INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 2018

Subject CT7 – Business Economics
Core Technical

Introduction

The Examiners' Report is written by the Principal Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and using past papers as a revision aid and also those who have previously failed the subject.

The Examiners are charged by Council with examining the published syllabus. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report; other valid approaches are given appropriate credit. For essay-style questions, particularly the open-ended questions in the later subjects, the report may contain more points than the Examiners will expect from a solution that scores full marks.

The report is written based on the legislative and regulatory context pertaining to the date that the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision.

Luke Hatter
Chair of the Board of Examiners
June 2018

A. General comments on the *aims of this subject and how it is marked*

1. The aim of the Business Economics subject is to introduce students to the core economic principles and their relevance to the business environment. It provides a grounding in the fundamental concepts of micro and macro economics as they affect the operation of insurance and other financial systems, both for individuals and their requirements for financial security, and for financial institutions and their ability to provide products that meet individual and institutional clients' needs.

2. The Business Economics examination paper includes different types of questions requiring a variety of styles of answers in the nature of the answer and the degree of detail required.

B. General comments on *student performance in this diet of the examination*

Candidates' performance was of similar standard to previous diets. Where answers included sufficient detail and related to the particular context higher marks were achieved.

C. Pass Mark

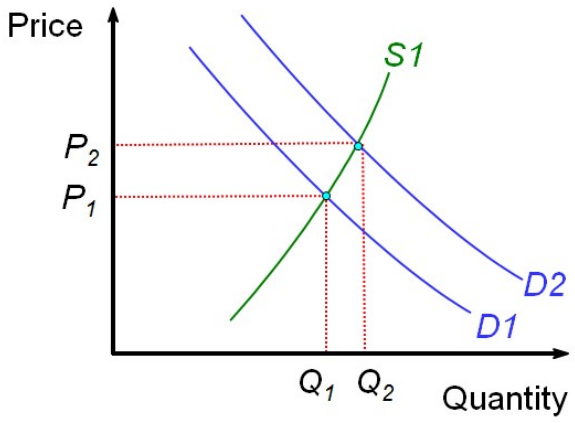
The Pass Mark for this exam was 60.

Solutions

Q1	C	[1½]
Q2	A	[1½]
Q3	D	[1½]
Q4	D	[1½]
Q5	A	[1½]
Q6	B	[1½]
Q7	D	[1½]
Q8	D	[1½]
Q9	D	[1½]
Q10	B	[1½]
Q11	C	[1½]
Q12	B	[1½]
Q13	B	[1½]
Q14	C	[1½]
Q15	D	[1½]
Q16	C	[1½]
Q17	B	[1½]
Q18	C	[1½]
Q19	C	[1½]
Q20	C	[1½]
Q21	A	[1½]
Q22	A	[1½]
Q23	A	[1½]
Q24	D	[1½]
Q25	D	[1½]
Q26	C	[1½]

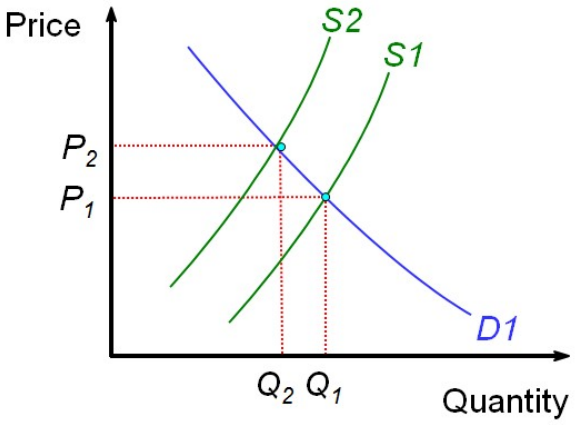
Q1–Q26: *The multiple choice section of the paper was generally well answered. Questions 5, 12, 20, 21 and 23 proved more challenging.*

Q27 (i)



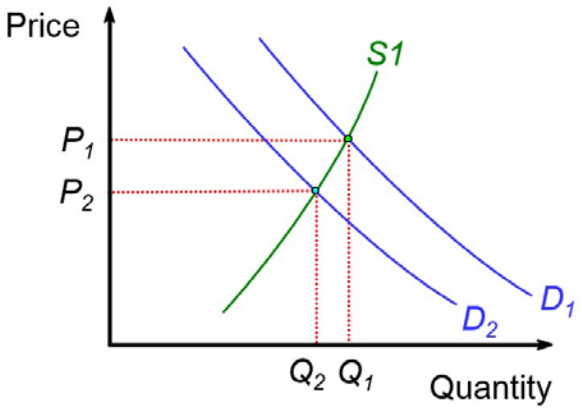
[1]

