Question 2: The impact of trade and automation on jobs

(a) (i) State the relationship between manufacturing employment (as a % of total employment) and imports from China (as a % of GDP). [1]

Suggested answer:

There is an **inverse relationship** between manufacturing employment (as a % of total employment) and imports from China (as a % of GDP).

(ii) Explain how changes in imports from China have contributed to the change in manufacturing employment. [3]

Suggested answer:

As China has an abundance of low cost labour, it has a comparative advantage (1) in the production of low cost, labour intensive consumption goods and this has resulted in the replacement of US domestic production of these goods with imported goods from China. This has caused a fall in the manufacturing employment in the US as imports from China increases. (2) (As show in Figure 1)

(b) Compare the change in China's current balance between 2010 and 2015 with that of the US over the same period. [2]

Suggested answer:

From 2010 to 2015,

1) Between 2010 to 2015, China Current accounts were always in surplus whereas US Current accounts were always in deficit. (1)
2) China Current accounts surplus has increased while US Current accounts deficit was relatively constant / has increased slightly. (1)

(c) Explain whether an increase in trade between China and the US would result in higher standard of living in the US. [6]

Suggested answer:

With an increase in trade between China and USA there would be an increase in imports and exports between the two countries. US firms are able to enlarge its global market and increase its total revenue and hence profits by exporting to China. With an increase exports, there would be an increase in AD and via the multiplier effect, there would be a larger increase in real output and hence real national income (NY). With an increase in real NY, there would be an increase in income per capita (assuming that the rate of population increase in USA is slower than the rate of increase in real NY) and an increase in purchasing power and hence an increase in SOL.

And with an increase in export and real output, there would be an increase in demand for labour. This would result in an increase in the wage rate for labour. Income of workers would increase and hence purchasing power increase and hence increasing the SOL of US workers.

An increase in trade would also imply increase competition and hence increased variety of goods and services at lower prices available for consumers. This would increase consumer surplus and hence consumer welfare and an increase in SOL for USA.

However, on the other hand, with increased trade and increased competition, firms which are not competitive may be driven out of the market. As shown in Figure 3, the US is facing a trade deficit with China which imply that the US is importing more from China than its exports to China. This may imply that the US does not have a comparative advantage in the production of certain goods and services, such as labour intensive goods. It may result in the fall in demand for the US goods and a fall in

demand for labour the US. This may worsen the SOL in the US. And if these lower skilled workers are unable to find jobs in other sectors of the economy due to a lack of the necessary skills, it may result in income inequality among the workers who possess the necessary skills and those who do not.

In conclusion, whether an increase in trade between China and USA would result in higher SOL in the USA would depend on how it could contribute to the economic growth of USA and its possible impact on employment opportunities for consumers in the USA.

(d) Assess the extent to which automation is the main cause of unemployment in an economy. [8]

Suggested answer:

Automation is the main cause of unemployment in the economy.

Automation of industries has resulted in the replacement of human labour with machinery and robots. This has not only resulted in the retrenchment of the excess workers, it has also resulted in a decrease in demand for labour. Hence, causing unemployment to increase. This is shown in Figure 2 where there was an increase in output but there is a fall in employment in the US manufacturing sector.

Furthermore, automation results in structural unemployment. Due to the adoption of new technology, high-skill workers are highly demanded. Those who have been made redundant do not have the skills and knowledge that match the requirements of jobs available. Hence, they become structurally unemployment.

But automation can also help to boost employment. With automation, for example, has enabled US firms to be more productive and has increased industrial output. With the increase in productivity, it would result in an increase in real GDP and national income and hence purchasing power. This would result in an increase in consumption and an increase in demand for goods and services and more goods and services would need to be produced. This would result in an increase in investment and the demand for labour, especially in the services sector to service the increase demand for goods and services. In addition, with automation, there would be an increase in demand for higher skilled workers to enable the automation and to service and maintain the machinery. Hence, automation may result in the redundancy of the lower skilled workers but it would also create employment opportunities for the higher skilled workers. This would result in an increase in the type of unemployment, that is, structural unemployment rather than an overall increase in unemployment rate.

On the other hand, automation has been seen as a solution to countries such as Japan and Singapore to resolving the problem of an aging population and a shrinking workforce and its dependence on foreign labour and at the same time as a means to increase its productivity and the competitiveness of its economy.

