

RAFFLES INSTITUTION
2024 YEAR 6 PRELIMINARY EXAMINATIONS
Higher 1

ECONOMICS
Examiners' Comments

8843/01

Question 1

(a)	With reference to Figure 1, summarise the main changes that occurred in the price of rice between July 2022 to July 2023.	[3]
<ul style="list-style-type: none"> • Overall trend: Price generally rose sharply between Jul 2022 to Jul 2023. • Refinement: <ul style="list-style-type: none"> ○ Price fell between Jan to Mar 2023 and May to Jun 2023. ○ Rose at faster rate between Jul 2022 to Jan 2023 compared to Jan 2023 to Jul 2023. 		
(b)	With reference to Extract 1 and using a supply and demand diagram, explain how and comment on the extent to which the Russian-Ukraine war might have contributed to the surge in the price of rice.	[6]
<p><u>Explain how Russian-Ukraine war has contributed to the surge in price of rice</u></p> <ul style="list-style-type: none"> • 'Russia, the world's top fertilizer exporter, halted hundreds of exports' including fertilisers, 'in response to economic sanctions... after Russia invaded Ukraine' → 'rising fertilizer prices' → increase cost of production of rice, since fertilisers are an important input in rice production → fall in SS of rice due to decreased profits → SS curve shifts left from S1 to S2. • Moreover, 'Russia's withdrawal from the Black Sea grain deal' → 'constrained global supply of wheat and corn' → increase in price of wheat and corn → consumers switch to rice which is now relatively cheaper → increase in demand for rice → DD curve shifts right from D1 to D2. <div style="text-align: center;"> <p>Figure 1: Rice market</p> </div> <ul style="list-style-type: none"> • With reference to Figure 1, initial equilibrium price and quantity are P1 and Q1 respectively. Fall in SS, from S1 to S2 will lead to a shortage of QSQ1 at initial equilibrium price → upward pressure exerted on price. 		

- As price increases, quantity demanded falls while quantity supplied rises → this continues until the shortage is resolved at a higher equilibrium price, P2 and equilibrium quantity Q2.
- In addition, the rise in DD from D1 to D2 resulted in yet another shortage Q2QD at P2 → following the market adjustment process → this resulted in price rising even higher to P3 with equilibrium quantity at Q3.
- Hence, the Russian-Ukraine war resulted in a 'surge' in price from P1 to P3.

Comment on the 'extent':

- Explain any alternative contributing factor (must be non-war related):
 - Weather conditions
 - PED of rice as a staple
 - India rice ban
- Provide a final conclusion by taking a stand.

(c)	Explain the statement 'a stable climate is essentially a global public good'.	[4]
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Explain non-excludable and non-rivalrous characteristics of a stable climate:

- Non-excludable:
 - A public good is non-excludable meaning that it is impossible or prohibitively expensive to exclude non-payers from consuming the good.
 - For example, a stable climate offers global benefits, such as favorable weather conditions, which would improve agriculture yields. It is impossible to exclude any farmer from the benefits of such favourable weather, even if the farmer did not 'pay' or contribute to maintaining a stable climate.
- Non-rivalrous:
 - A public good is non-rivalrous in consumption, meaning that one person's use of the good does not reduce its availability for others.
 - For example, if an Indian rice farmer benefits from favorable weather conditions due to a stable climate, this does not diminish the favorable conditions available to a rice farmer in the Philippines. Both farmers can enjoy the benefits of increased rice yields, and the marginal cost of extending the stable climate to the additional farmer is zero.

Since a stable climate displays the two main characteristics of a public good and its benefits extends to every single country in the world, it is essentially a 'global public good'

(d)	Explain how reducing subsidies on fertilisers can improve the signalling and incentivizing functions of the price mechanism to a farmer.	[4]
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Signalling function:

- Reducing subsidies on fertilisers leads to an increase in the price of fertiliser, causing farmers to pay a price closer to the true market value. This improves the signalling function, as the price more accurately reflects the scarcity/shortage of fertilisers. As a result, farmers are prompted to reconsider their decisions regarding the excessive use of fertilisers.