(ii)



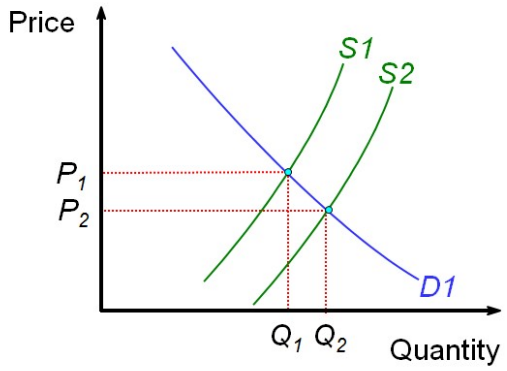
[1]

(iii)



[1]

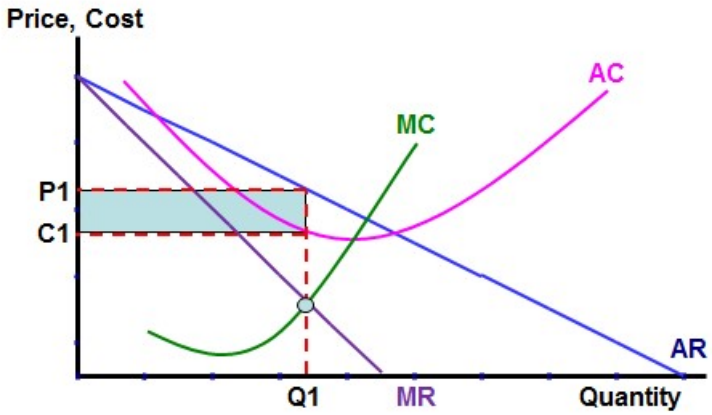
(iv)



[1]
[Total 4]

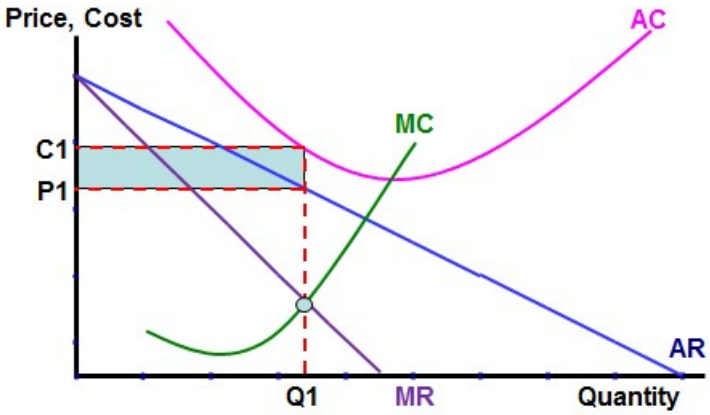
This question was generally answered well, although answers to part (i) were least correct compared to other parts of the question.

Q28 (i)



[2]

(ii)



[2]

(iii) In the long run because of the absence of barriers to entry there will be no excess profits and only normal profits will be made. [1]

[Total 5]

Most candidates provided correct answers to part (iii) and there were more correct diagrams offered for part (i) than part (ii).

Q29 (i) -173 or 1.73 are acceptable answers [1]

(ii) 1.19 [1]

(iii) 0.34 normal good [1]

(iv) –1.60 complements [1]

[Total 4]

Quite a few candidates did not use the average formula as required in parts (i) and (ii). Similarly some candidates did not use the average formula in parts (iii) and (iv). It is important to read questions carefully and offer what is required.

Q30 (i)

A risk neutral agent does not require an increased expected return to take on increased risk. If people are risk neutral they will always choose the option with the highest expected return.

Conversely, a risk averse agent requires an increase in expected return to take increased risk. If people are risk averse they will never accept a gamble if it has the same expected return as the pay-off from not taking a gamble. [2]

(ii) The minimum insurance premium Q which the insurer should be prepared to charge for insurance against a risk with a potential loss Y is given by the solution to the equation:

$E[U(a + Q - Y)] = U(a)$

For the minimum premium Q we need to solve so that the expected utility from taking on the insurance equals the expected utility from not issuing the insurance.

