ANDERSON SERANGOON JUNIOR COLLEGE
JC2 PRELIMINARY EXAMINATION 2019

ECONOMICS **8823/01**
Higher 1

Paper 1 **29 August 2019**

3 hours

Additional Materials: Answer Booklet

READ THESE INSTRUCTIONS FIRST

Write down your name and class in the boxes of the answer booklet.
Please write clearly and use capital letters.

Write in dark blue or black pen.
HB pencil may be used for graphs and diagrams only.

DO **NOT** WRITE ON ANY BARCODES.

Write your answers in the answer booklet. Use both sides of the paper. Please leave two blank lines in between your answers to each question.

Write the number of the question you are responding to in the first margin. If the question you are responding to also contain parts, for example 1a, write the question part in the second margin.

Do all your rough work in pen using the answer booklet and cross it through without making it illegible.

Do not tear out any part of the answer booklet provided.

All work must be handed in. If you have used any additional booklets (including graph paper booklets) please insert them inside the answer booklet.

Answer **all** questions.

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

This document consists of **8** printed pages and **0** blank page

Question 1:

The healthcare services market

Table 1: Gross Domestic Product (GDP) per capita at Purchasing Power Parity (PPP) in US$ and life expectancy at birth of selected countries, 2015

Country	GDP per Capita, PPP (US$)	Life expectancy at birth (Years)
China	14,373	76.0
India	6,137	68.3
Japan	40,701	83.9
Switzerland	62,500	83.0
United States	56,207	78.8

Source: OECD Indicators 2017, accessed 15 July 2019

Extract 1: Health and the economy: A vital relationship

Investment in health is not only a desirable, but also an essential priority for most societies. However, our health systems face tough and complex challenges, in part derived from new pressures, such as ageing populations, growing prevalence of chronic illnesses, and intensive use of expensive yet vital health technologies.

Health performance and economic performance are interlinked. Wealthier countries have healthier populations for a start. And it is a basic truth that poverty, mainly through infant malnourishment and mortality, adversely affects life expectancy. The opposite is also true – improving the health of a nation's citizens can directly result in economic growth, because there will be more people able to conduct effective activities in the workforce. The effects of health on development are clear. Countries with weak health and education conditions find it harder to achieve sustained growth. Indeed, economic evidence confirms that a 10% improvement in life expectancy at birth is associated with a rise in economic growth of some 0.3-0.4 percentage points a year.

Policy choices to improve healthcare access cannot be taken lightly. Health financing, through out-of-pocket expenditures, is inequitable and can expose whole populations to huge cost burdens that block development and simply perpetuate the disease/poverty trap. On the other hand, health systems need financing and investment to improve their performance, yet this need cannot in turn impose an unfair burden on national spending or competitiveness. This is a very delicate balance for policymakers to have to strike. In other words, if you want to raise investment in health spending, you may need to find cuts elsewhere in the economic system. As policymakers with public responsibilities, we must never forget that decisions taken in one sphere affect conditions, stakeholders and policies in another.

Source: OECD Observer, accessed 15 July 2019

Extract 2: Consumers and their demand for healthcare

Globally, healthcare demand is gradually rising. The increasing prevalence of preventable illness is contributing to this growth and this is influenced by choices consumers make. For instance, obesity, which can increase the risk of diabetes, stroke, and heart disease is on the rise in the United States. Though obesity is preventable, some patients do not take appropriate control of their health and seek treatment

when conditions become chronic. The lack of initiative to lead a healthy life and prevent chronic illnesses such as obesity has led to the rise in demand for healthcare services.

Overall, healthcare is only valued to the extent that it improves health and the consumers' ability to purchase healthcare is ultimately limited by the customers' income, and consumers are likely to forgo spending on other products to purchase the medical care needed.

Source: Journal of Health and Medical Economics, accessed 15 July 2019

Extract 3: Gaining better control of rising healthcare prices

Prices of healthcare services are rapidly rising globally as populations age, chronic conditions become more prevalent and demand for healthcare services outpaces supply. In Asia, several developments continue to drive an upward trend in the prices of healthcare services today. The availability of advanced medical technology and the appeal of medical tourism are just some of the key factors behind an unabated rise. At the same time, research has found that a 10% rise in price of healthcare services leads to a 4.1% fall in quantity demanded.

In Singapore, beyond the demographic changes, the cost of running a medical practice has also gone up tremendously over the past few years. Two major hospitals started operations over the past two years. They are supposed to bring in more capacity and competition, and lower costs. But an unintended consequence is the acute shortage of skilled medical personnel. Nurses were offered a significant pay rise to join the new hospitals. In return, existing hospitals have had to match the pay rise to keep their staff. In addition, the resale prices of private medical clinics have also gone through the roof. All these increases in overheads will eventually lead to higher hospital facility fees.

Hoping to alleviate the issue in Singapore, the Ministry of Health recently appointed a committee to develop medical fee benchmarks for common clinical procedures, with a view of including less common and expensive procedures like X-rays and magnetic resonance imaging (MRIs) in the longer term. Other strategies include ensuring that people are aware of the significance and impact of healthy living. Despite oceans of clinical data, many people still aren't aware of how profoundly their everyday decisions from a young age - what they eat and drink, whether they smoke, how often they exercise - really do significantly impact their long-term health.

Source: *The Business Times*, 27 March 2018

Extract 4: Affordable healthcare for all

The Ministry of Health (MOH) is looking to make sure that healthcare remains affordable for all. MOH is simplifying the criteria for means-testing in the intermediate and long-term care sector. It will be changed to per capita household income, which only includes those family members that the elderly is living with.

Subsidies for nursing homes and clinics under the Community Health Assist Scheme (CHAS) will also be expanded to include the middle income. The per capita household income ceilings to qualify for these subsidies will be increased for intermediate and long-term care. These changes will help the low income significantly, but also signal a major shift towards help for the middle income. Drug subsidies will also be raised, especially those required to treat chronic conditions.

Source: Channel News Asia, 24 March 2017

Extract 5: Singapore Budget 2018: Spending needs to grow in healthcare

SINGAPORE will put aside some S$10.2 billion for healthcare expenditure, Finance Minister Heng Swee Keat said on Monday. Unveiling the Budget for 2018, Mr Heng said the government expects to spend more on healthcare.

"We will have to build new healthcare capacity to meet the rising demand, and also invest in new medical technologies to improve care quality," Mr Heng said.

