

# **INSTITUTE AND FACULTY OF ACTUARIES**

## **EXAMINERS' REPORT**

April 2021

### **Subject CB2 – Business Economics Core Principles**

#### **Introduction**

The Examiners' Report is written by the Chief 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.

Paul Nicholas  
Chair of the Board of Examiners  
July 2021

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

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.

**B. Comments on *candidate performance in this diet of the examination.***

Due to the online format of the examination, the examination paper in this diet excluded questions that involve producing diagrams in answering questions. The focus was mainly on probing candidates' understanding of the theory by requiring application of concepts within a context.

Performance in answering the multiple choice questions was similar to the previous diets. Responses to short answer questions aimed at testing candidates' understanding of economic concepts within a chosen context were mixed; where a basic application of concepts to a particular context was required, most candidates provided a reasonable answer. However, parts of some questions where a deeper analysis was required proved more challenging.

**C. Pass Mark**

The Pass Mark for this exam was 58.

934 presented themselves and 518 passed.

**Solutions for Subject CB2 – April 2021**

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

*Overall, the multiple choice questions were answered generally well.*

**Q27**

(i)

Advertising can increase sales by shifting the firm's demand curve to the right and it can help create longer term brand awareness and increase customer loyalty to the brand in the longer run [1]

It can act to make the demand curve for the product for the firm's laptops more price inelastic enabling it to raise the prices of its laptops, increase its revenue and improve its profitability [1]

It can create a barrier to entry making it more difficult/expensive for new firms to enter the laptop industry [1]

It enables firms to expand production in line with the increased demand enabling them to gain economies of scale which reduce their long run average costs of producing each laptop and increasing their longer-term profitability [1]

(ii)

The rule is that the marginal revenue gained from increased advertising of its laptops should be equal to the marginal cost of the increased advertising expenditure [1]

[Total 5]

*To gain the mark in part (i) of this question, each distinct point had to be clearly identified and well explained. Most candidates provided a good answer to this part of the question.*

*For part (ii) quite a few candidates provided the general condition for profit maximisation rather than the marginal cost and marginal revenue of advertising which was required.*

### Q28

(i)

Hotel A will remain open during the winter season because its total revenue exceeds its total variable costs and this means that it is able to make some contribution to its fixed costs. So even though its total revenue is less than its total costs it can make less of a loss during the winter season by remaining open since the total revenue covers its total variable costs and makes some contribution to its fixed costs [1½]

By contrast, Hotel B closes during the winter season because its total revenue is less than its total variable costs and this means that by remaining open during the winter season it will make greater losses. By closing its loss is limited to its fixed costs which is less than the losses it would incur if it remained open since it would not have sufficient total revenue during the winter season to cover its total variable costs of production [1½]

(ii)

Since Hotels A and B are profit maximising firms they will set their room prices in the region where the demand is price elastic. The reason is that when the demand is inelastic raising the prices would mean more total revenue and fewer customers to worry about so saving on costs as well. Whereas, when the demand is price elastic the firms lose revenue when raising their prices while they also save on costs. When the marginal revenue lost through raising prices exceeds marginal cost saving then it will pay for the hotels to stop raising their prices [2]

[Total 5]

*Most candidates made a reasonable attempt at answering part (i) of this question. To gain the full mark for this part, the answer needed to mention total revenue covering the total variable costs for the hotel to remain open. Credit was given if the answer referred to total revenue contributing to covering some of the fixed costs. Part (ii) of this question was answered generally less well. To gain the full mark the answer needed to explain the reasoning.*

**Q29**

(i)  
 $-dQ/dP * P/Q = -(1/2) * 16/2 = -4$  [1]

(ii)  
 £6-£10 [1]

(iii)  
 Arc elasticity is  $-dQ/dP * (\text{average } P/\text{average } Q)$   
 $= (-2/4) * 10/5 = -1$  [1]

(iv)  
 The Goods are complementary goods [1]

(v)  
 The cross-price elasticity of demand is -0.5 [1]

**[Total 5]**

*Parts (i), (iv) and (v) of this question were answered correctly by most candidates. Parts (ii) and (iii) were generally answered less well. To calculate the arc elasticity the average method needs to be used.*