In conclusion, the extent to which automation is the main cause of unemployment would depend on the nature / condition of the economy. To some countries where the majority of workers are employed in the manufacturing sectors, automation would have a larger impact on unemployment. To other countries such as Japan and Singapore which are facing a shortage of labour, automation is seen as a means to increase productivity and hence competitiveness. **(Evaluation)** Also, it should be noted that although automation may reduce certain jobs in the manufacturing sector, it may also increase job opportunities as the need for skilled workers increases. **(Evaluation)**

(e) Discuss the most appropriate policies that the US and Singapore should adopt to tackle unemployment. [10]

Suggested answer:

US faces problem of unemployment due to the opening up of its economy to international trade as well as automation. Inflows of cheap imports into the US market and automation have both resulted in loss of jobs in the US manufacturing sector and structural unemployment. Similarly for Singapore, the rise in automation can lead to job loss in the manufacturing sector and structural unemployment. As such, the governments needs to identify the appropriate policies to deal with the root cause of unemployment. These can be demand side and supply side policies to create new jobs and increase the demand for labour and to upgrade the skills of workers to meet the needs of the automated and capital intensive industries for higher skilled workers as both countries develop new niches of comparative advantage to remain competitive.

With the opening up of the economies for international trade, the US and losses its comparative advantage and losses its competitiveness in the production of certain goods and services. As domestic consumption were being replaced with imports, this has resulted in the closure of domestic industries and a fall in demand for labour and an increase of unemployment as workers are being retrenched. As stated in Extract 3, MIT study estimated that rising Chinese imports from 1999 to 2011 cost up to 2.4 million American jobs.

With the losses of jobs due to imports, there is a need for government to adopt demand side policy such as fiscal policy (FP) to attract new investment so as to create new job opportunities and increase the demand for labour. This can be done via a reduction in corporate tax rate. With a fall in corporate tax rate, after tax profits of firms would increase and this would be more attractive for firms to increase investment. With an increase in investment, there would be an increase in aggregate demand (AD) and via the multiplier effect, real output and real national income (NY) would increase by a greater extent. In order to produce the increase in real output, there would be an increased in demand for labour. Hence, this would help to resolve the demand deficit unemployment problem.

However, depending on the type of investment that the country may attract, the increase in job opportunities may not be significant. This is especially so if the investment is of a capital intensive nature and if the firms continue to replacing human labour with robots (as stated in Extract 2). However, more job opportunities can be created if the investment is in the tertiary service oriented industries such as the financial and healthcare industries where the personal human services are still required.

Hence, merely adopting FP to encourage investment my not be sufficient to reduce unemployment, especially structural unemployment that resulted from automation.

(Note: Candidates can also discuss the use of protectionistic measures such as tariff to reduce the consumption of imports and increase domestic production to save domestic jobs)

To resolve the problem of structural unemployment resulting from automation with the replacement of human labour with robots (Extract 2) it would be appropriate for the government to adopt supply side policies to upgrade the skills of the workers.

Workers being retrenched due to automation may not have the necessary skills to work in the new industries where different set or higher level of skills is required. These would require the intervention of both the governments of the US and Singapore to provide incentive to encourage or persuade the firms or workers to continuously upgrade their skills to meet the requirement of the new industries.

In the case of Singapore, to encourage the development of new comparative advantages with a knowledge based economy, a host of incentive packages have been implemented to help firms to automate, innovate and expand overseas and at the same time, upgrading the skills of workers. These include the Automation Support Package and the National Robotics

Programme as stated in Extract 5 as well as the SkillsFuture where every Singaporean above the age of 21 years old are entitled to a credit of S$500 for training purposes. With the appropriate supply side policies, the economy would be able to develop new comparative advantages and it would also increase the occupational mobility of workers as workers upgrade or acquire new skills to enable them to make a career switch and remain gainfully employed in the highly automated or capital intensive industries.

However, supply side policies are basically a long term policies and which require strong commitment and financial support from the government. Countries such as Singapore which have the necessary financial resources with its budget surpluses would face lesser headwinds to provide incentives for workers to upgrade their skills. The success of these policies would also very much dependent on the workers educational level and attitude towards training and re-training.

Thus to resolve the problem of structural unemployment caused by the replacement of workers due to automation, supply side policies are appropriate policies that the government should adopt.

In conclusion, with increased competition as a result of international trade as well as increasing automation by firms, both the US and Singapore governments needs to adopt a mixture of complementary policies to encourage investment in order to create more jobs opportunities and at the same time, help workers upgrade their skills to meet the needs of the new industries and to remain employable.