He said within the next five years, Singapore will build six more general and community hospitals, four new polyclinics and more nursing homes and eldercare centres across the island.

Source: *The Business Times*, 19 February 2018

Questions

(a) With reference to Table 1 and Extract 1,

(i) State the relationship between GDP per capita (PPP) and life expectancy. [1]

(ii) Discuss whether the data suggests that the United States has a higher standard of living than Japan. [6]

(b) **(i)** Using a diagram, explain why there is a significant pay rise for nurses. [4]

(ii) With reference to Extract 3, account for the rising prices of healthcare services in Singapore and comment whether prices of healthcare services will continue to rise in the future. [8]

(c) With the aid of a diagram, explain why consumers, rather than producers will benefit more from a subsidy on healthcare services. [4]

(d) Explain what is meant by equity and why subsidies of healthcare services based on “means-testing” is likely to be equitable. [3]

(e) **(i)** Explain why the Singapore government intervenes in the market for merit goods such as healthcare services. [7]

(ii) As a consultant economist, what policies would you suggest to the Singapore government to address the inefficiency in resource allocation for healthcare services and which would you most recommend? Justify your answer. [12]

[Total: 45]

Question 2

The United States Economy

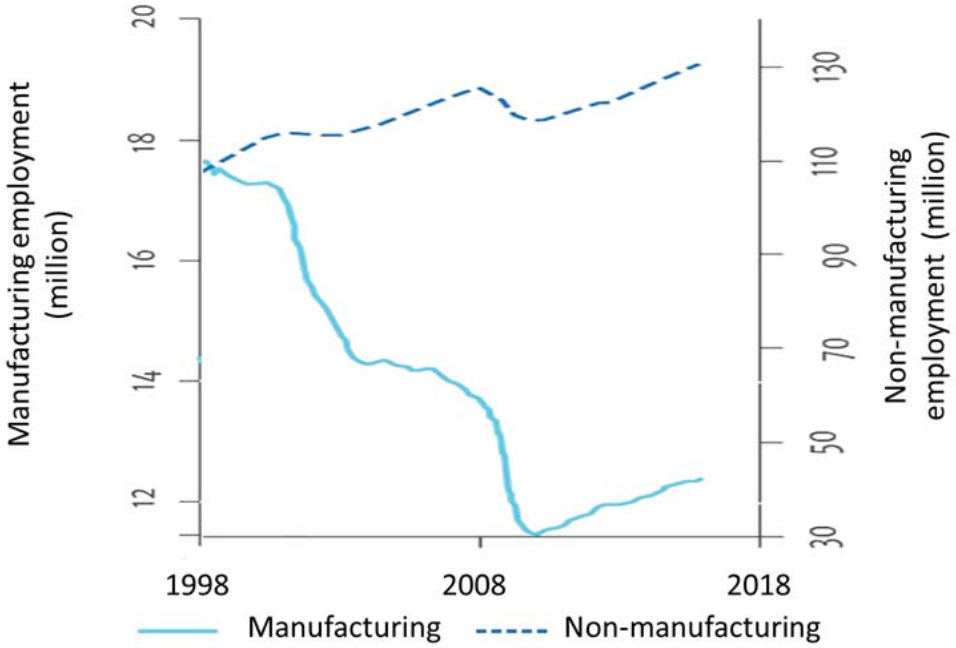
Extract 6: Tariffs and free trade explained

The United States (US) has a massive trade deficit with China, meaning that the value of US imports from China is much more than the value of US exports to China. In May 2018, US President Donald Trump announced a 25% tariff on all steel imports. Protectionism is trying to use restrictions such as import tariffs, a type of indirect tax on certain imports, to boost a country's industry, and shield it from foreign competition. In theory, taxing items coming into the country means people are less likely to buy them as they become more expensive and they will buy cheaper local products instead. Thus, taxing imported steel will mean US companies will buy local steel instead and help lift profits for local steel makers. But the US companies that need raw materials, like car and aeroplane makers, will see their costs rise. That means they might have to increase the prices on their finished products which would hurt consumers.

Free trade is the opposite of protectionism. It means as few tariffs as possible, giving people the freedom to buy cheaper products from anywhere in the world. But that means companies are less likely to buy more costly local products and there may be a loss of jobs in sectors selling such local products.

Source: BBC News, 10 May 2019

Figure 1: Manufacturing and non-manufacturing employment from 1998 to 2018



Source: *Microeconomics Insights*, accessed 3 August 2019

Extract 7: Understanding the decline in manufacturing employment

The US manufacturing sector started shedding jobs in huge numbers in the early 2000s, coincident with a sharp appreciation of the dollar and a widening trade deficit. Yet, statistics seem to show the sector's output keeping up with the rest of the growing economy. Many economists saw this as a sign that high productivity growth allowed manufacturing output to expand even as the workforce dwindled. This view points to automation, not rising consumption of imports, as the main cause of manufacturing's job losses.

However, Vice-President and Director of Research of the Upjohn Institute, Susan Houseman, cited recent research suggesting otherwise. The apparent strong growth was driven by a single industry within manufacturing: computer and electronics products. And while people have been buying more manufactured products, these products are increasingly made overseas where cost of production is lower. This shift to buying imports is further compounded by an appreciating exchange rate, which makes domestic manufactured products more expensive to local buyers and also hampers the export competitiveness of these products.

The Economic Policy Institute's research director, Josh Bivens addressed the importance of managing the exchange rate to minimise damage to the economy. "There needs to be real credibility that the US is now committed to never again allowing the dollar to just destroy the US manufacturing sector," Bivens said. He also echoed Houseman's call to expand vocational training programmes to improve the skills of workers in manufacturing.

Source: W.E. Upjohn Institute for Employment Research, June 2018

Extract 8: Time to capitalise on rare earth abundance in the US

The Chinese government has threatened to stop shipments of strategically vital rare earth minerals to the US to gain leverage in the ongoing trade dispute. Not only does this potentially affect costs of production, but this has also sparked fear and uncertainty in US businesses.

Rare earth minerals are essential in the production of numerous 21st century technologies, from mobile phones and solar panels to electric batteries and military weapons systems. The good news is that these minerals are actually quite abundant, especially in the US. The bad news is this treasure chest of vital minerals remains in the ground due to extreme environmental rules.

