ANGLO-CHINESE JUNIOR COLLEGE

2023 JC2 PRELIMINARY EXAMINATIONS

ECONOMICS	**9570/01**
Higher 2	22 August 2023
Paper 1	2 hours 30 minutes
Additional materials: Writing papers and 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.

This document consists of **8** printed pages (including this page).
Please check that your question paper is complete.

Answer **all** questions.

Question 1: Global Healthcare Issues

Extract 1: Healthcare costs in Singapore expected to grow 9.8% in 2023

As global inflation continues and healthcare use increases, healthcare expenditure in the Lion City is expected to increase by 9.8% in 2023. Widespread inflation and increasing healthcare use are combining to drive projected increases in global healthcare cost to their highest level in nearly 15 years.

Healthcare use and costs around the region will increase as nations continue to reopen their borders and loosen health restrictions. As one of the first few Asian countries to reopen, Singapore's medical tourism hub also recovered with a large influx of overseas patients seeking delayed elective treatment.

The fast-ageing workforce coupled with heavier chronic disease burden remained key contributors to the rise in healthcare costs. Other contributing factors include overuse of care by insured members, as well as overtreatment or overprescribing by medical practitioners.

Source: Singapore Business Review, December 2022

Extract 2: Singapore to spend more than $1 billion to get Healthier SG preventive care strategy up and running

Healthier SG seeks to shift the gravity of care from the hospitals to the community. The aim is to get residents to build a long-term relationship with one family doctor, who will help them to take charge of their own health and wellness.

To get the new preventive care strategy Healthier SG off the ground and running, Singapore will spend more than $1 billion over the next three to four years in set-up costs, such as new IT systems and support to get general practitioner (GP) clinics ready for the scheme.

It will also spend an estimated $400 million a year on recurrent costs, such as annual health screenings for residents and the annual service fee for GPs. In making these investments, the primary motivation is to reduce the burden of disease and the suffering of people and their loved ones. The aim is to get residents to build a long-term relationship with one family doctor, who will help them to take charge of their own health and wellness.

These investments in preventive care will take time to produce results. Any impact in people's health will not happen immediately, but perhaps be discernible eight or 10 years down the road.

Source: The Straits Times, October 2022

Extract 3: At least 8 new nursing homes in Singapore over the next 5 years

Nursing homes here are expanding, with at least eight new facilities to be added in the next five years, to meet the needs of a rapidly ageing population.

One in four Singapore citizens is expected to be at least 65 years old by 2030 and with a number of seniors expected to enter nursing homes, nearly 1,000 new beds will be available by the end of 2024 alone, with two major operators opening facilities next year.

St Andrew's Mission Hospital will open two new nursing homes in 2024 – a 342-bed facility in Aljunied Walk, and one with 277 beds in Tampines North co-located with St Andrew's Senior Care (Tampines North).

Ren Ci will open its third nursing home in the upcoming Woodlands Health Campus in the first quarter of 2024. The 332-bed nursing home will be co-located with a senior care centre to offer rehabilitative care, and will also have staff to provide home care in the north region.

The capital cost of building most new nursing homes is borne by the Ministry of Health (MOH), which then tenders out their operation to voluntary welfare organisations or private operators.

Other homes to be built include:

- A 302-bed nursing home in Yishun Avenue 6 run by Sree Narayana Mission by 2026. The charity will be running a third senior care centre at Bedok Reservoir Road in August, which will serve about 300 seniors.
- A 298-bed nursing home to be run by private nursing home operator Orange Valley and co-located with an active ageing centre in Bidadari in 2026.
- New nursing homes by private operator The Lentor Residence will open in MacPherson in August, and in West Coast in the next two months.

Source: The Straits Times, August 2023

Extract 4: Demand for Philippine nurses sparks bidding war amid global talent shortage

The toll of nearly three years of Covid-19 includes millions of nurses broken by punishing hours and low pay, many of whom quit the profession and left hospitals dangerously short of critical staff.

