Answers

CSQ1: Towards a Smart Nation

ai	**Describe the trend in the volume of mobile data usage in Table 1.**	**[1]**
	Mobile usage has been increasing *1m for general trend*	
aii	**Suggest a possible reason for the trend.**	**[2]**
	Possible factors to account for the increasing volume of data usage: - Fall in price of 'complements' : cheaper smartphones →quantity demanded of smartphones increased →Demand for data use increased→increase in volume (quantity) of data usage - Increase in Income →Increase in demand for smartphones →increase in demand for data →increase in volume (quantity) of mobile data usage - More apps/services (games/work)→ demand for data increase →increase in volume (quantity) of mobile data usage - Accept possible supply factors too *1m for how factor increases demand/supply* *1m for link between demand/supply and volume (quantity) of mobile date usage* *Note: error carried forward from a(i)* *Max 1m for answers that explained change in price of good*	
b	**Explain why the government is intervening in the market to bridge the digital divide to achieve the Smart Nation vision.**	**[4]**
	- The government is intervening to correct the market failure due to inequity. - Access to internet has become a necessity that everyone should have access to regardless of income - However, left to the market forces, the people who can have access to the internet are those who are able and willing to pay for it. This means that those who are poor-those who have no or limited ability to pay for the good will not have access to the internet. - Hence, there is inequity as mentioned in Extract 1 Para 1 where 13% are without internet access OR nine percent cited affordability issues *1m for identifying the source of market failure as inequity* *1m for recognising that access to the internet is a service that all should have access to* *1m for explaining how the market would result in the poor not having access to the internet* *1m for appropriate reference to the case material* *Max 2m for other possible sources of market failure or for macroeconomic reasons, e.g. SOL.* *Note: Marks are awarded for only 1 source of market failure. For students that explained 2 sources, marks are given based on the higher scoring market failure explanation.*	
ci	**Define a private good.**	**[1]**
	A private good is excludable (one will be excluded from the one if one does not pay for it), and rivalrous (consumption by one deprives another of consuming it) *1m for stating <u>both</u> the characteristics of excludability and rivalry* *Note for markers: 0m if one characteristic is inaccurate or missing.*	
cii	**With reference to Extract 2, explain why mobile data is a private good.**	**[2]**
	Mobile data is excludable –if one does not subscribe to the data plan, one will be excluded	

from using it. Using the data is rivalrous – more people using the data at any one time leads to data congestion and slower speed.

1m for showing how mobile data is excludable
1m for showing how mobile data is rivalrous

d	**State and justify the type of market structure that firms in the telecommunication industry in Singapore operate in.**	**[2]**
	It is an oligopoly since there are only 4 large firms in the market *1m for stating the correct market structure* *1m for accurate justification*	
e	**Assess Circles.Life's business strategy for its long run survival.**	**[8]**

Applying the 3C approach to the question
Command word = "Assess" → 2 sided answer is needed with evaluation
Content = "Circles' Life's business strategy for its long run survival" → 2 sides are how the strategies would give rise to at least normal profit in the LR and the limitations of the strategies
Context = Circles.Life → strategies must be those used by Circles.Life in the case material

Introduction
Profits = Total Revenue (TR) minus Total Cost (TC). To survive in the long run, firms must make at least normal profits where TR=TC.

Circles.Life's business strategies for reducing/minimising TC:
- Being asset light by partnering local firm to tap on existing infrastructure →reduce need for physical infrastructure →reduce need for heavy start-up costs (fixed costs)→lower TC → more likely to make at least normal profits
- **Limitation:** Circles.Life would need to pay M1 to tap on its infrastructure. This cost incurred could increase over the long run depending on whether M1 finds it profitable to charge more.
- Since consumer sign up is done through the company's website and changes to the data plan and billings are done through the Circles.Care mobile app, there is no need for a physical retail space for providing service → no need to pay for rental etc → lower TC → more likely to make at least normal profits
- **Limitation:** The lack of a personal touch could be at the expense of brand loyalty as some consumers prefer to be served by staff. Lower brand loyalty could mean that demand for Circles.Life's services may fall in the future when other telcos adopt non-price competition strategies to lure Circles.Life's customers away.