The Japanese announced last year that they found minerals off their coast that are so large, they described the supply as "semi infinite" and seem primed to take on Chinese dominance in rare earth minerals. Though it will take time to get the minerals out of the ground and build the infrastructure to get them to market, China's recent threats should be a wakeup call for US to get going now. A new investment into the American mining industry will create tens of thousands of new jobs and over time tens of billions of dollars of added output.

Source: Stephen Moore and Nicolas Loris, *The Hill* website, 6 April 2019

Extract 9: Reimagining rare earth elements in a sacrifice zone-free future

The rare earth elements may not be rare, geologically speaking, but they are hard to get in large quantities, as they are difficult and costly to separate and purify. The industrial separation processes produce heaps of nasty byproducts, including concentrated acids and radioactive waste. As the Chinese government pursued a policy that led to the country's dominance in world exports of rare earth, it knowingly accepted terrible costs to the health of the people around the region's mines and grievous damage to the environment. Scholars call this approach the creation of a "sacrifice zone".

A more just way forward begins with the principles of green chemistry. Can we redesign processes and products to make rare earth production less toxic and impactful upon the environment? Research suggests some ways to do that. An acid-free technique for dissolving and recovering rare earths from shredded hard drives has emerged, developed by researchers at Ames Laboratory.

Businesses also can be an important player in pioneering new methods of recovering rare earth elements. Apple is experimenting with a robot named Daisy to disassemble returned products to more efficiently recover the various metals, including rare earths.

Source: Robert Turner, *GreenBiz* website, 6 Feb 2019

Extract 10: Quality of life in the US

The US performs very well in many measures of well-being, according to the Organisation for Economic Co-operation and Development (OECD). The average household income per capita is US$45,284 a year. But there is a considerable gap between the richest and poorest – the top 20% of the population earn nearly nine times as much as the bottom 20%.

In terms of employment, 70% of people aged 15 to 64 in the US have a paid job while some 11% of employees work very long hours. In terms of pollution level, the level of atmospheric PM2.5 – tiny air pollutant particles small enough to enter and cause damage to the lungs – is 10.1 micrograms per cubic meter.

Source: OECD Better Life Index, accessed 15 Aug 2019

Questions

(a) With reference to Extract 6,

(i) Identify the relationship between "imported steel" and "local steel". [1]

(ii) Using demand and supply analysis, explain how "taxing imported steel" can "lift profits for local steel makers". [3]

(b) **(i)** Using Figure 1, compare the trends in employment data from 1998 to 2018. [2]

(ii) With reference to Extract 7, explain **two** causes of the general trend in manufacturing employment as identified in (b)(i). [6]

(iii) Assess the policies the US can adopt to boost manufacturing employment. [8]

(c) In response to the US taxes on imports, China has threatened to restrict exports of rare earth minerals to the US.

With the aid of a diagram, explain how this response is expected to impact the US economy, and comment on what might determine the extent of this impact on the US. [8]

(d) Using Extracts 8 and 9, explain **three** factors that the US government should consider in deciding whether to start mining its own "rare earth abundance". [6]

(e) With reference to Extract 10, discuss the indicators that would best allow the US government to determine whether the US has achieved an improvement in its standard of living. [11]

[Total: 45]

Questions

(a) With reference to Table 1 and Extract 1,

(i) State the relationship between GDP per capita (PPP) and life expectancy. [1]

Positive Relationship or GDP per capita is positively correlated with life expectancy.

(ii) Discuss whether the data suggests that the United States has a higher standard of living than Japan. [6]

Standard of living has two aspects, material and non material. The data provided GDP/Capita (in PPP) which allows us to compare the level on material SOL across countries and life expectancy with allows us to compare the level of non-material SOL.

GDP capita in PPP is higher in USA, suggesting that after controlling for the differences in cost of living across two countries, the residents in USA has a higher purchasing power and higher material SOL as they can consume more goods and services.

However, in terms of non material standard of living, Japan is said to be higher. The life expectancy is higher for Japan and this means that the residents in Japan are healthier and may lead a less stressful life. This means that the quality of life is higher in Japan.

Thus, in view of this, we may need additional data to conclude whether US has a higher standard of living than Japan as the data is inconclusive. While it does suggest that US has higher material SOL, we need to see other indicators of non-material SOL. In this case, we may need additional information such as crime rates and quantity of leisure hours to have a holistic comparison of the quality of life before we can make a judgement.

Mark Scheme
1m for understanding of material and non material
Up to 3 marks for explanation for explanation of material and non material (Idea of differences in COL is essential for full 3marks)
2 marks for judgement and explanation.

(b) **(i)** Using a diagram, explain why there is a significant pay rise for nurses. [4]

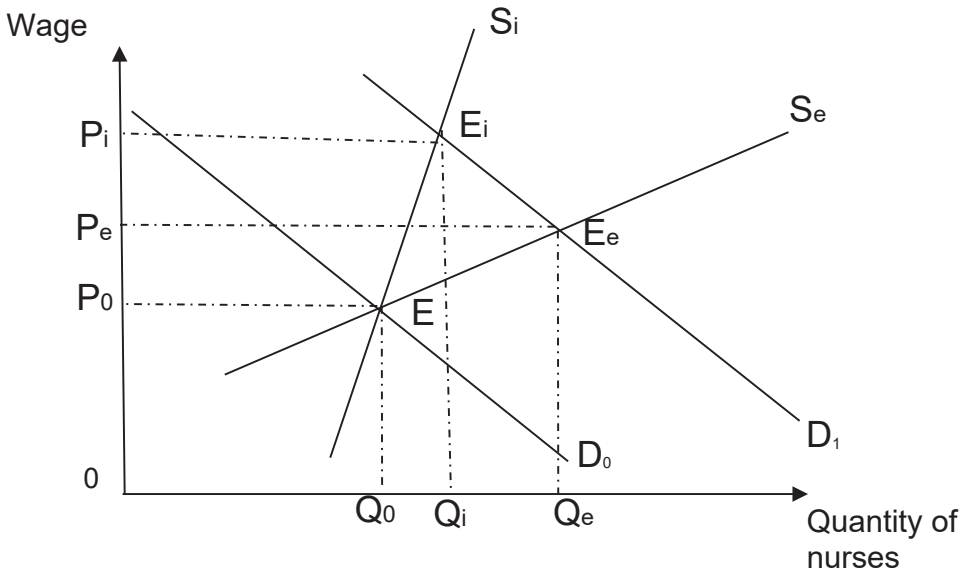
Due to aging population, there is a need for more healthcare services to be rendered and hence, there is an increase in DD for healthcare services. Therefore, the derived DD for nurses will increase because nurses is a factor of production of healthcare in the form of labour.

