

# YISHUN JUNIOR COLLEGE

## JC2 PRELIMINARY EXAMINATION 2016

**H2 ECONOMICS**  
**PAPER 1**

**9732/01**  
**15 AUGUST 2016**  
**1400 – 1615 hrs**

**TIME 2 hour 15 minutes**

**Additional Materials: Writing Papers**



### READ THESE INSTRUCTIONS FIRST

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

Answer **all** questions.

At the end of the examinations, fasten all your work securely together.  
The number of marks is given in brackets [ ] at the end of each question or part question.

Answer **all** questions.

## Question 1

### Utility Market

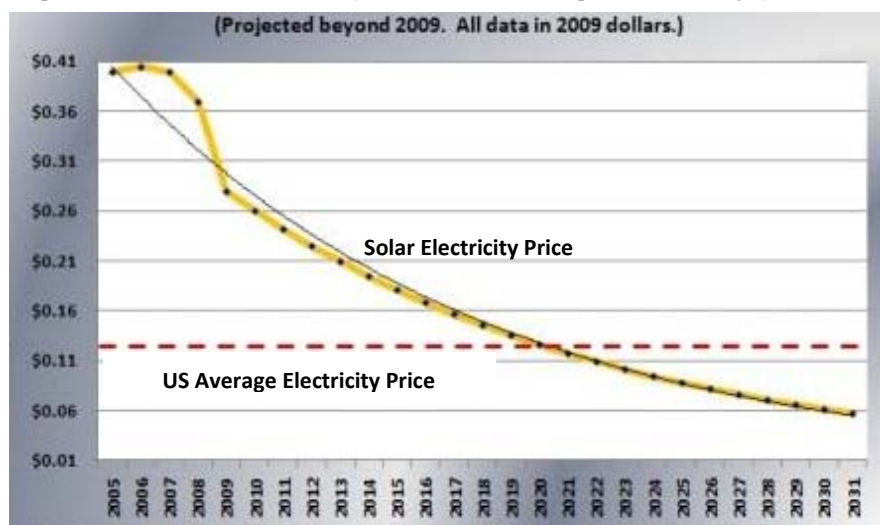
#### Extract 1: Power growth slows

Utility companies operating in competitive U.S. utility markets are struggling to make money as falling electricity consumption threatens their profits and forces the utility firms to rethink their long-held business models.

For decades, utility demand climbed steadily, often in lock-step with the economy, providing utility firms with a reliable increase in sales plus a profit that is typically set by state regulators. But the economic crash in the last decade has poked a hole in that business model. Power demand is flat lining, energy efficiency programmes are eroding the likelihood of future growth and the spread of rooftop solar systems is serving as a warning to large utility suppliers that they no longer hold their customers captive. However, it is unlikely and uneconomic for a large number of customers to go from the traditional power supply to solar systems without any subsidies until 2030 or beyond.

Source: Darius Dixon, <http://www.politico.com/>, 24 October 2014

**Figure 1: Prices of solar power vs. average electricity prices**



Source: DOE NREL Solar Technologies

#### Extract 2: Exelon Will Acquire Pepco and Form Largest Utility Firm in the US

Exelon Corporation announced on Wednesday that it will acquire Pepco Holdings in a \$6.8 billion all-cash transaction to create a mega-utility serving the Mid-Atlantic and Midwest.

Exelon and Pepco already have regional synergies in the Mid-Atlantic that should allow the companies to streamline some back office functions and share lessons learnt across the two companies' urban utility firms that have invested in technologies such as smart meters, distribution automation and advanced outage management systems. Expanding regulated businesses and diversifying operations reduce risk profiles. Many utility firms look to expand their regulated businesses to increase the stability and predictability of cash flows, while also maximising operational efficiency and spreading operating and maintenance costs over a wider customer base.

The merger is subject to approval from the Federal Energy Regulatory Commission, an antitrust review, and approval by public service commissions in the states where Pepco operates. The companies hope to close the deal in the second or third quarter of 2015.

Source: Katherine Tweed, <http://www.greentechmedia.com/>, 30 April 2014

### **Extract 3: Revenue Decoupling for Utility Firms**

Electric utility firms are responsible for delivering electricity to every home, business, and public building in the United States. It's no easy task, especially when outside forces—technology, innovation, and policy and economic changes—make the old ways of doing business obsolete.