Circles.Life's business strategies for increasing/maximising TR:
- Product differentiation - Circles.Life's plans are flexible, unlike the other telcos'. By offering a different product, Circles.Life is targetting people who like flexibility (to change and manage their plans) whose needs are currently not served by the existing Telcos. This increases the demand for Circles.Life's products as the consumers are lured over. Additionally, this difference in flexibility allows Circles.Life to stand out from the rest, making the PED for Circles.Life products less price elastic. The increase in demand and lowering of PED allows Circles.Life to increase both price and quantity and collect more revenue. With more revenue, it is more likely to make at least normal profit in the long run.
- **Limitation:** Allowing for the flexibility may also add to total costs as billing details would need to be updated more frequently and more manpower may be required to check that the billing is error-free.
- Additionally, Circles.Life is targeting a niche market –those who use a lot of data (e.g., people who watch videos or shop online compulsively). For this market, the PED of data is <1 as data is a necessity. So, Circles.Life could charge a higher price per unit of data and suffer a less than proportionate decrease in quantity demanded, increasing the total revenue. With more revenue, it is more likely to make at least normal profit in the long run.
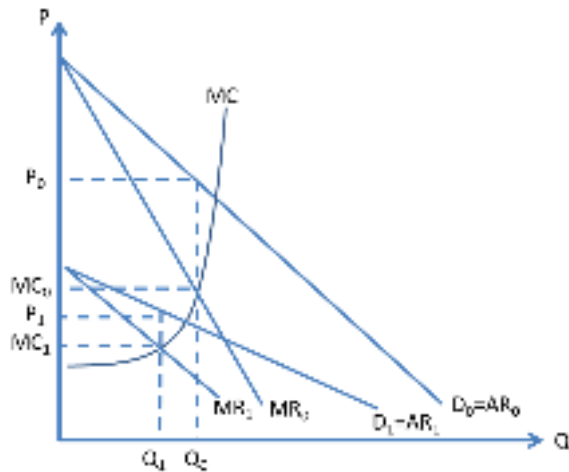
- **Limitation:** In the long run, it is likely that this niche market will become the mainstream market and other telcos would start targeting them too. When that happens, Circles.Life would see a fall in demand and hence TR instead.

Conclusion (evaluation)

In the long run, firms who are not able to cover their costs will have to shut down. In this case, much also depends on whether the kind of partnership Circles.Life currently has can be sustained in the long run. For eg, would the partnership still survive should be there changes in the partnership terms over time? Additionally, this current model of being asset light and tapping on MI for its infrastructure may be limited by the partner's state of infrastructure (Extract 3, Para 5, *" The big challenge is we don't own the network so we can't upgrade it. So if we wanted to build a tower to get better quality WiFi, we can't do that."*). So even if Circles.Life is able to increase its market share, that market share may be limited by the standard/state of the partner's infrastructure. Within Singapore, the regulatory body (IMDA) has effective guidelines of service standards which would safeguard Circles.Life's interest. However, this may not necessarily be the case in the other countries that Circles.Life wants to expand to.

Level	Descriptor	Marks
L2	Recognition that long run survival means making at least normal profits in the long run. Well-developed explanations of Circles.Life's strategies (at least two) in terms of how they increase profits and their limitations. Strategies should include cost-minimising and revenue-maximising ones. Maximum 4 marks for cost OR revenue considerations only. Maximum 4 marks for explanation of strategies without explanation of their limitations	4-6
L1	Recognition that long run survival means making at least normal profits in the long run. Under-developed explanations of Circles.Life's strategies in terms of how they increase profits.	1-3
E1	Judgement of the business strategies for long run survival	1-2

| f | **Using the case material and/or your own knowledge, discuss the impact of the entry of Circles.Life on the society.** | **[10]** |

Applying the 3C approach to the question
Command word = "Assess" → 2 sided answer is needed with evaluation
Content = "the impact of Circles Life on the society" → positive and negative impacts on the society (consumers, producers and the society as a whole)
Context = mobile data sector

Introduction

The effect on society can be analysed in terms of the effect on allocative efficiency, productive efficiency, dynamic efficiency, equity, and choice.