Or

As more hospitals are being built, there is a need for more medical staff. Therefore, the derived DD for nurses will increase because nurses is a factor of production of healthcare in the form of labour.

PES < 1 because it takes time to train and equip nurses with the necessary skills to provide an effective healthcare service.

Hence, an increase in DD, with PES < 1, would result in a shortage, which exerts an upward pressure on nurses' wages. As the wages increase, the quantity supplied of nurses only increase less than proportionately. As such, wages need to rise sharply to clear the shortage. This is why there is a significant pay rise from P0 to Pi as illustrated in the diagram.

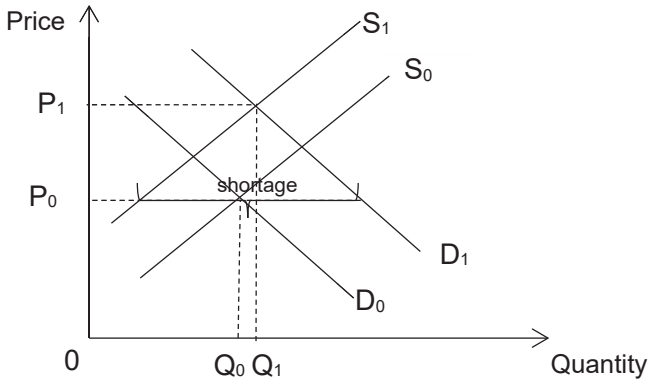


Mark Scheme
1m for rise in derived demand
1m for explanation of PES
1m for explanation of significant rise (How PES affect the extent of rise in price)
1m for diagram (Must have different PES to illustrate the extent of sharp rise)

(ii) With reference to Extract 3, account for the rising prices of healthcare services in Singapore and comment whether prices of healthcare services will continue to rise in the future. [8]

An "appeal of medical tourism" (Ext 3) would mean that there is a change in taste and preferences towards healthcare services. Hence, there is an increase in DD for healthcare services from D0 to D1.

Furthermore, the "existing hospitals have had to match the pay rise to keep their staff" (Ext 3) which meant higher wages for healthcare workers. This would in turn increase the cost of production of healthcare services and make it less profitable for healthcare providers to provide the services. Hence there will be a fall in SS from S0 to S1.



With an increase in DD and a fall in SS, this results in a large shortage which exerts an upward pressure on healthcare services' price. Hence, there is rising price of healthcare services as price increased from P0 to P1.

Price of healthcare services may not continue to rise in the future as the ceteris paribus assumption may not hold. As in the "next five years, Singapore will build six more general and community hospitals, four new polyclinics and more nursing homes and eldercare centres across the island" (Ext 5). This means that there will be a future increase in SS of healthcare services which would help to lower healthcare services prices.

Mark Scheme (6+2)
Up to 3 marks to explanation of DD/SS factors (Use of EGYPT or WETPIGS must be evident)
PAP 1m (Shortage+Upward Pressure)
Diagram (up to 2m, for a combined diagram)

Comment (2m)
Take a stand (1m) + explain any other factors which changes DD or SS and the impact on price.

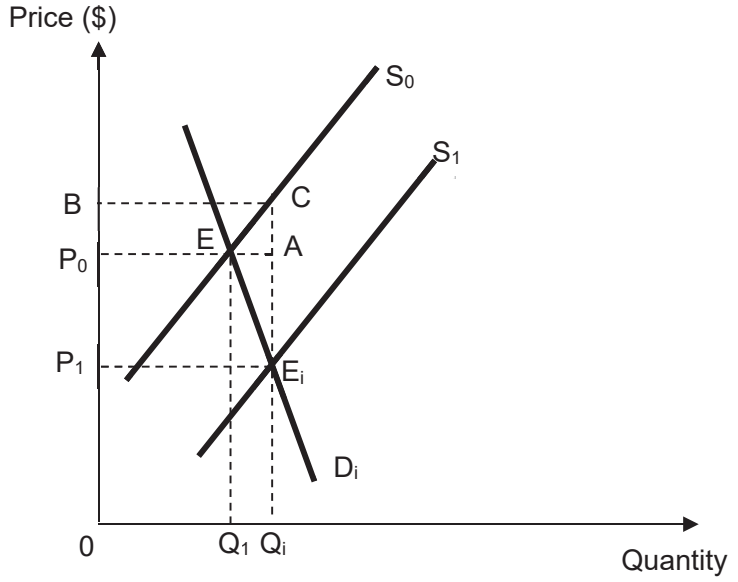
(c) With the aid of a diagram, explain why consumers, rather than producers will benefit more from a subsidy on healthcare services. [4]

With a subsidy on healthcare services, there will be a fall in the cost of production of the services and it will be more profitable for firms to produce the service. Hence, there will be an increase in SS of healthcare services from S0 to S1, resulting in a fall in price from P0 to P1.

Demand for healthcare services is relatively more price inelastic as it is deemed as necessity. This is further backed up by the data which shows a 10% rise in price, would only result in a 4% drop in quantity demanded (a less than proprotionate fall in quantity demanded).

Furthermore, in order for consumers will enjoy a larger share of the subsidy, the demand for healthcare services has to be more price inelastic compared to the supply.

From the diagram, the subsidy expenditure is denoted by Area BCEiP1. Out of this entire area, the consumer's share of the subsidy is represented by Area P1CEiP1. This is in comparison to producer's smaller share of the subsidy represented by BACP0.



Mark Scheme
COP fall → SS rise→ P fall and Q rise (1m)
Explain why PED<1 (1m)
2m for diagram (Total subsidy, and consumer/producer distribution)

(d) Explain what is meant by equity and why subsidies of healthcare services based on "means-testing" is likely to be equitable. [3]

Equity is defined as the fairness in distribution of economic welfare, and that there is an equitable (i.e. fair) distribution of goods and services. (1m)

Subsidy → **Fall in price → more affordable for lower income** groups → more people from lower income groups can enjoy healthcare services (1m)

This is an equitable outcome as healthcare is an **essential service which consumers should have access to regardless of their income level**. (1m)

1m for understanding of equity
1m for fall in price/ access for lower income group
1m for nature of healthcare service

(e) **(i)** Explain why the Singapore government intervenes in the market for merit goods such as healthcare services. [7]

- Merit goods are goods which the government deems as socially desirable but consumers are perceived to undervalue their benefits due to imperfect knowledge. These goods also generate positive externalities. The consumers will under-consume these goods and services and results in deadweight loss for the society, and hence, government will intervene to achieve allocative efficiency.