**Q30**

Firms seeking to enter a new industry may face barriers to entry which can be categorised as strategic or structural

In the context of the banking industry, existing firms within the sector may have some cost advantages in that they have existing systems to undertake financial transactions and thus may have superior technology relative to new entrants

There may also be switching costs for consumers which make it difficult to attract new clients and/or clients may have contractual obligations to their existing financial provider and find it difficult to change to a new entrant (this could be in the form of fees for example) Many individuals are also used to their current service provider and may be reluctant to switch firms and learn how to use new software/programs

Another significant factor is that users may be unsure about the quality of the service a new provider may be able to deliver and may therefore decide not to switch

These factors make it difficult for a new firm to build up its client base. In this sector, clients may have considerable brand loyalty as they have banked with the same firm for a number of years and whilst it may not directly block entry, it can make success much more difficult Advertising tactics to attract customers are a feature of the banking sector

In the financial services sector, there will be regulatory obligations that the firm must meet. They will need a banking licence in order to exist and this could be difficult to secure as there are strict regulations around the operations of firms in this sector [5]

*Most candidates provided a number of good barriers to entry in the banking sector. Each barrier needed to be distinct from the others in the list and explained fully to gain the mark. Where the barriers were mentioned without explanation some credit was allowed. A good answer needed to explain five barriers directly applicable to the banking sector. Each well explained barrier carried 1 mark.*

**Q31**

(i)

The concept of value added is used in the calculation of GDP to ensure that we do not double count. In the manufacturing of a car, there are different components such as the metal work for the frame. This would have been produced by a firm who then sells this onto a car manufacturer. The tyres for the car would have gone through several stages of manufacture, from the basic material, to processing and then into tyres. The seats of the car which could be made from leather is another example. In the case of leather, a farmer would have tended the animals and then sent the skins to a tannery. The frame of the car would have come from a steel works and have been moulded into shape. The electrical wiring would have come from various sources, including perhaps copper and then a covering made from some sort of plastic to protect it. [1]

Each stage of production contributes to the production of a car and adds additional value. Therefore, we need to focus on the final value obtained by accumulation of the value of the contribution of each stage of manufacture and thus the value added at each stage to arrive at an accurate value of the additional income created from the activity. If we were to add the income generated at each stage of manufacture, we would overestimate the level of GDP. [1]

(ii)

Inventories or stocks are included in GDP by focussing on value that was generated within the year being considered in terms of GDP statistics. The value of increases (decreases) in stocks added during this year which represent both finished and partially finished goods must be added (deducted). Increases in inventories are recorded in the GDP accounts under investment. Appreciation of inventories should be deducted as there is no actual increase in output [1]

Government activity in education is valued in terms of the cost charged to provide the service. So, for example, teachers and nurses are valued at the wage they are paid. [1]

Finally, home ownership, where the owner lives in the property is more challenging to account for than, for example, a tenant paying a landlord rent, despite consuming a similar service. Therefore, a value for owner occupation is ‘imputed’; a value is added to a GDP calculation on the basis of comparable rent [1]

**[Total 5]**

*Most candidates were able to explain the concept of value added applied to the car industry and provided a reasonable answer to part (i) of this question. Part (ii) proved more challenging and most candidates did not provided the full correct answer to this part of the question. Many answers that lacked sufficient explanation were allowed some credit.*

**Q32**

(i)  $Y = 300 + 0.7(1 - 0.25)Y + 250 + 200 + 150 - 0.15(Y)$   
 $Y = 900 + 0.375(Y)$   
 $Y = \text{£}1440 \text{ million}$  [2]

(ii)  $C = 300 + 0.7(1 - 0.25)1440$   
 $C = \text{£}1056 \text{ million}$  [1]

(iii)

Exports = £150 million

Imports =  $0.15(1440) = £216$  million

Current account Balance =  $£150 - £216 = -£66$  million (deficit) [1]

(iv)

When  $Y = £1440$  million then taxes  $T = (0.25)1440 = 360$

So fiscal surplus is  $£360 - £200 = +£160$  million [1]

[Total 5]

*This question was answered generally well. In part (i) 1 mark was allowed for the correct AD formula and substitution of values. Where the error in part (i) was carried through so that the incorrect answer for the GDP from part (i) was used to calculate the answers to the other parts of the question, the mark was allowed provided that both formulae and substitutions in these parts were correct.*