Utility firms are facing this dilemma today. The old business model—one based on selling more and more electricity—doesn't work anymore. As demand for energy falls, it will take a suite of policy and business tools to keep utility firms strong and dependable—and keep the lights on for consumers.

Revenue decoupling is one way to work around this problem. At a basic level, revenue decoupling is an accounting tool that ensures utility firms collect the amount of revenue they are allowed by state regulators. Decoupling essentially separates the link between utility profits and its sales revenue to create profit sustainability for utility firms.

What we pay for electricity depends on a rate approved by regulators. This rate is based on the anticipated amount of energy customers will use in the future; regulators and utility firms must plan ahead so that they can develop a plan to provide steady power that covers their cost of production at the same time. Without decoupling, utility firms will collect revenue based on only predicted usage numbers.

But the actual amount of energy customers use and the actual amount of money utility companies bring in may be higher or lower than forecasted for a host of reasons, including the implementation of energy efficiency measures, increased energy conservation, local power generation like small wind and solar, and even weather.

For example, if states have a decoupling policy in place, and actual electricity sales were higher than expected, the company would lower rates slightly the next year to refund customers the extra money they paid. If electricity sales were lower than what the utility firms and regulators expected, the company increases rates slightly the next year to make up the difference.

Decoupling benefits utility firms by relieving the need to sell increasing amounts of energy to cover the costs of generation and infrastructure investments and the costs of providing electricity to customers. It also encourages greener technologies. Reduced energy consumption caused by energy efficiency can help reduce carbon dioxide emissions and protect against climate change. Decoupling allows these to exist without harming the companies' finances.

In our rapidly changing energy world, it is unclear what the utility market of the future will look like, and what types of services it will provide. However, it's clear that the current business model which relies on selling more and more electricity is no longer compatible with today's energy landscape. Furthermore, a utility firm which is increasingly worried about selling certain amounts of energy to cover its operating costs will be more and more resistant to changes to its business model in the future.

Decoupling can break this reliance on increasing electricity sales revenue and open the door to new ways for utility firms to remain economically strong.

Source: <http://fresh-energy.org/>, 3 October 2014

#### **Extract 4: U.S. state policies to reduce carbon emissions from power plants**

Power plants are currently the nation's largest source of greenhouse gas emissions — especially the dangerous carbon emissions known to increase global warming. In June 2014, President Obama proposed the Clean Power Plan, which will require states to reduce carbon pollution from power plants, cutting emissions to 30% of 2005 levels by 2030. These 50 states must adopt and enforce effective carbon pollution reduction measures for its own electricity sector. These approaches include:

- Emission caps. Plant-level greenhouse emissions to be reduced by caps and targets that set specific reduction goals.
- Public benefit funds. This invests in research and development for energy efficiency and renewable power
- Plant-level reductions in dangerous emissions have happened in states with decoupling programme that separates the link between utility profits and its sales revenue

Some policies adopted by the states may have been ineffective because they are too vague or insufficiently publicised and enforced. More successful policies tend to have specific, concrete goals that can be objectively measured. Of course, it is important to acknowledge that emission levels are influenced by the characteristics of power plants themselves, as well as by state policies. On average, plants that are older or rely primarily on coal for fuel have significantly higher emissions. In contrast, lower emissions on average occur at plants with independent system operators and at plants that are part of regional transmission organisations where energy transfers are more efficient.

Source: Journalist's resource, 15 October 2014

#### **Questions**

- (a) Compare the price of the solar electricity with that of the average electricity price in US from 2010 to 2030. [2]
- (b) Explain how the provision of subsidy to the producers of solar systems will affect the following markets:
- (i) Solar power
- (ii) Traditional power supply [4]
- (c) Explain two possible sources of market failure that exist in the utility market. [6]
- (d) Discuss the likely factors that Exelon Corporation would have considered when deciding to acquire Pepco Holdings. [8]
- (e) With reference to the data where appropriate, discuss whether revenue decoupling such as that proposed in the US would be the most appropriate way of reducing carbon emission by the power plants. [10]

**[Total: 30]**

## Question 2

### Emerging Asia

#### Extract 5: Asia to remain the Global Growth Leader

Growth in Asia-Pacific will continue to outperform the rest of the world thanks to robust domestic consumption spurred by healthy labour markets, low interest rates and the recent fall in oil prices, according to the International Monetary Fund (IMF). Furthermore, the global recovery, albeit moderate and uneven, will continue to support demand for Asia's exports.