- Consumers suffer from imperfect information and positive externalities are generation from the consumption of healthcare services.

- Consumers will consume up to the quantity where MPB=MPC to maximise its own utility. The private benefit from consuming healthcare services is the satisfaction from being healthy while the private cost is the cost of healthcare services like cost of vaccinations and checkups. However, in the case of healthcare, consumers suffer from imperfect information as they tend to underestimate the benefits from regular checkup and vaccinations as these benefits only happen in the long run. For example, the protection from flu virus is only evident when there is a flu season going on and consumers tend to underestimate the benefit from this protection. Thus, there is a divergence between MPBperceived and MPBactual, and consumers will consume at Qm where MPBperceive=MPC.

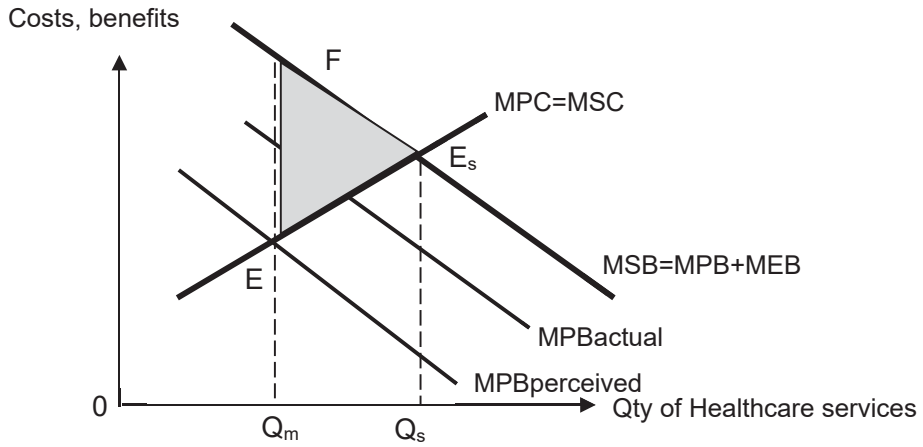
- The consumption of healthcare also gives rise to third party effects which are often ignored by the consumers. For example, when a worker consumed vaccination and pay for the cost, the employer will benefit from a more productive worker due to lower rate of absenteeism. In this case,

employer, who is not directly involved in the production or consumption of vaccination, benefits from the higher profits due to productive workers and he does not pay for this benefit.

- The existence of positive externalities lead to a divergence between MPBactual and MSB and the social equilibrium output is Qs where MSB=MSC.

- Due to the existence of positive externalities and imperfect information, there is underconsumption of education by QmQs amount.

- Between QmQs, the total benefit to the society is QmQsEsF and this is greater than the total cost cost to the society, QmQsEsE. Hence, if these additional QmQs units were produced and consumed, society's welfare would be higher but they do not. Thus, underconsumption of QmQs unit give rise to a monetary measure of total deadweight loss of area EFEs to the society if consumption were determined by the market, and government will intervene to improve the society welfare.

- 

Understanding of characteristics of merit good (1m)
Up to 3 marks from Explanation of Externalities (2m) + Explanation of Imperfect Information (2m)
Underconsumption (1m)
Explanation of DWL (1m)
Diagram (1m)

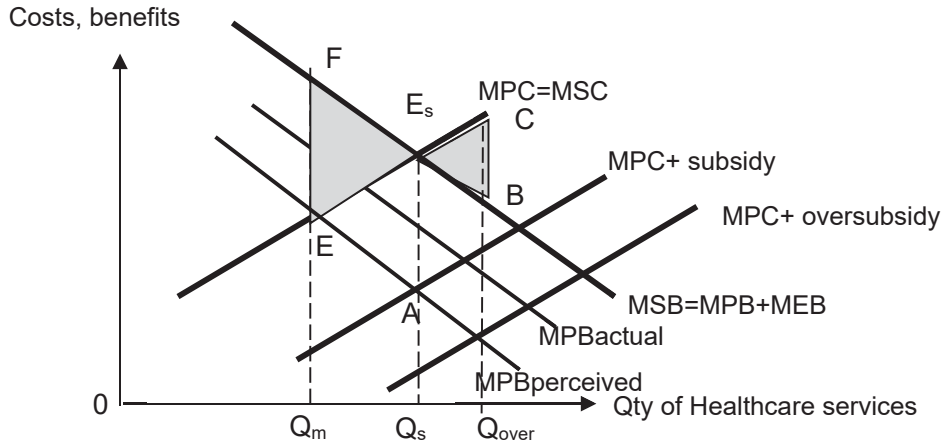
(ii) As a consultant economist, what policies would you suggest to the Singapore government to address the inefficiency in resource allocation for healthcare services and which would you most recommend? Justify your answer. [12]

A government can respond to the issue of underconsumption with policies such as subsidy, rules and regulation, and education and campaign to increase the level of healthcare consumption. The recommendation will depends on the severity of the problem and the characteristics of the Singapore society.

Subsidy:

To account for the presence of imperfect information and positive externalities, Singapore government can provide a subsidy is equal to the divergence between MPBperceived and MSB at Qs. This will increase the consumption to the socially optimal amount.

When a subsidy equal EsA is given, it reduces the cost of production of producing healthcare services and this leads to a rise in supply of healthcare and a fall in the price of healthcare services. In turn, this reduces the private cost of consumption healthcare to MPC+subsidy and this increase the level of consumption of healthcare to Qs, eliminating the deadweight loss of EEsF.



Subsidy is one of the recommended solution because it allows the market to continue to operate and consumers to exercise some sovereignty in the choice of healthcare services they wish to consume and producers will get to choose how they want to produce the different types of healthcare services.

However, it is likely that government may not estimate the extent of MEB correctly. As explained earlier, the extent of external benefit will differ depending on who consumes the vaccination and the different types of vaccination. Thus, Singapore government may oversubsidies the production of healthcare and and the greater fall in fall in price leads to overconsumption healthcare at Qover and this could lead a deadweight loss of EsBC.