With pandemic-related travel restrictions easing, countries from Germany to the United Arab Emirates and Singapore are stepping up efforts to lure foreign nurses and other medical professionals with promises of expedited visas and better pay.

Health professionals have been migrating for decades. The US and UK have the largest number of foreign-trained nurses among Organization for Economic Co-operation and Development (OECD) countries, but they are more heavily concentrated in other nations. Before the pandemic hit, roughly one-in-four nurses in New Zealand and Switzerland had studied abroad, the highest ratio among the OECD's 38 member states.

Germany's government said it wants to recruit 600 Filipino nurses for hospitals and elderly care centres, offering qualified applicants free travel expenses, language training, a bonus for passing exams on the first try and help finding accommodation. Singapore and the Philippines also opened talks last month on hiring more Filipino nurses and other healthcare workers.

No nation is better prepared to help the world staff up its hospitals and clinics than the Philippines, the single biggest exporter of nurses. Yet, the Philippines faces a shortfall of nursing staff, and there's long-standing debate over whether so many local nurses should be allowed to leave. According to the Philippines Health Department, the country's hospitals and clinics have a shortage of about 106,000 nurses.

Source: SCMP, October 2022

Extract 5: Is South India's Chennai Asia's next big medical tourism hub?

The state of Tamil Nadu, where Chennai is located, attracts about 40 per cent of the country's medical tourist. Foreign patients from neighbouring countries, Africa, Middle East and Southeast Asia visit the city for procedures and treatments such as cardiac bypass surgery, organ transplants, hip replacement, bone marrow transplant and eye surgeries.

Medical treatment in Chennai costs significantly less than in developed countries, about one-third of costs in those nations, particularly given India's production and access to generic drugs. Medical tourism in the country received a further boost in 2018, when the Indian government established a fund of US$641 million to improve service sectors, with health tourism among them. In 2020, India ranked 10th in the global medical tourism index, an industry estimated to be worth US$53 billion globally by 2028.

But the city's push to cater to foreign patients have also come under fire from local. Many low-income Indian often struggle to afford any form of healthcare, with public services generally poorly funded and private services too costly. Many experts feel that medical tourism is unethical and is developed at the cost of the country's neglected basic healthcare for citizens.

K Srinath Reddy, cardiologists and head of the Public Health Foundation of Inda, said that the government's proposed expansion of medical facilities for tourists is a bad idea.

Source: SCMP January 2023

Questions

(a) With reference to Extract 1, explain how the rise of healthcare use could affect producer surplus in the market for healthcare. [2]

(b) Explain how the issue of moral hazard could arise in the health insurance market.[3]

(c) 'There's long-standing debate over whether so many local nurses should be allowed to leave' (Extract 4).

Using demand and supply analysis, explain the impact on the following when local nurses are allowed to leave the Philippines.

(i) Wages of nurses in the Philippines [3]

(ii) Consumer expenditure on healthcare in the Philippines [4]

(d) Assess the impact of medical tourism on the standard of living in India. [8]

(e) Discuss if supply-side policy is the most effective way to manage rising prices in the market for healthcare. [10]

[Total: 30]

Question 2: Global Semiconductor Supply Chain

Extract 6: The stages of semiconductor production

Semiconductor production can be broken down into three phases: design, manufacturing, and assembly. The design phase is characterized by the development of chip architecture, meaning engineers map out the electronic circuit patterns based on power; functionality; speed, etc.

The second phase of semiconductor production is manufacturing also referred to as semiconductors fabrication, where creation of the physical wafer occurs. Manufacturing sophisticated semiconductor wafers is an incredibly complex process. Furthermore, Semiconductors Fabrication Plants (FAB) cannot be built easily because they require highly specialised knowledge and capital.