$0.3\,[5000 + 0.8\,(3000 - 500 + Q)] + 0.7\,[5000 + 0.8\,(3000 + Q)]$
$= [5000 + 0.8 * 3000]$

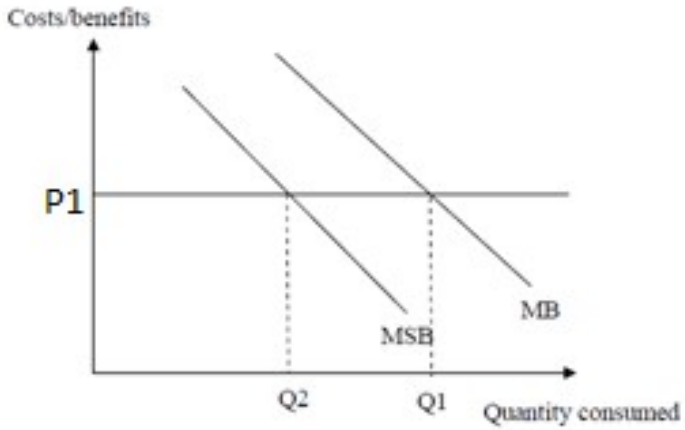
$1500 + 720 - 120 + 0.24Q + 3500 + 1680 + 0.56Q = 7400$
$0.8Q = 120$
$Q = 150$

Hence the minimum premium will be €150. [3]
[Total 5]

Definitions of risk neutral and risk averse agents were generally well done. In the case of calculating the minimum insurance level, responses were quite varied. About 45% of the candidates scored full marks for part (ii).

Q31 (i) An external cost of consumption is the cost experienced by people other than the consumer of the product or service. A negative externality in consumption occurs when the marginal social benefit (MSB) of consuming something is less than the marginal private benefit (MB).Examples include: pollution from air travel, noise from night clubs suffered by local residents, adverse health effects on other people from individuals that smoke. [2]

(ii)



[2]
[Total 4]

The definition of the external costs of consumption was generally correct and most candidates provided an interesting example. In part (ii) diagrams were generally good but candidates needed to label all parts of the diagram clearly including the socially optimal output Q2 as required by the question.

Q32 (i)

A floating exchange rate is one where the authorities, usually the central bank, does not intervene to buy or sell their currency in a bid to influence the exchange rate. An alternative way of describing this is a situation where the private sectors supply and demand intersection determines the exchange rate of a currency. [1]

(ii) A depreciation of the pound from \$1.50/£1 to \$1.30/£1 will raise the cost of imports measured in pounds. [1]

(iii) Advantages of floating exchange rate include:

Monetary policy can be conducted independently of other countries without the need for controls on the movement of capital. This means governments are able to pursue independent fiscal and monetary policies suited to the needs of the domestic economy.

A floating exchange rate will tend to move to offset a balance of payments deficit or surplus automatically. A large deficit in the balance of payments will tend to lead to a depreciation of the exchange rate which over time will boost exports (by making them cheaper for foreigners to buy) and reduce imports (by making them more expensive for domestic residents to purchase) and thus bring down or eliminate an unsustainable deficit.

A floating exchange rate can also insulate the domestic economy from the effects of foreign price shocks and other economic shocks. For example if foreign inflation rises, this may lead to an appreciation of the domestic currency so insulating the domestic economy from the foreign price shock.

A floating exchange rate can send a signal via a rapid depreciation if the authorities' fiscal and/or monetary policy is on a dangerous unsustainable path which can then necessitate a change of policy to put the fiscal and/or monetary policy onto a sustainable path.

There is no need for the central bank to hold large amounts of gold and foreign exchange reserves. [4]

[Total 6]

This question was answered well by most candidates who provided good definitions of a floating exchange rate. Some candidates scored well in part (ii) by using a specific numerical example to show how a change in the exchange rate from \$1.50/£1 to \$1.30/£1 affected the UK import prices measured in pounds. Some candidates did not provide four distinct benefits of a floating exchange rate in part (iii).