Moreover, the demand for healthcare is price inelastic as highlighted in extract 3. This means that the fall in price leads to a less than proportionate rise in quantity demand. As a result, Singapore government may need to increase the level of subsidy to lead to a rise in Qm to Qs. This could lead to greater government subsidy and caused a strain on Singapore government budget. Moreover, there is also an opportunity cost incurred. Singapore government may have to reallocate resources from pre-school and post-university education to fund healthcare subsidy. Considering that Singapore is facing structural

changes in the economy and that social mobility is becoming an issue, the opportunity cost incurred from the government spending could be too big to ignore. In this case, subsidy may not be the most recommended.

An alternate policy is to implement education and campaign for the public to raise the awareness of the true benefits to consumers. This help to address the problem of imperfect information. As consumers are aware, they will change their taste and preferences towards healthcare services and this leads to a rise in demand for healthcare services and the consumption level will increase to Qs, eliminating deadweight loss. For example, there are advertisements and roadshows to encourage people to go for medical check-ups more often and the importance of different vaccinations.

This policy can be effective for Singapore as Singapore consumers are relatively highly educated and they may understand the message from the campaign. In addition, it is cost effective to do such campaign in Singapore because of the high density of the consumers, and access to TV and Internet. As such, the spread of information can be achieved at relatively lower cost than subsidy.

However, this policy may not be the best on its own due to the issue of inequity. The poor may lack access to healthcare services even if they are aware of the benefits and they may not consume healthcare services. Moreover, it requires a long time to change the perception of vaccinations or healthcare services among the consumers. Even though the consumers are aware of the benefits, there is a lack of urgency to consume these services as they may prioritise their spending on other goods and services as highlighted in extract 1. In the event of a severe epidemic, this policy will not be the most recommended.

In view of the limitations, Singapore government may legislate the consumption of healthcare services. For example, in Singapore, there are compulsory vaccinations at birth and when young. This ensure that the quantity of healthcare services consume is socially optimal and eliminate the deadweight loss.

However, Singapore government may need to review the different sets of vaccinations required due to the changing information on the true benefits of different healthcare checkups and the vaccination. For example, as Singapore population ages, the focus would be more on checkups for age-related illnesses. HPV vaccine is also recommended for certain groups of consumers to reduce the risk of cancer. Thus, the effectiveness of this policy depends on the ability of the government to enforce and monitor.

Judgement

Situation + Recommendation

There should be a mixture of policies to tackle the problem as there are two sources of market failure. Considering that Singapore still have sufficient budget, she would able to allocate resources to finance the subsidy of healthcare services and supplement this policy with education and campaign such that that the consumers are aware of the true benefits and take responsibility of their own health, by going for appropriate checkups and vaccinations. Moving forward, the policy of education and campaign will help to reduce the burden on the government expenditure and ensure that Singapore has sufficient resources to support other areas of the economy such as education.

	Level Descriptor
L3 (6-9)	Good explanation of at least 2 relevant policies. Good explanation of limitations with relevance to Singapore context. (Explanation of why opp cost is important with application to Singapore).
L2 (3-5)	Explanation of adequate policies with some use of economic work Some application to Singapore context Undeveloped limitation of policies. (E.g Stating of opportunity cost)
L1 (1-2)	Mainly stating of policies with no use of economic framework
E1 (1-3)	A judgement with explanation.

[Total: 45]

ANSWERS

(a)	With reference to Extract 6,	
(a)(i)	Identify the relationship between “imported steel” and “local steel”. Substitutes [1]	[1]
(a)(ii)	Using demand and supply analysis, explain how “taxing imported steel” can “lift profits for local steel makers”. With a tax on imported steel, this raises the costs of production of imported steel, thereby causing the SS curve for imported steel to shift leftwards. [1] Price of imported steel therefore increases, with a fall in Qd of imported steel. [1] Because local steel is a substitute to imported steel, there will be an increase in DD for local steel. [1] Therefore, P and Q both increases, causing TR to increase. Assuming no change to cost, profits increase. [1]	[3]
(b)(i)	Using Figure 1, compare the trend in unemployment rates from 1998 to 2018. Manufacturing employment generally fell while non-manufacturing employment generally rose. [1] Both non-manufacturing and manufacturing employment fell 2008 before rising in 2010. [1]	[2]
(b)(ii)	With reference to extract 7, explain **two** causes of the general trend in manufacturing employment as identified in (b)(ii). With automation (Ext 7) being more efficient [1], the demand for manual labour, a substitute, decreases. Because they lack the skills to perform jobs linked to automation, such skills mismatch will result in structural unemployment. [1] With an appreciation (Ext 7) [1], assuming Marshal-Lerner condition holds where PEDx + PEDm > 1, (X-M) will fall. [1] AD falls, therefore causing derived demand for labour to fall, causing demand-deficient unemployment. [1] OR With consumers increasingly buying imported goods (Ext 7) [1], M increases. Ceteris paribus, X-M falls. [1] AD falls, therefore causing derived demand for labour to fall, causing demand-deficient unemployment. [1] OR	[6]