Finally, the last stage—assembly (testing and packaging)—requires the least knowledge of the semiconductor production. Assembly simply comes after the manufacturing stage is complete and the semiconductor is ready for final sale.

Source: The SAIS Review of International Affairs, May 7, 2022

Extract 7: The global semiconductor supply chain

Semiconductors, also known as chips, are everywhere in modern technology and are used in a wide range of products such as computers, smartphones, cars, household appliances, gaming systems, and medical equipment. As a result, semiconductors are incredibly important for today's economy, as they drive innovation and productivity in many industries.

The semiconductor supply chain involves a complex network of companies involved in the design, manufacturing, testing, packaging, and distribution of semiconductors.

The need for deep technical know-how and scale of production has resulted in a highly specialised global supply chain, in which regions perform different roles according to their comparative advantages. The US leads in the most R&D-intensive activities - core intellectual property (IP), chip design, and advanced manufacturing equipment, owing to its world-class universities, vast pool of engineering talent, and market-driven innovation ecosystem. East Asia is at the forefront in manufacturing the chips, which requires massive capital investments supported by government incentives as well as access to robust infrastructure and a skilled workforce. China is a leader in assembly, packaging, and testing, which is relatively less skill- and capital-intensive, and is investing aggressively to expand throughout the value chain.

When countries specialise based on comparative advantage, they end up depending on each other for access to the vast range of goods and services desired, making all countries better off. A concern may arise, however, in the presence of tensions between countries or other risks that may disrupt world trade.

Sources: Federal Reserve Bank of St. Louis, 7 December 2022
, Boston Consulting Group, 1 April 2021

Extract 8: China follows the rules of global trade

China is the world's largest consumer of semiconductors, taking up more than 50 percent of the global supply, and yet its production of high-end chips is limited.

Over the years, China has relied heavily on imports of high-end chips as it followed the rules of globalization and a natural division of labour across different economies in the world. High-end semiconductor chips involve significant R&D risks, and the industry requires huge upfront investment. Therefore, a division of labour across the world with key parts of the value chain concentrated in the hands of a few players in specific geographies makes sense.

However, the US sanctions on chips supplies to China have disrupted these fundamentals. China has realized that self-sufficiency in core technologies such as semiconductors will be critical going forward.

Source: China Daily Global, 10 June 2021

Extract 9: US to retain its competitive edge in global semiconductor value chain

“We’re in a competition with China and other countries to win the 21st century,” Joe Biden remarked in his opening presidential speech to Congress in April 2021. It’s a competition the US president is determined to win, and his trade policy programme has seen China’s access to key technologies heavily restricted to help the US retain its competitive advantage.

One of these technologies is semiconductors, with export ban to stop exports of high-end chips made in the US to China. Beyond chips, the export controls extend to bar exports of American-made manufacturing equipment needed to produce high-end chips to China. They also bar export of any US tools or components to Chinese factories capable of making high-end semiconductor chips.

While the export controls serve the US government's political objectives, top chip making firms could be left counting the cost at a time when they are already facing up to an economic slowdown.

Moreover, the make-up of the semiconductor market means ongoing action against Beijing will affect other companies, too. The semiconductor industry relies on both US IP and the Chinese chip market, and the US chip industry derives over 30% of its revenues from its China sales. A further blockading of China would threaten the future of the US chip companies. This is the serious dilemma facing the industry - in hurting China to protect its sovereignty, the US will hurt its most important strategic industry.