### Q33

(i)

Demand deficient unemployment is caused by a general lack of aggregate demand in the economy and it reflects itself in large scale unemployment across many sectors of the economy and large segments of the labour market [2]

(ii)

The main solution for demand deficient unemployment advocated by Keynesian economists is an expansionary fiscal policy. The expansionary fiscal policy is usually associated with an increase in government expenditure which it is believed will then have a multiplier effect on aggregate demand

The simple multiplier is given by  $1/MPS$  where MPS is the marginal propensity to save (or equivalently  $1/(1-MPC)$  where MPC is the marginal propensity to consume out of disposable income)

An alternative to increasing government expenditure is cutting the tax rate which should in turn lead to increased demand in the form of higher consumption and investment. However, Keynesians regard this as a less effective means of stimulating aggregate demand. An increase in aggregate demand as well as helping reduce unemployment may well have some adverse effects such as raising the rate of inflation, deteriorate the balance of payments or lead to crowding out effects

Some Keynesians support the idea of an expansion of the money supply to keep down interest rates when undertaking a fiscal expansion to improve its effectiveness [4]

[Total 6]

*Part (i) of this question was generally answered well. Partially explained answers were allowed some credit.*  
*In part (ii) very few answers were sufficiently focused or detailed to warrant the full mark. A good answer needed to mention factors such as expansionary fiscal policy, effectiveness of increasing government expenditure financed by borrowing as opposed to tax cuts. Mentioning adverse effects was not deemed essential but was considered as positive elements and were allowed some credit. Increases in the money supply was also considered supportive of a good answer but not essential.*

**Q34**

(i)

70,000

[1]

(ii)

80,000

[1]

(iii)

As wages rise then we expect more of those unemployed to be willing to accept a job

[1]

(iv)

A cut in social security will increase the number willing to accept jobs and thus increase employment and lower the average wage

[1]

(v)

Total employment will be 520,000

[1]

**[Total 5]**

*This question was generally answered well with many candidates providing the correct answer particularly to parts (i) and (ii).*

**Q35**

There are some similarities between a monopoly firm and a monopolistic competitor firm in that they can both raise their price without losing all their customers and this is shown by the fact that they both have negatively sloped demand curves. They are also similar in that they will attempt to maximise their profits by equating their marginal costs to their marginal revenue.

There are significant differences between the market structures of monopolistic competition and monopoly. With monopolistic competition there are many competing firms whereas with monopoly there is only one firm. Under monopolistic competition each firm sells a differentiated product whereas a monopoly may sell either a single product or a range of differentiated but similar products.

A crucial difference between the two structures is that with monopolistic competition there are no barriers to entry whereas with monopoly there are barriers to entry. The absence of barriers to entry means that firms in a monopolistic competition industry will only make normal profits in

the long run although super normal profits can be made in the short run. With monopoly, the existence of barriers to entry means that in both the short and the long run excess profits can be made.

Although both monopolistic and monopoly firms face downward sloping demand curves, the market demand curve is the demand curve for a monopolist whereas a monopolistic competitor firm only has a small share of the market.

Both firms can be profit maximisers, however, competition means that a firm in a monopolistic competition market structure will have to seek to minimise its costs whereas a monopoly firm can afford to some extent to be inefficient. Monopoly firms will be better able to exploit economies of scale as their production runs will be bigger than monopolistic competitor firms.

For consumers there are likely to be some significantly different welfare effects; the variety of products offered is likely to be better under monopolistic competition since there are many competing firms trying to differentiate themselves. Also, competition will help to keep prices down and the lack of barriers to entry will ensure product innovation as new firms can quickly enter the market.

A monopoly market structure is generally likely to lead to less innovation due to lack of competition although the possibility of supernormal profits will perhaps allow the monopoly to invest in new risky ventures that might not be possible in monopolistic competition where firms are restricted to only normal profits in the long run.

There is a possibility that prices facing consumers will be lower under monopoly, however, due to the fact that the monopolist can exploit economies of scale. Against this it might be possible for a monopolist to price discriminate between its customers which will not be possible under monopolistic competition. If price discrimination is practised by a monopolist, it will be to the detriment of consumers and benefit of the monopolist as the latter would gain some of the consumer surplus.