There are reasons to be cautious, however, with the balance of risks tilted to the downside, the IMF warned. Risks include significantly slower-than-expected growth in China or Japan and persistent U.S. dollar strength, which could ramp up debt servicing costs for firms with sizable dollar-denominated debt and curtail demand.

"Debt levels — including foreign currency-denominated debt—have increased rapidly in recent years, and Asia is now more vulnerable to financial market shocks," the IMF said.

On the flip side, lower energy prices present an upside risk for Asia's growth if more of the savings on oil import bills is spent. "The decline in oil and food prices provides a window of opportunity to further reform or phase out subsidies, thereby improving spending efficiency and shielding public spending from future commodity price fluctuations," it said.

Source: Ansuya Harjani, IMF: Asia will remain the global growth leader, [www.cnn.com](http://www.cnn.com), accessed 06 May 2015

#### Extract 6: Policy Priorities for Emerging Asia

Emerging Asia (Southeast Asia, China and India) has made remarkable progress over the past four decades. To ensure that the new growth strategies do indeed lead to sustained growth, countries in Emerging Asia need to shift away from growth that is driven primarily by factor accumulation, to growth based on productivity increases driven by improvements in the quality of human and other capital and by innovation.

It is therefore critical for Emerging Asia to undertake the necessary reforms to ensure sustained and robust productivity growth. Some of the policy priorities that will help Emerging Asia to sustain long-term growth and consequently become advanced economies include:

##### **Institutional development**

- Institutional capacities to provide human capital, infrastructure and innovation need to be created and strengthened to support the transformation to increasingly sophisticated industries.
- Institutions that support efficiently functioning markets, competition, and a favourable investment and business development climate are critical.
- Institutional capacities to sustain financial and macroeconomic stability are equally important to ensure that resources are allocated efficiently.

##### **Change in the character of “Factory Asia”**

The development of middle-income ASEAN countries and China has been characterised by a high reliance on exports of manufactured goods to advanced economies whose production is distributed across regionally-based global value chains (“Factory Asia”).

The participation of most middle-income Emerging Asia economies in global value chains is still largely limited to assembly and other less sophisticated, lower-productivity stages. Furthermore, there is need to intensify efforts to assist small and medium enterprises (SMEs) in accessing credit and in integrating into global value chains.

While a number of forces, including rapidly rising wages in China and most ASEAN countries, may curb the growth in demand from advanced economies for manufacturing exports, that trend is likely to be at least partly offset Emerging Asia's rising share of world consumption, and growing economic integration among Asian countries. As a result, Factory Asia is likely to remain of major importance in world manufacturing and a major contributor to regional GDP and economic growth. It will, however, probably evolve towards greater emphasis on supplying regional markets.

### **Service sector development**

Development of the services sector, especially in modern services, will be critical to the success of efforts by middle-income ASEAN countries to become advanced economies. Services provide critical support to their participation in the global value chain, and modern services are essential to their ability to move up the value chain. Service sector development will also be important to the achievement of broader goals, such as reducing poverty and meeting the needs of the growing middle classes. The potential contributions of services to economic development have been further increased by technological changes and liberalisation of trade and investment that have greatly expanded the scope for international trade in services.

Regulatory barriers that limit entry, stifle competition and inhibit investment have been major obstacles to the development of services sectors in developing Asian countries.

### **Regional co-operation and integration**

Regional initiatives to promote co-operation and greater integration can potentially increase the prospects for Emerging Asia in becoming high-income advanced economies.

- Regional integration will enable more efficient division of labour and allocation of resources in the region.
- Regional integration can help to make up for the constraints arising from the limited scale afforded by domestic markets alone.
- Regional co-operation and integration will help to facilitate capital account liberalization.
- The regional initiatives provide incentives for national liberalisation efforts. For example, the prospect of cross-border competition in banking is already spurring banks and their supervisors in individual countries to greater efforts to improve their efficiency and competitiveness.