Incentivizing function:

- An increase in the price of fertiliser will raise the marginal cost for farmers. If they continue to use fertilisers excessively, their profits will decrease. This incentivises the farmer to reduce inefficient usage in order to maximize profits.

(e)	With reference to Extract 3 and your own knowledge, discuss whether the use of a price ceiling can ever be justified to address the Philippines rice crisis.	[8]
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Why it is justified:

- Price ceiling is a legally established maximum price set by the government. Sellers are prohibited from selling above the stipulated price.
- To be effective, it has to be set below market equilibrium price as shown by P_{\max} in Figure 2 below.
- It is implemented to ensure that price does not increase by too much → protect consumers and ensure that rice as a 'staple food item' remains affordable for the average Filipino household.

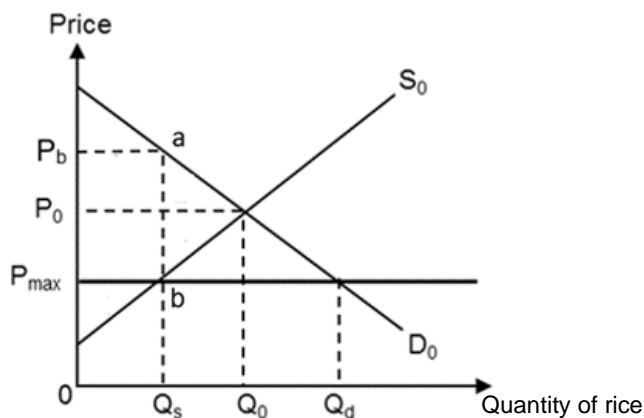


Figure 2: Price ceiling

- This is largely justified as the price ceiling will address the surge in rice price 'caused by forces such as external global pressures beyond the Philippines' control' as well as 'alleged illegal price manipulation attributed to hoarding by traders.'
- As analysed in part b, external global events such as the Russian-Ukraine conflict caused a rapid and sharp increase in the price of rice.
- If left to the free market, the market price will be established at P_0 , where $D_0 = S_0$, which the Philippines government considers too high.
- Rice is a staple in the Philippines, meaning $PED < 1$ → increase in price → less than proportionate decrease in quantity demanded → increase total expenditure on rice, which constitutes a large proportion of income for low-income households → many low-income households may be unable to afford rice.
- When price cap is implemented → price of rice decreases from P_0 to P_{\max} → fall in expenditure → increase affordability of rice in the Philippines.
- Furthermore, hoarding behaviour is disincentivized. When traders expect future price increases → withhold supply and release it later at higher price to increase profits → exacerbate the initial decrease in SS caused by external global events, driving prices even higher.
- With the price cap in place, prices are legally restricted from rising → discourage hoarding behaviour.

□

Limitations:

- Price ceiling will result in a persistent shortage. When price decreases from P_0 to P_{\max} → qty demanded increases from Q_0 to Q_d and qty supplied falls from Q_0 to Q_s → persistent shortage of $Q_s Q_d$ → could lead to the emergence of a black market.
- With only Q_s units of rice available in the market, some consumers may be willing to pay up to P_b (the black market price, which reflects the highest price consumers are willing

to pay) to secure rice supplies. This creates a perverse incentive for sellers holding stocks of rice to engage in illegal sales at P_b to increase their revenue ($P_{\max}P_{bab}$).

- As a result, those with higher ability to pay will obtain the rice, while low-income households, whom the policy is meant to help, will be unable to secure rice.
- Therefore, price ceiling may be ineffective.

Conclusion/Evaluation:

- The price ceiling can be justified as a temporary measure and substantiate with possible reason(s).
- Although there is a risk of black-market formation, this can be minimised through increased government monitoring and enforcement.