Source: Techmonitor, Technology, Silicon, 19 October 2022

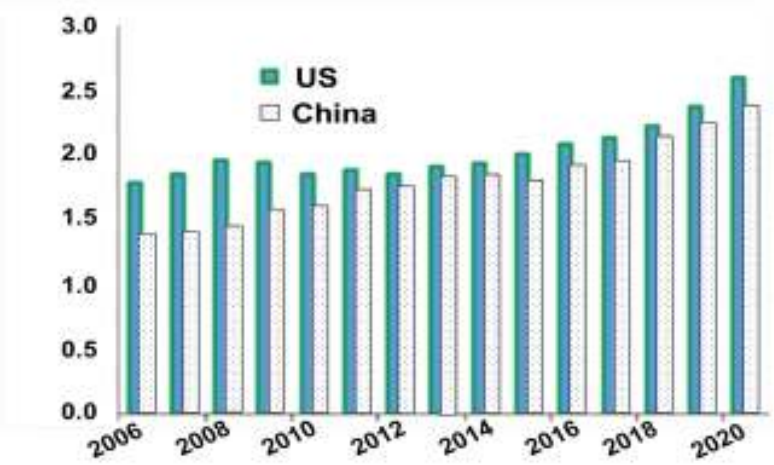
Table 1: Select indicators for China, India and US

Country	Government Debt as a % GDP (2020)	No. of STEM[1] Graduates (2016)
China	68.0	4.7 mil
US	133.9	568 000
India	89.6	2.6 mil

[1]STEM: Science, Technology, Engineering and Mathematics

Source: IMF and WEF

Figure 1: Research and Development spending as a percentage of GDP



Source: CEIC, BNP, Paribas Asset Management

Extract 10: Singapore moves up the semiconductor value chain

The Republic's semiconductor industry is one of the region's most diverse, having drawn global giants and an ecosystem of small and mid-sized firms up and downstream.

Singapore accounts for about 11 per cent of the global semiconductor market share, and about one-fifth of global semiconductor equipment is manufactured here.

The semiconductor industry contributed almost 7 per cent of Singapore's gross domestic product last year and is the backbone of electronics manufacturing output. Growing the electronics sector is part of the country's ambitions to expand its manufacturing sector by 50 per cent by 2030.

Singapore, with its favourable tax and regulatory environment, and pool of competent, high-skilled workers, Singapore is an attractive destination for investment in high-value added manufacturing.

Singapore is home to not just some of the world's biggest semiconductor manufacturing companies, but also three of the top outsourced semiconductor assembly and test companies.

Aside from MNCs, about 70 per cent of the Singapore Semiconductor Industry Association's (SSIA) 200 members are home-grown small and medium-sized enterprises, including those which provide design, prototyping, production and testing services for semiconductors.

Government support has been crucial in developing the industry, attracting MNCs to set up manufacturing operations here, which has in turn drawn other suppliers and service providers to the Republic's shores. This has benefited local companies by providing them with more opportunities to collaborate and learn from MNCs.

While Singapore enjoys the advantage of a highly skilled workforce, it needs to expand this pool to keep up with the semiconductor arena's rate of growth. To this end, SSIA has been working on boosting awareness about the industry, with an eye to attracting younger workers. Continuing education and training are also crucial to future-proofing the current workforce.

Source: The Straits Times, 3 September 2022

Questions

(a) **(i)** Explain what is meant by countries specialising based on their comparative advantage. [2]

(ii) Using extract 7, explain an example of a country's specialisation based on her comparative advantage. [2]

(b) It is mentioned in Extract 9 that US bans exports of American-made manufacturing equipment and tools or components needed to produce high-end chips to China.

Using a PPC diagram for goods using low-end chips and goods using high-end chips, explain how the above US export ban will change the opportunity cost of producing goods using high-end chips in China. [4]

(c) Explain the impact of US export restrictions of high-end chips to China on the profitability of a firm in the US chip industry. [4]

(d) Extract 10 states that the semiconductor industry contributed almost 7 per cent of Singapore's gross domestic product last year and that the country's ambition is to expand its manufacturing sector by 50 per cent by 2030.

Discuss whether the policies adopted by the Singapore government to expand the semiconductor industry will bring about inclusive economic growth. [8]

(e) Discuss whether China should move away from specialisation and instead be self-sufficient in the semiconductor supply chain. [10]

[Total:30]

End of paper