Q33 (i) Country A [1]

(ii) 2 units of Good X [1]

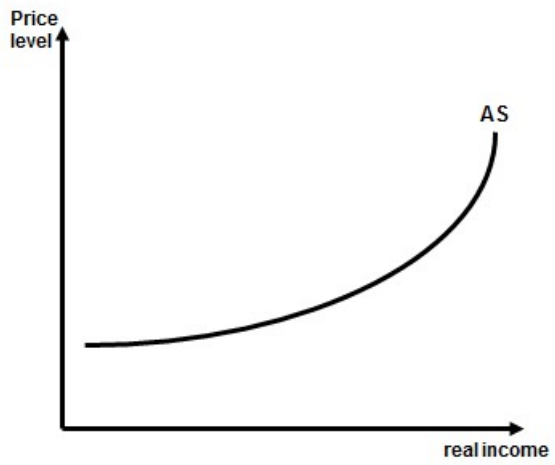
(iii) Good Y [1]

(iv) Option B i.e. 1.5 units of Good X for 1 unit of Good Y [1]

[Total 4]

Most candidates provided satisfactory answers to this question, although identifying the correct terms of trade in part (iii) proved more challenging to some candidates.

Q34 (i)



Note other answers with a straight upward sloping supply curve are acceptable and even a vertical aggregate supply curve is acceptable so long as it was made clear that real output/real income was on the horizontal axis. [1]

(ii) The aggregate supply curve is generally upward sloping until full employment is reached because a rise in the price level holding costs such as labour fixed means larger profits and therefore an increased willingness of producers in the economy to producer more output. [1]

(iii) There are several factors that could shift the AS curve to the left.

1. A rise in nominal wages in the economy.

2. A rise in the price of other inputs such as cost of capital, the required profit margin or cost of land.

3. A reduction in government subsidies and or a rise in sales taxes in the economy.

4. An adverse supply side shock such as a natural disaster or earthquakes.

5. Net emigration of factors of production such as labour can shift the aggregate supply to the left.

6. A fall in labour or capital productivity.
[2]

(iv) A fall in the price of imported oil will lead to a shift to the right of the aggregate supply curve. [1]

[Total 5]

Part (i) of this question was answered well. In part (ii) explanations for the upward slope of the aggregate supply curve were mixed. In part (iii) many candidates did not provide two distinct reasons for a leftward shift in the aggregate supply curve.

Q35

(i) Equilibrium (voluntary) unemployment refers to workers who are registered as part of the labour force but are not prepared to immediately accept a job at the going wage rate for their skills are voluntarily unemployed. In a broader sense equilibrium unemployment may involve structural, seasonal and frictional unemployment.

Disequilibrium (involuntary) unemployment refers to worker who are registered as unemployed and are prepared to accept a job immediately at the going wage rate for their skills but are unable to get a job due to insufficient demand. [2]

(ii) Equilibrium (voluntary) unemployment is likely to be greater in the long run if there are:

- Increases in state benefits for being unemployed relative to net wages when employed which reduce the opportunity cost of being unemployed

- Increases in rates of tax on earned income which reduces the incentive to work

- If finding out about jobs and travelling to interviews is ore expensive and time consuming i.e. increase in search costs

- retraining is made more difficult to obtain and/or is more expensive.

- Also regulation can affect voluntary unemployment for example greater labour market deregulation by reducing the demand for labour might increase voluntary because it will decrease the equilibrium wage and this raises the gap between the labour force and the accept jobs, which increases equilibrium unemployment as the real wage falls

- In a broader context if equilibrium unemployment incorporates structural unemployment then technological change reducing demand for certain labour can raise the equilibrium unemployment rate. As can shifts in jobs due to increased globalization shifting labour demand from one country to another.

[2]
[Total 4]

This question was generally answered well but in part (ii) some candidates did not relate their answer to raising voluntary unemployment as required by the question; factors which raise unemployment are not necessarily those that specifically raise voluntary unemployment.

Q36 An expansionary fiscal policy can come about either through an increase in government expenditure (financed by increases in taxes and/or increased government borrowing) or by a decrease in taxes. In the case of an increase in government spending financed by government borrowing, the cash received from the bond sales is re-injected into the economy via the increased government spending leaving no overall change in the money supply.

In response to an expansionary fiscal policy national income and therefore employment will increase in the short run and there will be an associated multiplier effect. Higher government expenditure will add directly to aggregate demand. Lower taxes will increase consumption and investment and the effect of the higher fiscal deficit will be increased by the multiplier effect.

The main arguments that have been given against the use of an active fiscal policy include the following:

Unpredictability – the effects of a fiscal expansion are difficult to estimate and there is a danger that it could lead to overheating of the economy.