<i>Knowledge, Application, Understanding, Analysis</i>		
L1	<ul style="list-style-type: none"> - Limited understanding of how the price ceiling can address affordability issues. - Limited application to the Philippines rice crisis. 	1-3
L2	<ul style="list-style-type: none"> - Detailed analysis of how the implementation of a price ceiling can address the rice crisis. - Balanced answer with well-developed thesis and antithesis - Good use of case material to support main ideas. 	4-6
E1	<ul style="list-style-type: none"> - Opinion without substantiation. 	1
E2	<ul style="list-style-type: none"> - Conclusion derived arrived after consideration of the analysis provided. 	2

(f)	With reference to the case material, explain the market failure that arises from agriculture production.	[5]
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- From Extract 4, it is mentioned that the agriculture sector is a major contributor of climate change. 'The sector accounts for roughly 12 percent of annual global GHG emissions.' This contributes to global warming, representing a negative externality in production.
- Negative externalities refer to costs incurred by third parties who are not directly involved in agriculture activities.
- The emissions of GHG have led to climate change such as extreme weather events which reduced agriculture productivity. This resulted in decreased food yields and increased food prices, which impact consumers, particularly low-income households who struggle to afford basic necessities.
- In their pursuit of self-interest, farmers only consider their private costs when producing crops and livestock and ignore the costs imposed on third parties arising from their production. As a result, there is now a divergence between the Marginal Social Cost (MSC) and the Marginal Private Cost (MPC), with MSC exceeding MPC by the amount of Marginal External Cost (MEC).
- In Fig 3, the free-market equilibrium output of the agriculture sector is $0Q_e$ units where $MPC = MPB$.
- However, the socially optimal output level occurs at $0Q_s$ units, where $MSC = MSB$.
- Between output Q_eQ_s , $MSC > MSB$, meaning that the additional costs of the resources used to produce Q_eQ_s units exceed the additional benefits from consuming Q_eQ_s units from society's perspective.

- This implies that the free market has led to an overproduction of agriculture by $Q_e - Q_s$ units, resulting in deadweight loss due to over-allocation of resources to agriculture production.

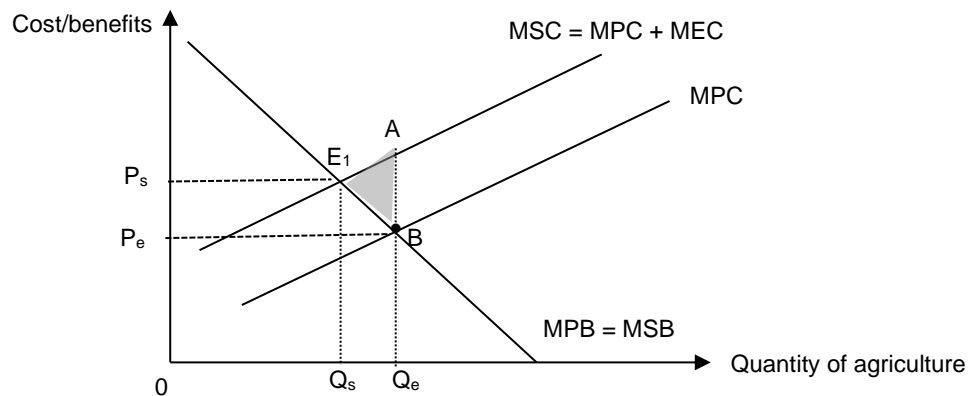


Fig 3: Negative externalities in agriculture production

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|------------|--|------|
| (g) | Discuss the view that imposing a carbon tax is the best policy to address this market failure. | [10] |
|------------|--|------|

- Analyse how the imposition of a carbon tax result in achieving the socially optimal output level.
 - The government can implement a carbon tax on greenhouse emissions, similar to Denmark's approach.
 - With reference to Fig 4, imposing a specific tax of E_1B per unit, equivalent to the marginal external cost (MEC) at output level $0Q_s$ will raise MPC, shifting it from MPC to MPC_1 . The new market equilibrium is where $MPB = MPC_1$, with output level falling from Q_e to Q_s , which coincides with the social optimum level, where $MSB = MSC$.
 - Hence, the tax has internalised the external cost, correcting the over-allocation of resources. This eliminates the deadweight loss (AE_1E) which arose from over-production. Allocative efficiency is now achieved at the output of $0Q_s$.

