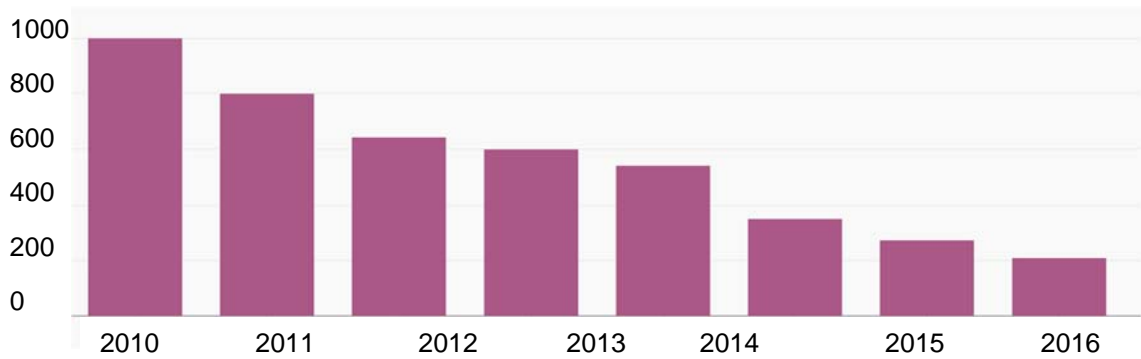


Answer **all** questions.

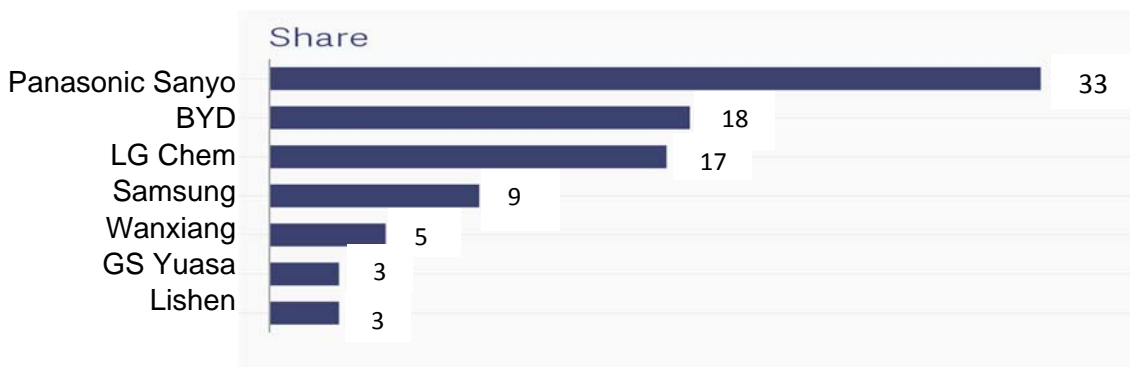
Question 1: The Rise of Electric Vehicles

Figure 1: Global price of lithium-ion battery (US\$/kilowatt hour)



Source: *Bloomberg New Energy Finance*, accessed 5 July 2018

Figure 2: 2018 Lithium-ion battery global market share (%)



Source: *Statista*, accessed 5 July 2018

Extract 1: Technology is fuelling the use of cobalt

Cobalt is a hard, shiny and greyish metal which has many strategic and irreplaceable industrial uses as a result of its unique properties. Currently used in numerous industrial chemical processes, close to half of the world's cobalt supplied today is used in lithium-ion batteries, putting it at the heart of the drive for alternative and renewable energy systems. There has not been a good substitute to make lithium-ion batteries without the mineral.

In 2017, lithium-ion batteries used in portable consumer electronics took up around 72% of total cobalt used in lithium-ion batteries. Each new electric vehicle, which runs on lithium-ion battery, uses about 10 kg of cobalt.

