And most criticisms of EVs' mineral use miss a hugely important point: the majority of battery materials used in cars are likely to be recycled. That will drastically cut down the amount of wasted material compared with fossil fuels which disappear invisibly but harmfully to heat the planet. Julia Poliscanova, T&E's senior director for vehicles and e-mobility, said: "By 2030 we will need around 30m tonnes of critical minerals [for batteries]. It's very, very substantial, but if we put this in comparison, we used in one year 15bn tonnes of fossil fuels."

Source: The Guardian, 1 December 2023

Questions

- (a) (i) With reference to Table 1, explain how changes in prices of EV batteries might have affected sales of EVs over the period 2019 to 2021. **[2]**
- (ii) Explain one possible reason why the above relationship was not observed in 2022 and 2023. **[2]**
- (b) Explain whether the data in Table 2 allows you to conclude which firm is most likely to shut down in the short run. **[4]**
- (c) Explain, with the use of two examples, why China may have comparative advantage in the production of EVs. **[4]**
- (d) Discuss the extent to which BYD's 'price-for-volume' approach is beneficial to consumers and producers. **[8]**
- (e) Discuss whether China should continue subsidising the production of EVs. **[10]**

[Total: 30 marks]

Question 2 Indonesia and Vietnam

Table 4: Key Economic Indicators

	Indonesia		Vietnam	
Indicator	2023	2024	2023	2024
Real GDP Growth (%)	5.0	5.1	5.1	6.0
Inflation Rate (%)	3.7	2.5	3.2	3.6
GDP per capita (PPP, US\$)	15,400	16,100	13,600	14,500
Unemployment Rate (%)	5.5	5.2	2.3	2.2
Current Account (% of GDP)	0.1	-0.5	3.0	2.5
Balance of Trade (US\$ billions)	36	30	26	24
Population (millions)	281.2	283.5	100.3	101.0

Source: Various

Table 5: Composition of GDP by Expenditure (2023)

Expenditure (%)	Indonesia	Vietnam
Private Consumption	53.1	54.4
Government Spending	8.8	9.0
Investment	29.3	30.6
Exports of Goods & Services	21.8	81.8
Imports of Goods & Services	19.6	71.6

Note: the above figures include statistical discrepancies

Source: Various

Table 6: Composition of Trade (Key Sectors)

Country	Main Exports	Main Imports
Indonesia	Coal, Oil, Palm oil, Nickel, Rubber, Textiles, Footwear	Machinery, Electronics, Fuel, Chemicals, Food
Vietnam	Electronics, Smartphones, Textiles, Footwear, Seafood	Machinery, Raw materials, Petroleum, Fabrics, Electronics

Source: Various

Extract 5: Export-led Growth in Vietnam

Vietnam's economy has come a long way since the Vietnam war ended 50 years ago. Over the past 40 years, GDP per person has increased 18-fold and poverty has plummeted. Foreign investors, attracted by Vietnam's cheap labour, political stability, proximity to Asian suppliers and generous incentives for manufacturing, have built lots of factories assembling consumer goods for export. A trade deal with America, accession to the World Trade Organisation and, more recently, multinationals' desire to diversify away from China have provided further reasons to invest.

Yet the forces that have propelled Vietnam's boom are slowing or reversing. The pool of cheap workers is dwindling and wages are rising. Instead of largely free trade with America, Donald Trump is threatening tariffs of 46%. It is getting harder to maintain good relations with both America and China, Vietnam's second-biggest trading partner. And there has been relatively little spillover from the foreign-owned factories to the rest of the economy. Vietnam risks becoming stuck as an assembly hub, adding little value to components manufactured elsewhere. Shifting onto a more promising developmental path will not be easy.

Source: The Economist, 22 May 2025

Extract 6: Downstreaming Policy led to Nickel Ore Export Ban

Indonesia has stepped up its defence of its nickel ore export curbs the European Union has protested against, asserting its right to enhance value addition, boost its economy, and create job opportunities by climbing the value chain. South-east Asia's largest economy, which was the world's top exporter of nickel ore, introduced the ban on Jan 1, 2020.

Nickel is a key component in making efficient lithium-ion batteries, which are widely used in EVs, but is also crucial for a more traditional industry – stainless steel manufacture. Indonesia's 2020 ban caused global nickel prices to soar, hitting the EU hard.

Indonesia's "downstreaming" policy mandates that all the raw nickel extracted in the country must be processed domestically, enabling higher value-added export revenues and spurring the growth of the mineral smelting industry. Nickel-related annual export proceeds have now jumped to US\$33.8 billion from a mere US\$2.1 billion before the downstreaming policy.