Source: Economic Outlook for Southeast Asia, China and India 2014: Beyond the Middle-Income Trap

**Table 1: Selected Data for China, India and Vietnam, 2014**

	China	India	Vietnam
Final Consumption Expenditure (% of GDP)	51	69	70
Gross Capital Formation (% of GDP)	46	32	27
Exports (% of GDP)	22.6	23.2	86.4
Imports (% of GDP)	18.9	25.5	83.1

Source: World Bank

### Questions

- (a) Using economic analysis, explain how each of the following drives growth in Asia.
- (i) low interest rates
  - (ii) fall in oil prices [4]
- (b) With reference to Extract 5, state how the 'persistent US dollar strength' affects the capital and financial account on the balance of payments of Asian countries. [1]
- (c) The decline in oil and food prices provides a window of opportunity to further reform or phase out subsidies' (Extract 5).  
Explain **one** benefit of the phasing out of fuel and food subsidies to governments of the Asian economies. [2]
- (d) Using the information contained in Table 1, explain how current and future living standards of the three countries may be affected. [5]
- (e) Assess whether a smaller country such as Vietnam benefits more from a greater regional cooperation and integration than larger economies like China and India, using both the case study and your own relevant knowledge. [8]
- (f) Discuss the view that Emerging Asian economies need to shift to growth based on productivity increases driven by improvements in the quality of human and other capital and by innovation in order to achieve sustained growth. [10]

**[Total: 30]**

## **H2 Case Study Suggested Answers**

### **Question 1**

- (a) Compare the price of the solar electricity with that of the average electricity price in US from 2010 to 2030. [2]**

- Price of solar electricity falls while the average electricity price remains constant.
- Before 2020, price of solar electricity > average electricity price but after 2020, it's the other way.

- (b) Explain how the provision of subsidy to the producers of solar systems will affect the following markets:**

**(i) Solar power**

- With the subsidy given to producers, COP of solar power will fall → SS of solar power rises. [1m]
- Price of solar power falls while quantity transacted rises. [1m]

**(ii) Traditional power supply**

- Traditional power supply and solar power are substitutes, hence as price of solar power falls, consumers will switch from using traditional power to solar power → demand for traditional power falls. [1m]
- Price of traditional power falls, quantity transacted falls. [1m]

- (c) Explain two sources of market failure that exist in the utility market. [6]**

- Two sources of market failure:
  - due to presence of negative externality
  - market dominance.
- Clear explanation of how each source lead to market failure. [3m for each source of market failure.]
- Presence of negative externality:
  - State the negative externality presence and therefore the divergence between MPC and MSC. [1m]
  - State the free market and socially optimum output equilibrium. [1m]
  - Explain the welfare loss due to over production and there leading to market failure. [1m]
- Market dominance
  - State that utility firms have large market power due to high BTE. [1m]
  - State the free market and socially optimum output equilibrium. [1m]
  - Explain that  $P > MC$  and the welfare loss due to under production and therefore leading to market failure. [1m]

- (d) Discuss the likely factors that Exelon Corporation would have considered when deciding to acquire Pepco Holdings. [8]**

- Exelon wants to acquire Pepco likely because it wants to increase its profits, hence it has to consider how the acquisition can lower its costs and increase its revenue.
- Factors to consider to reduce costs:
  - The extent of fall in its COP due to the possible sources of EOS reaped.
    - Technical, Managerial, Financial
  - The potential increase and availability of funds for R&D, such as greener technologies (Evidence from Extract 2 and 3)



- Factors to consider to increase revenue:
  - The potential increase in market share → higher demand
- At the same time, Exelon also has to consider the possible adverse impact on the company:
  - Possibility of diseconomies of scale as the firm gets too big → increase the costs
  - The possible increase in government intervention to prevent consumers being exploited as the firm's market power rises.
- If at the time of acquisition, Pepco is not doing too well, the potential increase in funds may not be huge for Exelon. And the increase in market share will not be much too. But it would also mean Exelon will not go into diseconomies so fast.
- On the other hand, if Pepco is actually doing well, the benefits of Exelon acquiring Pepco will likely outweigh the costs if Exelon is able to manage the company well.