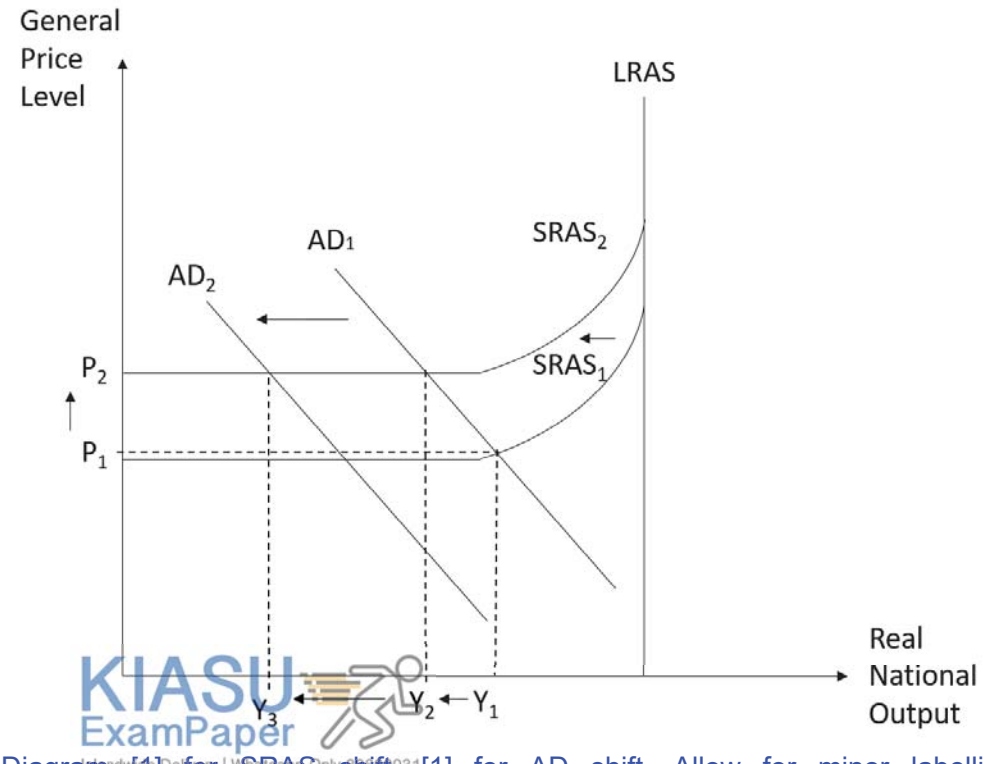
	Consumers consume imported manufactured goods instead of local goods (Ext 7) [1]. C falls [1], AD falls, therefore causing derived demand for labour to fall, causing demand-deficient unemployment. [1] Max 5 for an answer that provides 2 examples of demand-deficient unemployment. For each cause, evidence/identify [1] + explanation [2].	
(b)(iii)	Assess the policies the US can adopt to boost manufacturing employment. Since one of the causes was due to appreciation (Ext 7), the US could **depreciate its currency**. This will result in a fall in the foreign price of exports and a rise in the domestic price of imports. Assuming MLC holds where PEDx + PEDm > 1, this will lead to an increase in (X-M). This translates to an increase in AD, causing firms to step up production and to employ more factors of production including labour. This will therefore reduce demand-deficient unemployment and boost employment. This policy is also supported by Bivens call to manage "exchange rates to minimise damage to the economy" (Ext 7). However, in the very short run, it is likely that the MLC may not hold, since contractual obligations may reduce the availability of substitutes to exports and imports, thereby causing the demand for exports and imports to be very price inelastic. This may mean that depreciation may first worsen the employment before improving it, so the US has to be mentally prepared to bear with it. Using such a policy also begs the question about the nature of the US economy, i.e., how significant (X - M) is as a proportion of AD. If this proportion is small, then the effect on employment may be rather limited. Finally, a depreciation of the currency may be taken as a sign of impending weakness in the economy. If not well-communicated, this depreciation may trigger a loss of confidence among consumers and businesses, thereby causing a further fall in AD and a fall in employment. Another policy that the US can adopt is the **training and retraining of workers**, a proposal echoed by Houseman (Ext 7). This will help to improve the skills of workers and the quality of labour. Not only does this potentially allow the structurally unemployed to be equipped with the relevant skills to complement the drive to automation, it may also prepare workers to move to a new (sunrise) industry. Also, with the quality of labour falling, this may translate into lowered costs of production across the economy, allowing for SRAS to increase, causing actual growth and allowing for derived demand for labour to increase. However, such training programmes typically takes a long time. Skills are not learnt overnight, and time is also needed for workers to become accustomed to those new skills. In the short run therefore, this policy on its own may not significantly boost employment.	[8]

Other policies:
The US could also impose a tariff on manufactured products. This raises the cost of importing and thus supply will fall, causing the price of imported products to increase. This will then increase the demand for locally manufactured products, which in turn leads to an increase in the derived demand for labour, boosting manufacturing employment.

However, Extract 8 has shown how China is contemplating to reduce the shipment of rare earths to US, in response to tariffs being imposed. Imposing tariffs on other manufactured products may likewise cause the same issue to US, causing higher costs of imported factors of production, which may lead to imported inflation.
Additionally, should the tariffs be on factors of production like steel, this will translate into higher costs of production for companies requiring steel like the automobile industry, adversely impacting their profits.

Evaluation
In conclusion, given how there are two causes of unemployment seen in Extract 7, in order to ensure that the decline of manufacturing unemployment is fully addressed, the US can pursue both the monetary policy to boost employment in the short run, and couple it with supply-side policy to start the shift towards a longer-term and more sustainable pattern of employment.

Level	Knowledge, Application, Understanding and Analysis	Marks
L2	A well-developed balanced answer that discusses at least one contextually-supported policy. Generic policies without context: max 4 1 contextually-supported policy with limitation: max 4	4 - 6
L1	Mainly descriptive; may have conceptual errors. 1 policy with limitation OR with context: max 3 1 policy without limitation AND without context: max 2	1 - 3
	Evaluation	
Up to 2 marks for a valid evaluative comment based on analysis.		

(c)	In response to the US taxes on imports, China has threatened to restrict exports of rare earth minerals to the US. With the aid of a diagram, explain how this response is expected to impact the US economy, and comment on what might determine the extent of this impact on the US. With fewer rare earth imports, there will be a fall in SS of rare earth elements. Therefore, prices of rare earths increase, and since they are key factors of production (Ext 8), rise in COP across the economy. [1] This causes the SRAS to fall from SRAS1 to SRAS2, causing a fall in economic growth from Y1 to Y2. Additionally, the general price level increases from P1 to P2, causing cost-push inflation. [1] Additionally, fear and uncertainty amongst businesses (Ext 8) may lead to a fall in investor outlook, causing I to fall. [1] Since I is a component of AD, AD decreases from AD1 to AD2, causing a further fall in real national income to Y3. [1]  Diagram [1] for SRAS shift, [1] for AD shift. Allow for minor labelling errors/omissions.	[8]