In Central Sulawesi, one of several nickel-producing regions in Indonesia, nickel-related jobs have skyrocketed to 71,500 now, from 1,800, because of the downstreaming policy. Over in North Maluku, such jobs stand at 45,600, compared with 500 previously.

"Hence, the downstreaming policy must continue, and must be expanded to all minerals and to the plantation, agriculture and fishery sectors. This is about job creation," Mr Joko Widodo, who ends his second term in office on Oct 20, 2024, told a forum organised by the Indonesian Employers Association.

Source: The Straits Times, 3 August 2023

Extract 7: Resource-based Industrialisation

Since the imposition of the nickel export ban, investment in Indonesia's metals sector has rapidly expanded. Between 2019 and 2023, domestic investment in the metal industry more than trebled from US\$8.2 billion to US\$25.9 billion and foreign investment from US\$3.6 billion to US\$11.8 billion.

Chinese capital has led the increase in investment in Indonesia's nickel industry. Chinese companies swiftly moved in after the export ban in order to secure nickel supply for the stainless steel industry at home. They also had a goal of producing materials for the growing market for nickel-based electric vehicle batteries which use high-purity nickel.

Within the space of just half a decade, Indonesia has moved from a minor nickel refiner to the largest one, accounting for two-fifths of the world's refined nickel production. Despite such a remarkable performance, Indonesia's nickel downstreaming strategy is not without concerns. Production of one metric ton of nickel is known to produce between 1.4 tons and 1.6 tons of waste. Storing and disposing of the tailings from nickel production is difficult in Indonesia due to its topographical, soil and climate characteristics.

Deforestation is another environmental concern. Recent research finds that more than 75,000 hectares of forest have already been cleared for nickel extraction. Considering recent concessions for nickel mining, the forest loss is expected to accelerate, harming biodiversity.

Nickel sector development is also affecting fishing, a key local industry. The acceleration of development of mines and refineries has affected the ecosystem, leading to dwindling fish stocks in the region. Not only is this hurting local economic activities, water pollution has also meant that fish caught in the area have high metal content.

For Indonesia, it appears that there will be no going back when it comes to resource-based industrialization. As the strategy expands, all eyes will be on how the Indonesian government will deal with the side effects.

Source: www.globalasia.org

Extract 8: Indonesia pledges nickel industry decarbonization

Indonesia has hatched a plan to reduce emissions from its coal-powered nickel trade amid growing scrutiny of its downstreaming policy.

The Indonesian Ministry of National Development Planning and climate think tank World Resources Institute Indonesia plan to launch a nickel decarbonisation roadmap early next year. This roadmap is part of the 2025-2029 National Medium-Term Development Plan, which aims to integrate environmental, social and governance (ESG) principles into industry downstreaming. One key target is to reduce emissions from the nickel industry by 90 per cent by 2050. It also aims to expand employment opportunities in renewable energy and provide incentives for green industries.

Currently, Indonesia's nickel industry emits 58.6 tonnes of carbon dioxide equivalent (tCO₂e) per tonne of nickel, exceeding the global standard of 48 tCO₂e per tonne. "This industry uses coal because it needs consistent and reliable heat, especially for smelters. Replacing it will be difficult and time-consuming. That is why our priority is to create a roadmap for reducing emissions in this sector," stated Nizhar Marizi, director of energy resources, mineral and mining at the Indonesian Ministry of National Development Planning. The first step will be to map out the emissions trajectory of the industry, then plan how to decarbonise the trade and how to finance these efforts.

Beyond decarbonisation efforts, Indonesia's government needs to revise regulations for nickel mining and downstreaming, experts stated. The latest amendment to the law on minerals and coals in 2020 shifted all mining affairs to the central government. However, the central government does not yet have an adequate monitoring system for the mining sector. This has meant that local and regional authorities can avoid responsibility for mining violations, while experts point to Indonesia's permissive legal culture that has a tendency to let violators off the hook.

Source: www.eco-business.com

Questions

- (a) With reference to Table 4:
- (i) Identify which country has a higher Gross Domestic Product in 2024. Justify your answer. **[2]**
 - (ii) Explain an additional piece of information that is needed to better compare living standards between Indonesia and Vietnam. **[2]**
 - (iii) Explain the possible causes of the observed relationships between the inflation rate and unemployment rate in Vietnam and Indonesia. **[4]**
- (b) With the use of a diagram, explain why “nickel ore export curbs” by Indonesia “caused global nickel prices to soar”. **[4]**
- (c) With reference to Table 5 and 6, discuss the extent to which “threatening tariffs” will affect Vietnam and Indonesia’s economies differently. **[8]**
- (d) Discuss whether Indonesia’s resource-based-industrialisation can achieve economic growth which is also sustainable. **[10]**

[Total: 30 marks]*******END OF PAPER*******

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