Level	Descriptors	Mark Range
<b>L1</b>	Merely stating some factors without explanation.	<b>1 – 3</b>
<b>L2</b>	Clear explanation of the factors (both the benefits and costs of acquisition) to be considered, with reference made to Extract 2	<b>4 – 6</b>
<b>E1</b>	Statement/conclusion on whether the acquisition is beneficial to the company	<b>1</b>
<b>E2</b>	Reasoned conclusion on whether the acquisition is beneficial to the company	<b>2</b>

**(e) With reference to the data where appropriate, discuss whether revenue decoupling such as that proposed in the US would be the most appropriate way of reducing carbon emission by the power plants.**

**[10]**

- Revenue decoupling is appropriate:
  - It ensures stable revenue for the utility companies to cover the high COP, hence firms would be willing to engage in R&D to develop greener technology.
  - Firms wouldn't need to waste resources on trying to increase sales and thus able to channel the funds for R&D.
  - It doesn't discriminate against the older power plants which are emitting higher level of carbon.
  - Unlike emission caps, government doesn't need to estimate the external costs of carbon emission and then sets a target which may not coincide at the socially optimum output level. → the possibility of government failure in correctly estimate the external costs.
  - Also, this policy will not drain government's budget like the Public benefit funds. The funds for R&D will come from the utility firms themselves.
  - This policy is also easier to enforce. Additionally, no much publicity is needed for this policy.
  - This is a long term policy.
- However,
  - There won't be much increase in revenue thus no increment in profits. As such, if cost of production goes up, firms' profit will fall, resulting in not willing to engage in R&D for greener technologies.

- Due to imperfect knowledge, firms can wrongly estimate the power usage and thus charging the consumers at the wrong rates which may not cover their COP.
- R&D doesn't guarantee success. If the R&D is not successful, resources are wasted and firms may therefore stop their R&D.
- Revenue decoupling is an appropriate policy as the benefits outweigh the costs.
- However, the results may be seen only in the longer run, hence the US government should still have some ST policies to reduce the carbon emission

<b>Level</b>	<b>Descriptors</b>	<b>Mark Range</b>
<b>L1</b>	Merely stating the advantages and disadvantages of revenue decoupling. No mention of whether the policy is appropriate.	<b>1 – 3</b>
<b>L2</b>	Clear explanation of why revenue decoupling is more appropriate than other policies.	<b>4 – 6</b>
<b>E1</b>	Statements on whether revenue decoupling is the most appropriate.	<b>1 – 2</b>
<b>E2</b>	Reasoned conclusion on whether revenue decoupling is the most appropriate.	<b>3 – 4</b>

**Question 2**

- (a) Using economic analysis, explain how each of the following drives growth in Asia.

(i) low interest rates

(ii) fall in oil prices [4]

- (i) Low interest rates  $\rightarrow$  cost of borrowing  $\downarrow \rightarrow I \uparrow$   
 Low interest rates  $\rightarrow$  opportunity cost of spending  $\downarrow \rightarrow C \uparrow$   
 $AD \uparrow \rightarrow NI \uparrow$  by a multiple  $\rightarrow$  actual growth
- (ii) Fall in oil prices  $\rightarrow$  cost of production  $\downarrow \rightarrow$  producers motivated to increase production  $\rightarrow SRAS \uparrow \rightarrow NI \uparrow$

2m for each part

- (b) With reference to Extract 1, state how the 'persistent US dollar strength' affects the capital and financial account on the balance of payments of Asian countries. [1]

Capital and financial account worsens Or capital outflow in the capital and financial account – 1m

- (c) 'The decline in oil and food prices provides a window of opportunity to further reform or phase out subsidies' (Extract 1).

**Explain one benefit of the phasing out of fuel and food subsidies to governments of the Asian economies.** [2]

Governments can channel funds to other areas like infrastructural development and education to stimulate/develop the economies  $\rightarrow$  results in more efficient use of funds

Governments can reduce spending and hence improve fiscal balance  $\rightarrow$  helps to reduce fiscal deficit if any or helps to build up fiscal surplus and allows governments to be in better position to stimulate economy in the case of any future recession/sluggish growth

Any clear explanation of how removal of subsidies benefits ---2m

- (d) Using the information contained in Table 1, explain how current and future living standards of the three countries may be affected. [5]

Total final consumption expenditure figures more than 50% of GDP  $\rightarrow$  current consumption is high and hence material well-being of the people is high.

Vietnam's imports constitute >80% of its GDP and consumption figure is 70% of GDP  $\rightarrow$  a high current living standard especially if most of these imports are consumer goods and services.

Future living standards of the countries are likely to be affected by their high current consumption. A high level of current consumption means fewer resources can be channelled to investment  $\rightarrow$  reduced capacity in the future to produce goods and services to meet consumers' demand  $\rightarrow$  future standard of living is compromised.