	Possible comments (non-exhaustive) for up to [2] marks (i.e., identify [1], explain [1]) a) The proportion of industries which use rare earth as part of the US economy might be a determinant. Should such industries be a very small proportion, then perhaps the COP may not rise significantly across the whole economy and SRAS may not shift much. b) The time period might be a determinant. In the short run, the extent of impact may be more apparent should there be a sudden cut of such FOP. However, in the long run, with the availability of substitutes within the US, and the ability to import from other countries like Japan (Ext 8), the impact on SRAS and thus on inflation and growth may instead be positive should the costs of production be even lower than the Chinese rare earths. c) The extent of this impact on the US might depend on whether China even makes good its threat. Should it be mere political posturing, the SRAS may not change and there might not be noticeable impact.	
(d)	Using Extracts 8 and 9, explain **three** factors that the US government should consider in deciding whether to start mining its own "rare earth abundance". The US government seeks to maximise social welfare, and should consider primarily its benefits and costs in deciding whether to undertake mining on its own. If total benefits outweigh total cost, the government should do so. Firstly, the US government should consider **benefits** that can be reaped from undertaking its own mining. A new investment into the US mining industry will create tens of thousands of new jobs and over time tens of billions of dollars of added output (Ext 8). By mining its own rare earth minerals therefore, the rise in G will lead to a rise in AD and hence a multiplied increase in real national output. Consequently, the increase in production would drive the derived demand for workers and will lead to a fall in demand-deficient unemployment. That US would be self-sufficient in rare earth minerals, and need not be beholden to the China for theirs supply would be icing on the cake. At the same time, the US government should also consider **costs** incurred in undertaking its own mining. This can include explicit and implicit costs. Explicit costs would be conceivably high, given that these minerals are "difficult and costly to separate and purify" (Ext 9). This would impact the government's budget. There is also an implicit opportunity cost in terms of the benefits that could have been derived had that expenditure been channelled to other sectors of the economy, for instance, education and healthcare. To make matters worse, the pursuit of rare earth mining may cause "terrible costs to the health of the people around the regions' mines" (Ext 9). These negative externalities will contribute to the worsening of the non-material SOL of the people, especially those living in the vicinity of the mines. Furthermore, given this negative externality, the US will suffer from an over-allocation of resources to mining, causing deadweight loss to society.	[6]

	Apart from benefits and costs, the US government may also wish to **gather information** on alternatives to the usual means of mining. For instance, the US government should consider whether it has the technological and technical means to engage in "green chemistry" that makes rare earth production that is less toxic (Ext 9), as this will reduce the marginal external cost generated. The government may also want to consider working towards having private firms recover existing rare earth mineral (Ext 9) rather than to mine for more new ones. That Japan could possibly provide an alternative import source of such minerals is another avenue the US government could consider. Such information gathered, should they prove to be valid and viable options, would help decision-making. *NOTE: The third factor can be a different cost or benefit, or indeed any other factor (possibly framed as perspectives, info, or constraints).* [2] for 1 well-explained benefit [2] for 1 well-explained cost [2] for any other factor (can still be benefit or cost) Max 5 for an answer solely on 3 benefits OR 3 costs Max 4 for an answer that does not explicitly address benefits and costs	
(e)	With reference to Extract 10, discuss the indicators that would best allow the US government to determine whether the US has achieved an improvement in its standard of living. 1. average household income per capita is US$45,284 2. 70% of people aged 15 to 64 in the US have a paid job while some 11% of employees work very long hours. 3. considerable gap between the richest and poorest – the top 20% of the population earn nearly nine times as much as the bottom 20% 4. The level of atmospheric PM2.5 – tiny air pollutant particles small enough to enter and cause damage to the lungs – is 10.1 micrograms per cubic meter **Average Household income per capita** One indicator could be average household per capita. Since the US' average household income per capita is US$45,284 a year, should this value be higher than the previous year's, each person in a household on average would have experienced an increase in the quantity of goods and services consumed, allowing for an improvement in the material SOL. **Limitation of household income per capita** However, the indicator is just an average of income earned by households, rather than a sum total of all goods and services produced within the economy (which GDP measures). Also, this value does not seem to be adjusted for inflation rate. This is important because it can reflect the purchasing power of the average person, which is linked with material SOL. For example, should the household income per capita increased by 10% but prices increase by 20%, then the	[11]

purchasing power and amount of goods and services that each household can consume would have fallen instead.

Pollution rates: PM 2.5
Another indicator could be the amount of pollution. With the PM2.5 being 10.1 micrograms per cubic meter, this gives us an understanding of how polluted the environment is, and should it be of a lower value than the previous year, this may mean that the pollution level has fallen and therefore the non-material SOL may have improved.

Limitation of PM2.5
However, one significant limitation is that this measure only takes into account the average for the whole of US - there may be some places with higher concentrations of PM2.5, such as pollutive production sites like a rare earths mine, while some other places may have lower concentrations. Even if the average value has fallen, the increase in PM2.5 in pollutive production sites may have been more than offset by the fall in PM2.5 in other areas of the US. In this case, the people staying near the pollutive production sites may instead experience a fall in non-material SOL.

Gap between top 20% and bottom 20%
This indicator gives a very rough sense of how the country is performing in terms of inequality. Should there be a reduction in the factor (9x) for which the top 20% earned as much as the bottom 20%, then there ought to have been an improvement in the income inequality, therefore contributing to the improvement in the material SOL across the economy.

Limitation of income gap
However, this crude measure does not take into account the remaining 60% of the workers - there may have been worsened income inequality between the top 20% and the next 60%, which may not have been captured if the comparison is only between the top and bottom 20%. A better measure would be the use of the Gini Coefficient, which can provide a more precise measure about how far the country is in terms of a perfectly equal income distribution.

Evaluation
In conclusion, there is no one best indicator, and there should instead be a range of indicators that government should examine to determine the change in SOL. All in all, the indicators would be better should there be data from previous years to compare with the indicators seen in extract 10 to have a better assessment of whether SOL has risen. Additionally, given how US is such a big country with 50 states, looking at the SOL within each state may provide US with more meaningful data on whether there might be inequalities amongst states.

Level	Knowledge, Application, Understanding and Analysis	Marks
L3	A well-developed balanced answer that discusses at least two indicators supported by case evidence to determine whether SOL has improved. *2 indicators with Limitations (both m and n-m) max 7*	7-9
L2	A balanced answer that attempts to discuss two indicators supported by case evidence. Answer may have gaps in analysis. *2 indicators with Limitations (both m) max 6* *1 indicator with Limitations (e.g. GDP) that seeks to go towards both m and n-m: max 5*	4-6
L1	A one-sided/descriptive answer on indicators determining whether the SOL of US have risen. May have multiple conceptual errors.	1-3
Evaluation		
Up to 3 marks for a valid evaluative comment based on analysis.		