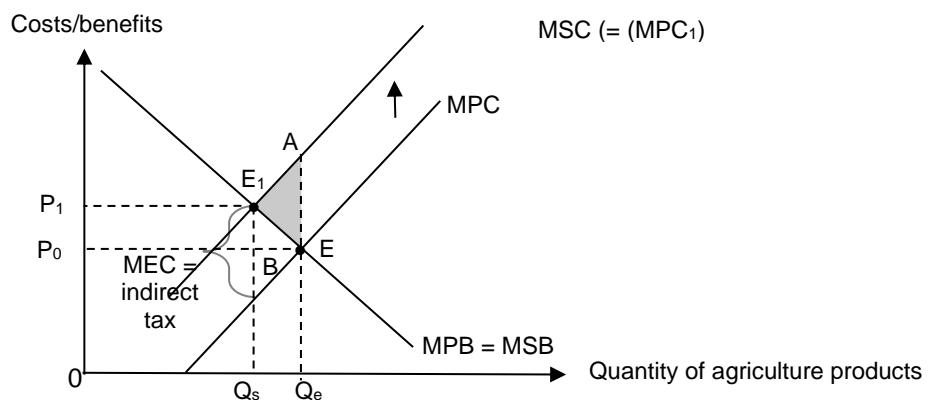


Figure 4: Carbon tax to correct for negative externalities

- Limitations:
 - The carbon tax works by increasing cost to farmers, hurting profitability and hence income of farmers. This may make it difficult for a farmer to sustain their livelihood.
 - Moreover, when imposed on agriculture sector, this will lead to higher prices for consumers.

- This situation could create a cycle where both farmers and consumers are adversely affected by rising food prices and reduced agricultural output
- Analyse how training farmers to adopt sustainable farming and cultivation methods can resolve market failure
 - Alternatively, governments can provide training for farmers on sustainable agriculture techniques, such as 'improved tillage practices, as well as tailored fertiliser application'.
 - When farmers adopt such techniques, they can reduce GHG emissions, thereby reducing the MEC. This reduction narrows the divergence between the MSC and MPC curves, effectively shifting the MSC curve closer to the MPC. As a result, the socially optimal output increases, aligning more closely with the free market output.
 - If negative externalities become negligible or are completely eliminated, then MSC will equal MPC. Consequently, the market output level where MPC equals MPB will also represent the social optimum, leading to an efficient allocation of resources.
- Limitations
 - However, the success of the training programme hinges on the receptivity of farmers. For example, traditional beliefs about farming practices may conflict with modern sustainable techniques, making it difficult for farmers to adopt new methods despite educational efforts.
 - Moreover, transitioning from conventional to sustainable farming practices can be disruptive and time-consuming. Farmers may face temporary setbacks in yields and income during this adjustment period, which can discourage them from adopting new techniques.
- Conclusion
 - In conclusion, both the imposition of a carbon tax and the training of farmers in sustainable agricultural practices are effective strategies for addressing market failure that arises from agriculture production. However, the appropriateness of the two policies varies depending on the specific constraints of each country.
 - Compare why training programmes may be the better policy in less developed countries, or why carbon tax may be more appropriate for developed countries.

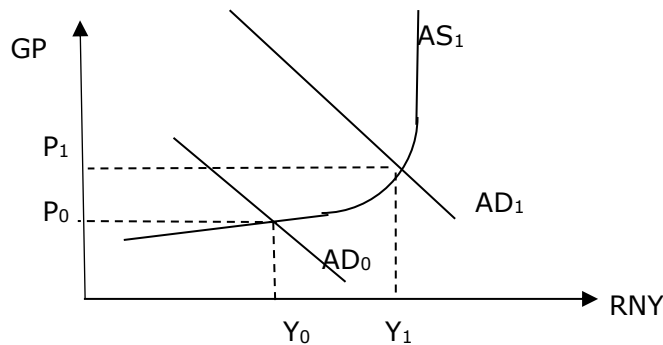
<i>Knowledge, Application, Understanding, Analysis</i>		
L1	<ul style="list-style-type: none"> - Answers mostly irrelevant or inaccurate. - Lack of scope of discussion. - Insufficient depth of elaboration – points are stated and not explained. - One-sided answer that with no limitations of policies - Lack use of case material 	1-3
L2	<ul style="list-style-type: none"> - Discussion of how carbon tax and one alternative policy - Good depth of analysis with the use of MSB/MSB framework. - Balanced answer – limitations are well-considered. - Good use of case material to support main ideas. 	4-7
E1	An unexplained conclusion /judgment.	1
E2	A judgment/conclusion supported by reasons / economic analysis – relative effectiveness of each policy with particular insight that made reference to 'best'.	2-3