In recent years, electric cars have knocked diesel off its perch as the fuel with the smallest carbon footprint. Diesel also releases greater quantities of nasty gases other than carbon, such as nitrogen oxides, than petrol does. Many cities in Europe and the rest of the world want

to eliminate diesel cars from their roads as early as 2025. Governments hope that the void left by diesel will be filled by zero-emission battery-powered models. But mass adoption of such vehicles, which for now are expensive and have limited ranges, still appears a way off.

Sources: <https://www.dartoncommodities.co.uk/> (accessed on 21 July 2018) and *The Economist*, 13 February 2018

Extract 2: Charging ahead, China's dirty race for clean vehicles

After a decade of halting progress, electric cars are zooming ahead in China. Last year the number of registrations of new electric vehicles (EVs) in the country overtook that in America, making it the world's biggest and fastest growing market. The category includes electric-only cars as well as plug-in hybrids that can also run on petrol. Analysts expect the market to grow by nearly 50% a year for the rest of this decade.

The government has had a big role in the marked expansion of EVs in China. It doles out generous subsidies to local makers, to parts suppliers and to those who buy the final products. Last year alone, China shovelled over 90 billion yuan in subsidies into the industry, which it calls "strategic". This has led to queues of EVs on the streets, mostly of poor design and quality. China has yet to produce an EV manufacturer that can compete at the level of America's Tesla Motors.

The Chinese government is also encouraging other Chinese firms, including the country's tech giants, to innovate in the field. Tencent, a gaming and social media firm, is developing internet-connected EVs with Taiwan's Foxconn. Alibaba, an e-commerce firm, is providing data and cloud-computing services to Kandi Technologies, a local EV-maker that is popularising the sharing of the vehicles.

Source: *The Economist*, 28 July 2016

Extract 3: German cars have the most to lose from a changing auto industry

Carmaking is Germany's biggest industrial sector but cars are changing. Electric power and autonomous vehicles will alter radically the way they are used. The difficulty in adapting threatens not only future revenues and profits at the big three—Daimler, BMW and Volkswagen—but also Germany's status as a mean economic machine. However, the German carmakers have ambitious plans to catch up.

The German automobile industry is woefully behind in designing and selling electric vehicles (EVs), which consumers are increasingly taking to. It is not the Germans, supposedly the leading innovators in cars, but Renault-Nissan-Mitsubishi, a mass-market rival, that makes the world's bestselling EV, the Nissan Leaf, the sales of which have reached some 300,000 since the car's launch in 2010. Chinese carmakers are streets ahead.

"Made in Germany" has become a guarantee of engineering prowess that has helped to promote the country's exports of industrial equipment and a myriad of niche products. Around four-fifths of all cars made in Germany, worth €256bn (US\$283bn) in 2016, are exported. A workforce of around 800,000 is employed directly or by suppliers. In theory, German carmakers have the skills and cash to respond quickly, by building high-quality hybrid, plug-in

or all-electric cars. Volkswagen says up to 25% of its cars sold in 2025 will be electrified. But they will not come cheap. EVs are pricier to make than those petrol-powered.

Source: *The Economist*, 1 March 2018

Extract 4: After electric cars, what more will it take for batteries to change the face of energy?

The demand for vehicle batteries is expected to overtake that from consumer electronics as early as in 2018. Huge expansion is under way. The top manufacturers of lithium-ion batteries—Japan's Panasonic, South Korea's LG Chem and Samsung SDI, are ramping up capital expenditure with a view to almost tripling capacity by 2020. Tesla is building with Panasonic in Nevada a new gigafactory that will vastly increase its production capacity in 2018. There have also been large amounts of R&D investment to improve power density (more storage per kilogram) and better durability (more discharge-then-recharge cycles) of the batteries.

The expansions have resulted in significant overcapacity. In 2016, the manufacturing capacity for lithium-ion batteries exceeded demand by about a third. The battery manufacturers were reported to either losing money or making only wafer-thin profits on every electric-vehicle battery they produce. Despite the seeming glut, though, they all have plans to expand, in part to drive prices even lower.