Proportion of GDP devoted to capital goods (Gross capital formation as a % of GDP) is very low in India and Vietnam, and hence these two countries' future living standards are most likely to be compromised.

However, in Vietnam, if a large proportion of its imports are capital goods → capacity to produce more goods and services in the future can increase → living standard may not be as badly affected as that in India.

[ Also accept the point that if India's trade deficit persists it may point to a slower growth → future standard of living will be adversely affected]

Explanation confined to only current **or** future living standards --- max 3m

No reference to the data, purely theoretical answer explaining what is living standard and that with more consumer goods living standard is high --- max 2m

Reference to data to explain both current and future living standards --- 4-5m

**(e) Assess whether a smaller country such as Vietnam benefits more from a greater regional cooperation and integration than larger economies like China and India, using both the case study and your own relevant knowledge. [8]**

Greater regional cooperation and integration will benefit emerging Asian economies, whether big or small

- More efficient allocation of resources within the region → All countries can consume beyond their PPCs.
- Access to the regional market → more opportunities for domestic firms to reap economies of scale and  $X_s \uparrow$
- Capital account liberalisation →  $FDIs \uparrow \rightarrow NI \uparrow$

Smaller countries like Vietnam may benefit more

- Trade plays a significant role ( $X_s$  and  $M_s$  make up a larger proportion of the Vietnam's GDP)  
Greater cooperation and integration → volume of trade increases → benefits the small and open country significantly.
- Market for Vietnam's exports expands due to access to the regional market → export-driven growth. Bigger countries, like China and India, can rely on domestic consumption to drive growth instead of depending on exports. Firms in Vietnam can now operate on large scale and enjoy economies of scale as they now produce for a much bigger market.
- More inward  $FDIs \rightarrow$  make up for the lack of funds for large scale investment projects in a small country like Vietnam (lower level of investment in the country compared to China) → both actual and potential growth.  
Inward  $FDIs$  also bring in a lot of other benefits like technical know-how and managerial skills.

However, extent of benefits depends on:

- Openness of the economy
- Type of goods that the country imports and exports

Conclusion:

All Emerging Asian economies will benefit with greater regional cooperation and integration and smaller economies that are more open to trade and capital flows are likely to benefit more.

Level	Descriptors	Mark Range
L1	Explanation of benefits of greater cooperation and integration without much reference to small countries like Vietnam	1 – 3m

L2	Balanced answer with clear explanation of why small countries may or may not benefit more	4 – 6m
E1	Statement/conclusion on whether small countries benefit more	1m
E2	Reasoned conclusion on whether small countries benefit more	2m

- (f) **Discuss the view that Emerging Asian economies need to shift to growth based on productivity increases driven by improvements in the quality of labour and other capital and by innovation in order to achieve sustained growth.** [10]

To achieve sustained economic growth in Emerging Asian economies both AD and AS must increase.

AD in Emerging Asian economies is robust and will continue to grow due to

- Global recovery
- Demand in the regional market ↑

Need to increase AS. Otherwise, NI of these countries will increase up to the full employment level and inflationary pressure will then set in.

Emerging economies need to increase AS by increasing productivity

- Improving quality of labour and capital, and innovation → productivity and productive capacity ↑ → AS ↑ and entire AS curve shifts to the right → NI ↑ → economies enjoy both actual and potential growth.

But much depends on the structural reforms that must take place in these economies  
Challenges for Emerging Asian Economies

- Development of institutional capacities to provide human capital, infrastructure and innovation
- Development of favourable investment and business environment
- Change in the participation of these economies in global value chains
- Development of service sector to provide the critical support to these economies' participation in the global value chain.

Conclusion:

As AD increases and will continue to increase, Emerging Asian economies need to shift to growth based on productivity increases driven by improvements in the quality of labour and other capital and by innovation. However, efforts must be channelled to ensure the structural reforms take place or else these countries would not be able to successfully raise productivity and achieve innovation needed to sustain growth.

Level	Descriptors	Mark Range
L1	Mere analysis of increase in AS without recognizing increase in AD and the challenges/problems that countries must address	1 – 3m
L2	Thorough analysis of the need to increase productivity in the light of increase in AD and the challenges the countries faced and arriving at a conclusion	4 – 6m
E1	Evaluative statements made regarding the need for growth based on productivity increases	1 – 2m
E2	Explained conclusion regarding the need for growth based on productivity increases	3 – 4m