Question 2

(a)	Explain the relationship between real GDP growth rate and inflation rate and comment on the extent to which Table 1 supports the expected relationship.	[6]
	<ul style="list-style-type: none"> Identify and explain the expected relationship from Table 1. <ul style="list-style-type: none"> positive relationship between real GDP growth rate and inflation rate for most years. explain the positive relationship. Identify and explain another possible relationship from Table 1. <ul style="list-style-type: none"> In year 2022, there was a negative relationship - real GDP growth rate fell but inflation rate rose. Explain the negative relationship - Possibly due to cost-push inflation experienced by supply-chain disruption from the Russian-Ukraine war. 	
(b)	Using an aggregate demand and aggregate supply diagram, explain how China's weak economic growth may impact the Singapore economy.	[4]
	<ul style="list-style-type: none"> Weak EG in China leads to plummeting consumer and business confidence → fall in national income and purchasing power in China: <ul style="list-style-type: none"> decrease in willingness and ability to purchase Singapore goods as China is a major trading partner of Singapore → leads to fall in net exports of Singapore → fall in AD → firms cut down on production and reduce use of factors of production, including labour → unemployment rise → fall in household income → fall in consumption for many rounds → Singapore's real national income fall by more than proportionate. As seen in the diagram below, AD fell from AD₀ to AD₁, and Singapore's real national income fell by more than proportionate from Y₀ to Y₁ via the multiplier process → fall in economic growth and rise in cyclical unemployment. Fall in GPL to P₁ - With more idle resources in the economy, inflationary pressure is alleviated due to the downward pressure on prices given the excess capacity in the economy. <div data-bbox="363 1464 1026 1865"> </div>	

(c)	Explain how a “tighter monetary policy” helps to address inflation in Singapore.	[2]
	<ul style="list-style-type: none"> • Singapore is a small open economy with very limited resources and its main source of inflation is imported cost push inflation. So, it uses the exchange rate as the monetary policy tool to tackle imported cost push inflation. • A tighter MP → appreciation of SGD → imported factors of production become relatively cheaper in SGD → costs of production become lower → lowers prices of final goods and service → fall in GPL. 	
(d)	Explain 2 possible reasons why the Chinese authority was reluctant to cut interest rate aggressively to counter deflation.	[4]
	<ul style="list-style-type: none"> • Cutting interest rate leads to depreciation of Chinese yuan. <ul style="list-style-type: none"> ○ capital outflow from China (Extract 6) because returns to funds is lower in China, when USA increases interest rate ○ This outflow of funds to USA will lead to rise in supply of yuan in the foreign exchange market as financial investors convert yuan to USD to shift funds into USA financial institutions. <ul style="list-style-type: none"> ▪ leads to a fall in its value against the USD → persistent depreciation of Chinese yuan due to aggressive cuts in interest rate → worsen investor confidence → fall in investment → fall in economic growth. • Interest rate cut is unlikely to counter deflation <ul style="list-style-type: none"> ○ High degree of pessimism (Extract 6) because consumers feel poorer due to sharp fall in the value of their property. Business outlook on economic growth is weak and firms are not likely to increase investments. Hence cutting interest rate is unlikely to boost AD. 	
(e)	With reference to Extract 6, discuss whether a “fiscal policy focused on consumers” or a “fiscal support for industries” would be more effective to alleviate China's “economic long Covid”?	[8]
	<p>Fiscal policy (FP) is the use of taxation and/or govt expenditure to influence economic activity.</p> <p>Fiscal support for industries</p> <p>Explain how fiscal support for industries may help address China’s problems using an example of FP</p> <p>Fiscal support for industries in form of cutting corporate tax or increasing government expenditure on the infrastructure</p> <ul style="list-style-type: none"> • Cut in corporate tax – after-tax profits of firms rise → incentive for firms to increase investments as which are now more profitable than before → leading to rise in I by firms <ul style="list-style-type: none"> ○ Rise in AD → firms step up production and increase use of factors of production, including labour → unemployment falls → rise in household income → rise in consumption for many rounds through the multiplier process → Singapore’s real national income increase by more than proportionate. As seen in the diagram below, AD fell from AD0 to AD1 and Singapore’s real national income rose by more than proportionate from Y0 	