Source: *The Economist*, 12 August 2017

Questions

- (a) Using examples from extract 1, distinguish between complement in demand and derived demand. [2]
- (b) Explain a factor that could be responsible for the trend in the global price of lithium-ion battery shown in Figure 1. [3]
- (c) Extract 2 mentions that the Chinese government is encouraging the production of electric vehicles.
Explain how this policy can address the problem of market failure in the land transport market. [5]
- (d) Account for the market structure which lithium-ion battery manufacturers are in. [2]
- (e) Assess whether size expansion or research & development (R&D) is the better method for lithium-ion battery makers to expand their global market share. [8]
- (f) Discuss whether Germany should adopt similar policies as China to maintain the profitability of Germany's car manufacturers. [10]

[Total: 30]

Question 2: South Africa's Economy Needs Dynamism

Table 1: Trade Balance (Goods and Services), US\$ at current prices (in billions)

	2013	2014	2015	2016	2017
South Africa	-8.46	-5.31	-4.05	1.91	4.75
Nigeria	22.77	-1.83	-23.64	-8.55	-0.09
United States	-461.88	-490.33	-500.45	-504.80	-568.44

Source: *World Bank*, accessed 5 July 2018

Table 2: Annual change in Real Gross Domestic Product (GDP) (%)

	2013	2014	2015	2016	2017
South Africa	2.49	1.85	1.28	0.57	1.32
Nigeria	5.39	6.31	2.65	-1.62	0.81
United States	1.68	2.57	2.86	1.49	2.27

Source: *World Bank*, accessed 5 July 2018

Extract 5: US trade practices heighten market fears

Since Mr Donald Trump took office in 2016, he has demanded China for a "fair, equitable and reciprocal" relationship, with more access for American-made goods and services. During his campaign, Mr Trump attacked China for unfair trade practices in their interventions. However, the Chinese central bank governor insists that China's "huge" trade imbalance with the United States is a structural and long-term problem and should be viewed with rationality.

President Trump shocked the world in early March 2018 when he announced plans to impose a 10% tax on aluminium exports and a 25% tariff on steel imports. Both the EU and China threatened retaliations almost immediately, heightening market fears of a trade war.

Africa, relatively isolated from the machinations of the financial markets, might not yet feel the ill effects of Trump's tariff proposal, but the continent stands to lose far more than most should a trade war become a reality. The demand for African resources is driven by global growth and, as such, is essential for the continent's economies. As the largest buyer of African commodities, Africa's economic growth is tied to China's.

Source: *The Straits Times*, 20 July 2017, 7 May 2018 &
CNBC Africa, 12 March 2018

Extract 6: Signing of African Continental Free Trade Area

In 2012, the African Heads of State and Governments resolved to establish the African Continental Free Trade Area (AfCFTA) treaty to create a single continental market for goods and services in member nations of the African Union, with free movement of business persons and investments using a single currency. After several years, the draft agreement was finally signed on March 21, 2018.

The scope of the treaty covered agreements on trade in goods, services, investment, and rules and procedures on dispute settlement, including a range of provisions to facilitate trade, reduce transaction costs and increase flexibilities between countries.

However, consensus was not reached among many member nations who requested for more time to continue consultations on the potential impacts on their economies. For example, Nigeria was delaying its signature to the agreement to widen and deepen domestic consultations, to ensure all concerns were addressed, as it would not sign any agreement that would not fairly represent the interest of Nigeria. The Nigeria Labour Congress was against signing the treaty, warning that doing so would open the country's seaports, airports and other businesses to foreign domination.

Source: *Premium Times*, 29 March 2018

Extract 7: Openness to trade makes South Africa vulnerable to global shifts

In the case of South Africa, its openness to trade makes it more vulnerable to global economic shifts than if it was less open. The effects of these globalisation forces and domestic economic policies have brought the South African economy to a state far from prosperous.