Time lags – the time delay necessary for fiscal policy to work is not known with certainty and there is a danger that fiscal expansion may overheat an economy that is already moving out of recession.

Crowding out effects – there are a number of crowding out effects that limit the effectiveness of fiscal policy:

Interest rate effects – a fiscal expansion which is financed by government borrowing will lead to higher interest rates due to the depressing effect on bond prices. The higher interest rate will then reduce investment and consumer expenditure.

Tax effects – an increase in government expenditure which is financed by taxation will adversely affect consumers' and firms' investment expenditure.

Expectation effects – an increase in government expenditure financed by borrowing will lead to expectations of future increases in taxes. This will lead to increased saving and reduced investment by firms.

Fiscal policy is not as flexible an instrument as monetary policy since both expenditure and tax sides are generally determined annually.

An expansionary fiscal policy that raises output may also lead to an increase in import volumes which may lead to balance of payments problems and/or a depreciating currency which can lead to inflation.

An expansionary monetary policy is achieved via an open market operation. It involves purchase of short term government securities (e.g. Treasury bills) by the central bank which increases the money supply held by the public and reduces the stock of Treasury bills held by the public. The effect is to raise Treasury bill prices and lower the short term interest rate. The fall in the domestic interest rate should lead to a rise in consumption and investment and results in higher national income and employment. However, an expansionary monetary policy may raise inflation expectations and thereby raise longer term interest rates which may adversely affect longer term investment.

One of the major problems with an expansionary monetary policy is that it may lead to inflationary pressures. If the country has a fixed exchange rate, the currency will come under pressure in the foreign exchange market and the current account position will worsen. This will necessitate purchases of the currency in the foreign exchange market. These purchases will have to continue until the initial increase in the money stock is reversed if the peg is to be maintained. If the country has a floating exchange rate it is likely that the exchange rate may depreciate in the short run by an even greater percentage than the initial rise in the money stock ("overshooting" its long run equilibrium value). This will ensure that the expansion in the money stock will quickly lead to inflation. [10]

Answers to this question were varied resulting in a wide range of marks. In discussing fiscal policy it was necessary not only to emphasize increased government expenditure but also to mention a reduction in taxes. While there were some good discussions of the advantages of fiscal and monetary expansion to boost economic activity, many candidates did not relate their answers to an open

economy. Answers that included reference to an open economy scored the highest marks.

Q37 (i) A supermarket can differentiate its product in various ways these include:

Quality – some supermarkets offer a high quality more expensive product offering while others settle for a lower price lower quality product offering.

Range of products offered – some supermarkets offer a small range of products at very competitive prices while others offer a wider range of products at generally higher prices. Some supermarkets offer both branded products and own brands catering for consumers with both high and low incomes.

Service – some supermarket offer a high quality of service with speedy checkouts, well maintained stores and rewarding loyal customers while others tend to offer poorer service levels.

Location – some supermarkets specialise in giving their customers convenient access to their stores including parking facilities and placing smaller stores in prime locations close to residents. Other supermarkets do not offer car parking and are located in less prime areas.

Advertising – even if two supermarkets have broadly similar products through a successful advertising campaign a supermarket can differentiate the perceived quality of its product offering. Advertising can also be used also attract consumers from a target category such as more affluent consumers, families with children and consumers of a certain age range.

Pricing and special offers can be an effective means of differentiating the products, some supermarkets specialize in lower price product ranges while others have a high price but better products and customer experience.

Design and technical standards can also affect supermarkets, for example some have a higher proportion of frozen foods while others have a tendency to offer fresh food. Then there is organic versus non organic food.

[3]

(ii) Explanation of the following factors for a rise in popularity of own brand Products include:

Cost – Branded manufacturers' low costs due to economies of scale have been matched by supermarkets because of improvements in technology and close links between suppliers and retailers.