to $Y_1 \rightarrow$ rise in economic growth and fall in cyclical unemployment. GPL rises given upward pressure on prices arising from the shortages created from a higher AD.



Limitations of fiscal support for industries (ineffective to achieve intended goals):

Current FP is only on selective industries like EV, AI

- ability to boost AD may work to a small extent
 - cut in corporate tax or government expenditure on the infrastructure to help these industries might not encourage further spending from firms as there is currently an over-production in these industries (Extract 2) \rightarrow firms may not see the need to increase I further.

Fiscal policy focused on consumers

Explain how fiscal policy focused on consumers address China's problem

Fiscal policy in the form of income tax cut or cash grants / vouchers

- rise in disposable income and purchasing power of consumers \rightarrow able to buy more goods and services \rightarrow domestic consumption rises
 - C component of AD rise
 - likely to be effective because of the huge consumer base in China (large population), especially vouchers for goods and services which might have an expiry date.

Limitations of direct transfers to consumers:

Weak consumer confidence with expectation of fall in income

- consumers may save the financial support given instead of spending
 - may have limited effectiveness in stimulating AD and China's problem of slow growth and deflation may still persist.

Evaluative Conclusion:

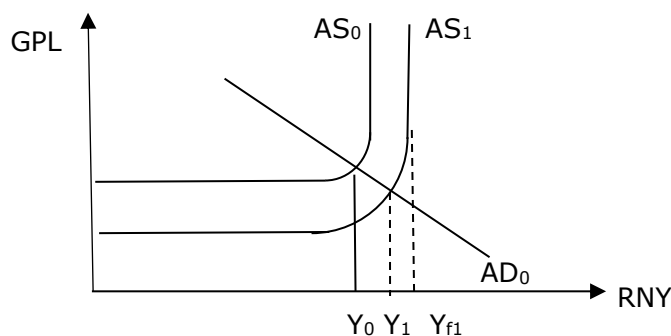
Compare between the 2 types of FP stated in question and take a stand.

<i>Knowledge, Application, Understanding, Analysis</i>		
L1	<ul style="list-style-type: none"> - Cover either fiscal policy “focused on consumers” or a “fiscal support for industries” - No use of AD/AS framework - No use of case material 	1-3
L2	<ul style="list-style-type: none"> - Good use of AD/AS framework and case evidence - Balanced discussion of fiscal policy both focused on consumers and industries and the relevant limitations. 	4-6
E1	Comparison and Judgment made on the consumers focused and industries focused fiscal policies.	1
E2	Comparison and Judgment made on the consumers focused and industries focused fiscal policies plus substantiation made based on given case material. OR other relevant insight or recommendation.	2
(f)	With reference to Figure 2, describe the trend in fixed asset investment for Singapore between 2012 and 2020.	[2]
	<ul style="list-style-type: none"> • Rise in fixed asset investment from 2012 to 2020. (overall trend) • Sharp fall from 2012 to 2013. (refinement) [Or falling from 2012 to 2016]. 	
(g)	Explain 2 possible reasons why Singapore is a preferred destination for foreign direct investments.	[4]
	<p>Any 2 of the following reasons from Extract 7, explained. Answers must make links to the total revenue or cost or profits of the firms.</p> <ul style="list-style-type: none"> • Connectivity – Ease of access to regional markets in Asia <ul style="list-style-type: none"> ◦ Ease of access and close proximity to large markets → increase total revenue and lower transport costs → increase profits • Vibrant innovation and tech ecosystem <ul style="list-style-type: none"> ◦ Conducive environment for firms to innovate or use edge-cutting technologies → increase productivity → lower average COP → raise profits • Talent base <ul style="list-style-type: none"> ◦ Availability of high skilled labour → higher labour productivity → lower average cost of production → higher projected profits. 	
(h)	<p>"As the pandemic eases, the focus of Singapore's policymakers has appropriately shifted to accelerating transformation towards a digital, more inclusive, and greener economy."</p> <p>Discuss whether supply-side policies to accelerate transformation to digitalisation and innovation are appropriate in helping Singapore achieve an inclusive economy.</p>	[10]
	<p>Clarify inclusive economy</p> <ul style="list-style-type: none"> • inclusive growth which includes achieving sustained EG that is broad-based across sectors and creates employment opportunities for the majority → does not worsen income gap. 	