Broadly speaking, while overall growth has improved since the mid-1990s, there is more inequality today compared to before. This was due to high-skilled workers and capital owners benefitting more from the net income gains, compared to unskilled and semi-skilled workers; this a concern for social stability. Moreover, part of this growing income is being taxed, and is deemed less efficiently utilised than private expenditure.

Why is this taking place? One important reason is because the services sector is growing and the manufacturing sector is shrinking. This tendency, when found in a developing country, is called "premature deindustrialisation". A developing economy would be expected to show an increasing level of industrialisation up to the point it becomes a developed economy. Much of Africa is deindustrialising as it battles to compete with the manufacturing economies of Asia. The fact is that a services-orientated economy, which South Africa is becoming more like, has less of a need for unskilled and semi-skilled workers than in an industrialising economy. On top of that, the South Africa's economy has also become more reliant on imports, with increasing import penetration across most sectors of the economy.

Source: *Business Live*, 28 February 2018

Extract 8: Increase in quantity and quality of investment will spur on dynamism

The release of South Africa's appalling first-quarter GDP growth data was a shock. The 2.2% GDP contraction requires the government to assess their priorities and implement the correct policies needed to drive economic growth.

In South Africa, building economic dynamism is urgently needed. The economy has to generate more jobs for the vast numbers of the unemployed and underemployed, especially among the youth. Over the longer term it is equally necessary to raise productivity and increase the country's global competitiveness. The key to building economic dynamism at this juncture lies in encouraging investment and intellectual property.

More investment is needed to equip workers with better tools, machinery and infrastructure, raising their productivity. The demand for more and better tools, machinery and infrastructure in turn increases the need for more workers.

However, increasing the quantity of capital is only one side of the coin. The quality of capital has to improve as well. The priorities of the government should be in formulating public policies to encourage higher investment, giving preference to private sector investment over public sector investment, and in so doing focus on attracting foreign direct investment (FDI). FDI is particularly impactful because it usually comes with a lot of inbound transfer of know-how and skills. As demonstrated powerfully by the experience of East Asia, global companies are instrumental in introducing state-of-the-art technical and management techniques and in upgrading the skills of the local workers they employ in countries in which they invest.

Clearly, global companies are still very interested in seeking opportunities in developing countries. South Africa must position itself as a preferred destination. Nevertheless, the pattern of the FDI flowing in the country are typically financial services, real estate developments and other business services that are highly concentrated in urban areas. Such expansions in business operations serve mainly the urban middle class, which constitutes a minority of households in South African society. On the contrary, what may be more inclusive are achieving a better mix in investment in terms of the different sectors in the economy as well as its geographic distribution across the whole country. Private businesses can add value by innovating, fostering technological progress, transferring knowledge and creating jobs. However, businesses need the support of a capable and effective state that creates an enabling environment while furthering social equality. The government must ensure efficient network industries (such as roads, rail, telecommunication and ports). It has to lay the foundations for the supply of skilled labour and deliver a supportive and predictable regulatory environment.

Source: *Various*

Questions:

- | | | | |
|-----|------|---|------|
| (a) | (i) | Compare the trade balance between South Africa and United States from 2013 to 2017. | [2] |
| | (ii) | Account for the change in the trade balance of United States observed in a(i). | [2] |
| (b) | | Using an aggregate demand and aggregate supply diagram, explain how trade wars among United States and China might affect domestic prices levels in Africa. | [5] |
| (c) | | Explain why the Nigerian government might consider it a rational decision to delay its participation in the African Continental Free Trade Area. | [3] |
| (d) | | Assess whether giving priority to private sector investments over public investments is a more appropriate approach in driving higher economic growth. | [8] |
| (e) | | Discuss whether the openness to trade in South Africa is likely, on balance, to have a beneficial effect on its economy and population. | [10] |

[Total: 30]