The entry of Circles.Life would reduce allocative inefficiency

The entry of Circles.Life would reduce allocative inefficiency in two ways. First, since there is now more competition in the market, the demand for each of the existing telcos would fall and become more price elastic. The telcos would then have to reduce prices. This would narrow the gap between P and MC (P_0MC_0 to P_1MC_1), reducing the degree of allocative inefficiency.

Second, Circles.Life's own pricing is flexible. Consumers buy data in smaller chunks and can choose to only add on more data when the need arises. Hence, the quantity of data provided would be closer to the 'right' amount (desired by consumers). There would be less allocative inefficiency and less deadweight loss.

The entry of Circles.Life could reduce or improve productive inefficiency
The entry of Circles.Life could reduce productive inefficiency in two ways. The increased competition in the telecommunications market would force the telcos to cut out wasteful processes, reducing X-inefficiency.
Additionally, since Circles.Life is tapping on M1's infrastructure, there is better utilization of its existing infrastructure, which also reduces productive inefficiency.
However, if Circles.Life attracts customers from the other telcos, they would then be providing services to a smaller number of people. As such, there could be underutilisation of the other telcos' infrastructure.

The entry of Circles.Life could improve or worsen dynamic efficiency
However, the effect of Circles.Life on dynamic efficiency is unclear. While increased competition would give firms in the telecommunications industry more incentive to improve their processes and offer better quality services, the erosion of profits due to the competition would reduce the ability of firms to do so.

The entry of Circles.Life would reduce inequity
The entry of Circles.Life would reduce inequity in two ways.
First, if the increased competition from Circles.Life's entry causes other telcos to reduce their prices, then inequity would be reduced since now more people would be able to afford data plans.
Also, Circles.Life's own pricing could reduce inequity. Since Circles.Life does not contract plans and allows customers to add what they need above a base plan, those who were previously unable to afford contract plans and hence had no or limited access to mobile data now have 'more affordable' access to mobile data. This brings about more equity.

The entry of Circles.Life would increase choice
Consumers now have more choice with the entry of Circle Life as they could choose from 4 instead of 3 telcos. Circles.Life also offers choice as subscribers are not tied down to a contract plan. Instead subscribers can add on more data themselves, giving rise to more options for consumers.

Conclusion (evaluation):
In conclusion, while there seems to mainly be positive effects (with the main benefit likely to be more choice), the impact may not be felt throughout society as Circles.Life targets a niche market – identified as those between 20-45 years who like to buy things online. Hence, the benefits from other telcos charging lower prices due to the increase in competition may be limited since Circles.Life is not directly competing with the other telcos. Additionally, the direct effects of Circles.Life's product offerings may also be limited since

only it only serves about 4-6% of the market. Hence, in the short run, the net benefit is likely to be small. In the long run, however, if Circles.Life grows to be a viable rival to the other telcos, then the effects of competition would be greater and there would likely be larger effects.

Alternative approach of looking at positive and negative effects on consumers, producers, and society respectively is also accepted.

Level	Descriptor	Marks
L3	Well-explained positive and negative effects of presence of Circles Life. Explanations make good reference to the case material.	6-8
L2	Under-developed explanations of positive and negative impacts of Circles.Life with some reference to case evidence. Maximum 4 marks if only positive or negative impact is analysed.	4-5
L1	Descriptive answer with limited economic analysis.	1-3
E2	Judgement of the net effect with clear justification	2
E1	Judgement of the net effect with limited justification	1