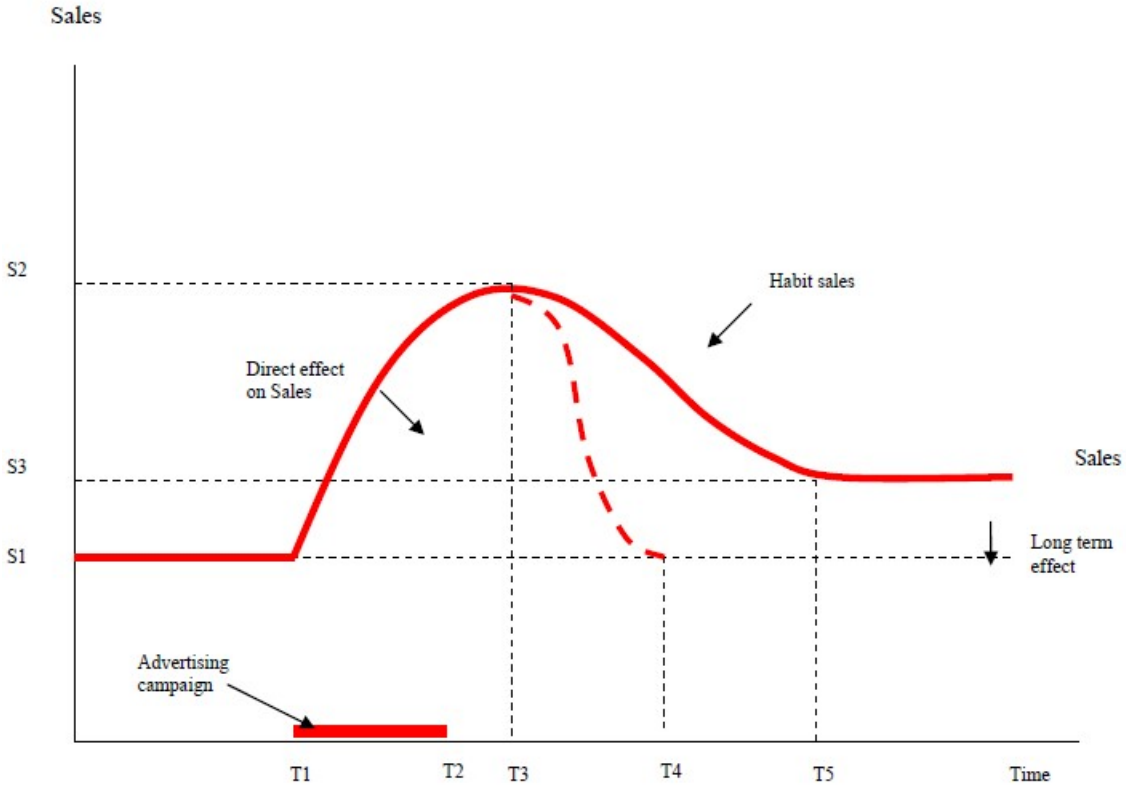
Quality – Supermarkets have introduced higher quality own brand products to compete with the branded manufacturers. Surveys show that consumers perceive own brand products to be better value than branded products.

The state of the economy – An important factor in deciding to buy own-brand products is consumers' income. In the recession following the financial crisis of 2008, sales of own brands grew as consumers became price sensitive seeking good value products.

Advertising by supermarkets as well as the shelf space they devote to their own products has helped supermarket own brands increase their sales.

Also competition between supermarkets since the 2008 recession has meant that they have been keen to keep overall household shopping bills down so as to maintain their market share. [3]

(iii)



Initially an advertising campaign at time T1 is likely to push up sales of a product particularly as the campaign gets wider coverage and some consumers recommend the product for other consumers to buy. The impact on profitability of a successful campaign in the short run is likely to be positive as advertising expenditure relative to competitors will enhance product image and company reputation leading to enhanced perceived relative quality of offering in relation to its price. The enhanced customer perception of the product will increase market share which leads to higher profit margin as well as sales growth.

Once the advertising campaign ceases there are two possibilities, one is that sales drop off quite quickly and there is no long run effect with sales returning back to roughly the original level (see dotted line). However, a more likely scenario is that some consumers that purchased the product are likely to continue to purchase the product, so called habit sales, while other new consumers might switch back to other brands. In this latter scenario, total sales will gradually decline over time but the long run sales levels will be above the original level.

Of course, the above assumes no reaction by other supermarkets to an advertising campaign. If they react to the advertising campaign then the likely effects of the advertising campaign on sales will be somewhat diminished.

[4]

[Total 10]

While there were some good answers to part (i) of this question, it was important to relate the answers to supermarket chains and not just mention how any company can differentiate itself from its competitors. In part (ii) the rise in own brand usage was reasonably well argued. In part (iii) although many candidates drew the diagram correctly, they needed to support the diagram with adequate commentary.

END OF EXAMINERS' REPORT