For differences key points are: demand facing monopolist is likely to be relatively inelastic compared to monopolistic competition and the market demand curve is its demand curve which is not the case for monopolistic competition, barriers to entry for monopoly but none for monopolistic competition mean potential for excess profits for monopoly while only normal profits for monopolistic competition, monopoly more likely to benefit from economies of scale in production, price discrimination is much easier for a monopolist, while both may seek to maximise profits in the real world a monopoly firm can survive without necessarily minimising its average costs of production.

For consumer advantages and disadvantages the key points are: monopolistic competition gives greater product variety, also it provides greater price competition and less chance for price discrimination, but monopolies may do better on R&D due to excess profits, monopolies may benefit consumers if economies of scale lead to lower prices. [10]

*The marks to this question were equally split between differences between the two market structures and the impact on consumers.*

*Most answers provided a good list of differences between the two structures with explanation. However many answers did not discuss the impact on the consumers.*

*Very thorough answers scoring close to the full mark would need to have some overall conclusions and evaluation.*

### **Q36**

(i)(a)

The authorities can try to stimulate the economy in the short run by pursuing an expansionary monetary policy.

A policy of quantitative easing differs from a conventional monetary policy primarily in the range of assets considered for purchase and the period of time to maturity. With a conventional monetary policy, the central bank will purchase safe short-term securities such as Treasury bills and this will drive their prices up and so lower the short-term rate of interest. However, with a quantitative easing programme the central bank will usually consider purchasing a much wider range of longer-term securities such as government bonds, corporate bonds and even equities, if need be, which will tend to lower bond yields and improve returns on equity in the short term. Such a policy involves purchasing riskier securities than is normally allowed for under conventional monetary policy. [2]

(i)(b)

The likely effects of lower long-term yields and lower cost of debt issuance for corporates will likely lead to an increase in investment as firms can borrow more cheaply and consumption can be expected to rise as consumers spend more and homeowners will have lower mortgage payments to make. There is also likely to be a positive wealth effect on consumption due to higher, bond, equity and property values. [2]

(ii)(a)

A quantitative easing policy will likely lead to higher government bond prices, higher corporate bond prices and higher equity prices. This is because direct purchases of these securities will push up their prices and the fact that as longer-term government bond yields fall this will lead to economic agents moving into riskier securities such as corporate bonds and equities in their search for higher yields. This may lead to prices in these markets becoming distorted, over-valued and even the risk that unsustainable bubbles may form in these markets. When such bubbles finally burst it may cause severe disruptions in the markets and large losses for those that bought the assets at the overvalued prices. [3]

(ii)(b)

The dangers of a quantitative easing for the real economy are numerous, it could push up inflation expectations and cause recorded inflation to rise in the economy. It can also lead to a rapid depreciation of a currency and also unsettle the bond market by pushing up inflation expectations and longer-term bond yields. It could lead to workers raising their wage demands and also undermine the credibility of the central bank. Quantitative easing, by keeping short term interest rates low, might lead to consumers, firms and governments to over borrow and this could lead to large problems in the future should the economy go into a recession. With respect to financial markets the danger of distorted prices, overvaluation and bubbles means that there could be losses for investors, lack of interest from savers in

relatively safe securities such as government bonds can provide high returns for institutional investors such as pension funds, also excessive risk taking and then problems when there is an attempt by central banks to end or unwind the effects of the quantitative easing programme.

[3]

[Total 10]

*This question was generally answered less well. In part (i) (a) most answers did not explain the difference between the two policies and answers were confined to one or the other of the policies and some answers confused the two.*

*In part (i) (b) the question asks to focus on the effects on the economy - such as increased consumption, higher equity and house prices, lower long-term borrowing costs for consumers and businesses. Very few answers provided the full effects.*

*In part (ii)(a) a good answer should not only explain that QE can lead to higher prices for various financial assets but also the channels through which this may occur, as indicated above. Most answers were not sufficiently detailed to merit the full mark.*

*Most answers to part (ii) (b) mentioned inflation but few answers provided a full explanation of the implication for the financial markets as well as the economy.*

[Paper Total 100]

**END OF EXAMINERS' REPORT**