Discuss the 2 types of supply-side policies SSP to accelerate transformation to digitalisation and innovation (Extract 5)

SSP 1

- Govt to invest in the digitalisation in relevant infrastructure (Extract 5) or grants to firms to encourage more R&D in areas of digitalisation and innovation eg in AI and green tech.
 - increase in productivity of firms when firms can innovate production processes → increase efficiency → leading to fall in unit cost of production as greater output can be produced by per unit input
 - In the long run LR, an increase in AS → down and rightward shift of AS curve
 - rise in actual and potential EG
 - rise in real national income to Y_1 and income at full employment level to Y_f in LR
 - achieving sustained EG
 - Sustained EG could lead to an increase in tax revenue collection
 - Government can adopt income redistribution policies
 - Eg. more rebates or handouts to the low income → leading to more inclusive growth.



Limitations of govt investment in digitalisation/innovation in infrastructure or R&D grants to firms:

- Digitalisation in industries may result in displacement of workers, especially the low skilled ones who are not able to seek employment elsewhere → increase in structural unemployment → fall in income of low skilled workers.
- The creation of more jobs from the new industries are likely knowledge intensive ones and require high-skilled workers → greater demand for high skilled workers who are already enjoying higher income → further increase income of higher group and further widening income gap between the higher and lower income group. (can use Extract 7: many new jobs created are for PMETs. This group are more likely to benefit than the low skilled workers).
- Inclusive growth is not achieved.

SSP 2

- SSP in the form of subsidies to encourage workers (especially the low skilled) to go for training; Extract 5, heavy subsidies for courses through SkillsFuture and monetary rewards after successful completion of some relevant courses.
 - Low skilled workers pick up relevant new skills in digitalisation
 - with relevant skills and rise in productivity, they become more employable in the digitalised industries and likely to enjoy rise in wage → ceteris paribus, narrow income gap → inclusive growth

Limitations of training subsidies:

- Low skilled workers are likely to have a lower education and lower cognitive ability to pick up IT and digitalization skills.
- Older workers might be more resistant to training because of lack of confidence and fear of IT and digitalisation.

Evaluative Conclusion:

- SSP to accelerate transformation to digitalisation and innovation by investment on infrastructure by the govt and investment by firms are likely to lead to non-inclusive growth as discussed above.
- To ensure inclusive growth, that SSP must be coupled with measures to ensure the upskilling and training of the lower skilled workers.
- Consider other policies that should be put in place to ensure inclusiveness.

<i>Knowledge, Application, Understanding, Analysis</i>		
L1	<ul style="list-style-type: none"> - No theoretical framework and/or glaring errors - Lack of scope of discussion - No use of context. 	1-3
L2	<ul style="list-style-type: none"> - Good scope of discussion for both types of SSP - Good depth of analysis – use of AD/AS framework. - Balanced answer – with well-developed thesis and anti-thesis. 	4-7
E1	An unexplained conclusion /judgment or mere repetition of points discussed.	1
E2	A judgment/conclusion supported by reasons / economic analysis. A recommendation is needed for full 3m.	2-3