CSQ2: Technology and the Economy

ai)	**Define labour productivity.**	**[1]**
	Labour productivity is the average amount of output each unit of labour can produce [1]	
aii)	**Using Extract 5, explain how technological development would affect the production possibility curve (PPC) of an economy.**	**[2]**
	Technological development would improve labour productivity through making labour more efficient or redundant [1] This would increase the productive capacity of an economy and shift the PPC outwards [1]	
b)	**Explain the statement that "many of the benefits of these new activities (from technological development) are not accounted for in the calculation of GDP in the same way that private housework and childcare are neglected".**	**[3]**
	GDP is the value of the final goods and services produced within the geographical boundary of a country within a year [1] Private housework and childcare tend not to be included in the GDP as they are goods that are not transacted in the market [1] Many of the benefits of technological improvements (e.g. rental services by airbnb and Uber) are similarly not captured as they are not formally traded in a market. [1] 1m – Definition of GDP 1m – Accurate explanation of why housework and childcare are not captured in the GDP (i.e. non-market goods & services) 1m – Accurate application of why the new activities are not captured by the GDP (i.e. non-market goods & services)	
c)	**With reference to Extract 6, explain how the Gini coefficient is expected to change with technological advances.**	**[4]**
	Technological advances described in Extract 6 have caused middle skilled labour to be replaced This causes the supply of low-skilled labour to increase as mid-skilled labour can only enter the low-skilled labour market since they do not own the skills necessary in the high-skilled labour market [1] Technological advances will also increase the demand for high-skilled labour as they are better able to make use of technology to be more productive [1] The rise in supply of low skilled labour would reduce the wages of low-skilled labour while the rise in demand for high skilled labour would increase the wages of the high-skilled. [1] Hence, there would be larger income inequality and the Gini coefficient would increase. [1] 1m – Explanation of D and/or S factor for low-skilled labour 1m – Explanation of D and/or S factor for high-skilled labour 1m – Accurate application of changes in D and S to explain changes in wages for high- and low-skilled labour 1m – Accurate link to change in Gini coefficient (more unequal = higher Gini coefficient)	
di)	**Describe the trend in job vacancies in Singapore**	**[2]**
	General trend – General decrease [1] Refinement – Decrease was larger for PMETs than other occupations [1]	
dii)	**To what extent is the above trend a result of the Fourth Industrial Revolution**	**[8]**
	Command = 'To what extent' = requires two-sided answer with evaluative conclusion *Content = "is the above trend a result of the Fourth Industrial Revolution" = the two sides are "above trend is a result of the Fourth Industrial Revolution" versus "above trend is not a result of the Fourth Industrial Revolution"* *Context = trend from (di) which shows a general decrease in job vacancies with the decrease in vacancies for PMETs being the sharpest* Introduction: Fourth industrial revolution is the technological change that includes the development of digital services and robotics technology such as artificial intelligence and machine learning (Ext 1). Thesis: Trend is a result of the Fourth / Anti-thesis: Trend is not a result of the	

Industrial Revolution	Fourth Industrial Revolution
• Trend of general decreasing vacancies can be a result of the Fourth Industrial Revolution. With the development of technology that replaces labour, there will be lower demand for labour. This means that there will be fewer vacancies (smaller shortage of labour). • The sharpest fall in vacancies in PMET vacancies can also be explained by the Fourth Industrial revolution. The Fourth Industrial Revolution has resulted in the sharpest fall in demand for mid-skilled labour (Ext 3). This corresponds to the fall in vacancies for PMETs being the sharpest since PMETs are mid-skill labourers.	• However, the trend of a general decrease may be due to global slowdown instead (Ext 4). The global slowdown would mean that foreign consumers would purchase fewer of Sg's X. Also, foreign firms would be more pessimistic causing less FDI inflows into Sg. Fall in X and I → fall in AD → lower national output → lower demand for workers (fewer vacancies) • Additionally, a reduction in vacancies may not reflect a fall in demand for workers. It might be due to the vacancies being filled up faster than they are being created

Conclusion: While the fourth industrial revolution probably is a contributing factor to the fall in vacancies, it is unlikely to be the only factor since the period clearly contributes to a global slowdown. To determine the extent to which it caused the fall in vacancies, more information such as the profile of job applicants (to identify if there is a skill mismatch) and the GDP growth rate (to identify how deep the recession is) would be needed.

Level	Descriptor	Marks
L2	Well explained thesis and anti-thesis; explanations show how the trend observed may and may not be the result of the fourth industrial revolution. Explanations make good use of economic analyses.	4-6
L1	Well explained thesis OR anti-thesis; explanations show how the trend observed may OR may not be the result of the fourth industrial revolution. OR Insufficiently explained thesis and anti-thesis; explanations show how the trend observed may and may not be the result of the fourth industrial revolution but did not make good use of economic analyses.	1-3
E	Makes a reasoned conclusion regarding the extent to which the Fourth Industrial Revolution caused the observed trend.	1-2

e)	**As an economic advisor to the Singapore government, evaluate the possible options to reduce unemployment in Singapore.**	[10]

Command = 'Evaluate' = requires two-sided answer with evaluative conclusion
Content = "the possible options to increase employment" = the two sides are the policies to increase employment and their limitations
Context = "in Singapore"

Introduction:
Current situation in Singapore is that structural and demand deficient unemployment are expected to increase (Ext 4)

Policy option	Limitation
• To reduce structural unemployment, **subsidise re-training schemes** so that workers can pick up skills that	• Retraining takes time, and this is a problem especially if jobs are evolving faster. Workers may find

are relevant to the industry (e.g. skillsfuture). Reduction in skills mismatch → reduction in structural unemployment	that by the time they pick up the new skills, the jobs they are trained for have evolved yet again. • The new jobs are more specialised and not many of these may be created. Not everyone who gets retrained will get a new job.
• To reduce demand deficient unemployment, **expansionary FP can be used**. Increase in G → increase AD. Reduction in Y and corp taxes → increase in disp Y and after tax profits for firms → increase in C and I → increase in AD. Increase in AD → increase in NY via the k process. Increased NY (national output) → increased demand for labour → reduction in demand-deficient unemployment	• Sg has a small multiplier due to the high MPW due to high MPS from having a compulsory saving scheme (CPF) and high MPM from being dependent on imports. A small multiplier would mean that the increase in national output would be limited and hence the reduction in demand-deficient unemployment would be limited too. • Additionally, given the gloomy economy, the reductions in taxes would likely to stimulate only small increase in C and I, causing the final reduction on demand deficient unemployment to be limited.
• To reduce demand deficient unemployment, **a depreciation of the exchange rate can be used**. Depreciation → reduction in Px and increase in Pm → rise in Qx and fall in Qm → assuming MLC holds, (X-M) increases → increase in AD → increase in NY via the k process. Increased NY (national output) → increased demand for labour → reduction in demand-deficient unemployment	• Effect may be limited as Sg is dependent on imported raw materials and components. Increased Pm → increased COP → Px would not fall by the full extent of the depreciation → limited effect on X-M and hence limited effect on AD, NY, and unemployment. • Given a slowing global economy, depreciation may be seen as a protectionist measure and foreign countries may retaliate by imposing tariffs on Sg's X instead. Fall in X → fall in AD → NY → rise in demand deficient unemployment

Conclusion:
Each option has its limitations and a combination of policies may be the best way forward for Singapore as the policies could be complementary. Re-training and expansionary fiscal could be complementary as subsidising re-training could be a form of government expenditure. Additionally, the two could be complementary as they target different types of unemployment. Expansionary fiscal policy and depreciation could be complementary as using them simultaneously would mean that the currency would not need to be depreciated as much, which would reduce the risk of retaliation.

Level	Descriptor	Marks
L3	Well explained policies (at least 2) and limitations of policies that Singapore can adopt to reduce unemployment. Choice of policies are relevant to Singapore (i/r policy is not accepted) and show understanding of case material (policies should address structural and demand deficient unemployment, which were the sources of unemployment in Singapore identified in Ext 4. Policies to reduce frictional unemployment can only be given partial credit). Explanations make good use of economics analyses.	7-8
L2	One well explained policy and limitations of the policy that Singapore	4-6

		can adopt to reduce unemployment. Choice of policies are relevant to Singapore (i/r policy is not accepted) and show understanding of case material (policy should address structural and demand deficient unemployment, which were the sources of unemployment in Singapore identified in Ext 4. Policy to reduce frictional unemployment can only be given partial credit). Explanations make good use of economics analyses. OR Well explained policies (at least 2) and limitations of policies that Singapore can adopt to reduce unemployment. Choice of policies are relevant to Singapore (i/r policy is not accepted) and show understanding of case material (policies should address structural and demand deficient unemployment, which were the sources of unemployment in Singapore identified in Ext 4. Policies to reduce frictional unemployment can only be given partial credit). However, explanations make insufficient use of economics analyses. Well-explained policies without explanations of limitations to be capped at 4.		
L1	Only explained one relevant policy	1-3	
E	Makes an evaluative conclusion regarding what Singapore should do to reduce unemployment	1-2	