



Institute
and Faculty
of Actuaries

EXAMINERS' REPORT

CB2 - Business Economics

Core Principles

April 2023

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.

For some candidates, this may be their first attempt at answering an examination using open books and online. The Examiners expect all candidates to have a good level of knowledge and understanding of the topics and therefore candidates should not be overly dependent on open book materials. In our experience, candidates that spend too long researching answers in their materials will not be successful either because of time management issues or because they do not properly answer the questions.

Many candidates rely on past exam papers and examiner reports. Great caution must be exercised in doing so because each exam question is unique. As with all professional examinations, it is insufficient to repeat points of principle, formula or other text book works. The examinations are designed to test "higher order" thinking including candidates' ability to apply their knowledge to the facts presented in detail, synthesise and analyse their findings, and present conclusions or advice. Successful candidates concentrate on answering the questions asked rather than repeating their knowledge without application.

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.

Sarah Hutchinson
Chair of the Board of Examiners
July 2023

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

The aim of the Business Economics subject is to introduce candidates to the core economic principles and their relevance to the business environment.

The subject 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. The examination paper is designed to assess candidates' knowledge and understanding as well as application of economic concepts and exploration of the linkages within the wider economy, and the marking scheme duly reflects this aim.

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

Performance in this session was generally of a lower standard. Answers on multiple choice questions were of similar standards to previous sessions. However, for short answer questions requiring application of theory in different contexts, the answers generally explored parts of the theory and did not offer sufficient detail on the theory itself nor the application of the theory to the particular case. Answers to the long answer questions generally were not sufficiently detailed and lacked exploration of linkages between economic concepts and the possible impact on the whole economy. Presenting the discussion for long answer questions in bullet point form usually prevents exploring the linkages between various points and yields an answer that is insufficient in detail.

C. Pass Mark

The Pass Mark for this exam was 60
833 presented themselves and 514 passed.

Solutions for Subject CB2 – April 2023

1	D	[1½]
2	C	[1½]
3	B	[1½]
4	D	[1½]
5	C	[1½]
6	B and C	[1½]
7	D	[1½]
8	C	[1½]
9	C	[1½]
10	A	[1½]
11	D	[1½]
12	C	[1½]
13	A	[1½]
14	B	[1½]
15	B	[1½]
16	D	[1½]
17	D	[1½]
18	B	[1½]
19	D	[1½]
20	A	[1½]
21	A	[1½]
22	D	[1½]
23	A	[1½]
24	A	[1½]
25	C	[1½]
26	B	[1½]

The multiple-choice questions were generally answered well. Workings were not required.

For Question 6, two answers B and C were accepted.

Q27

(i)		
70		[1]
(ii)		
Less than		[1]
(iii)		
£10.56		[1]
(iv)		
£2,100		[1]

(v)

6 units of labour

[1]

[Total 5]

This question was generally answered well. Workings were not required.

Q28

(i)

Consumption of Good Y will rise but consumption of Good X will fall. This is because rise in income has no implications for relative prices of the two goods. As such, there is no substitution effect to consider, while the consumption of Good Y increases as it is a normal good and consumption of Good X falls as it is an inferior good.

[2]

(ii)

Consumption of Good X will rise. This is because the cheaper price of Good X relative to good Y leads to a substitution effect in favour of Good X. While the rise in real income will lead to a negative impact on consumption of Good X that is not sufficient to offset the rise from the substitution effect.

[2]

(iii)

Consumption of Good X will rise. This is because the relative prices remain the same so that there is no substitution effect. However, there is a fall in real income which will raise consumption of Good X.

[2]

[Total 6]

In parts (i)-(iii), 1 mark was allowed for including in the answer the income and substitution effects and 1 mark for the overall effect on the consumption of the goods.

Most candidates offered correct answers for the overall impact on consumption of the goods but few offered a good answer relating to the income and substitutions effects.

Q29

The law of diminishing returns is the relevant factor in determining short run average costs of the firm. As increasing amounts of labour are added to a given amount of a fixed factor, capital, at some point, the marginal and average product tend to fall resulting in a rise in short run average costs of production. However, after a certain point marginal and eventually average product begin to decline. As marginal and average product decline, the short-run marginal and average costs will rise.

Diseconomies of scale relate to rising long run average costs of production. In the

long run all factors of production are variable, that is the amount of both capital and labour can be changed. If increasing all inputs increases output less than proportionately then long run average cost of production will rise. Diseconomies of scale can be caused by factors such as bureaucracy, management inefficiency, inflexibility and poor decision making etc.

[5]

The mark for this question was equally divided between explaining the diminishing returns and the diseconomies of scale. Some credit was given for mentioning the causes of the diseconomies of scale. Most answers were confined to defining the diseconomies of scale in terms of increasing long run average cost and did not offer a complete definition as shown in the model answer above.

Q30

The household water supply industry is often characterised as a natural monopoly in that it would not make sense to have competing suppliers as it would involve an unnecessary duplication of resources and prevent the exploitation of economies of scale. There is a need to make sure the supply of water to households is done in a secure manner and that health and safety standards are upheld and it is easier for the authorities to monitor one company than many. Furthermore, given that water supply infrastructure is expensive to provide there are very considerable barriers to entry in the water supply industry.

Since water supply is an essential good for households, there is a need to control the price at which it is delivered to the consumer. One method of achieving this is to have the industry run by the state so that consumers are charged a reasonable price in line with costs of production. An alternative is to allow the industry to be run by a private sector firm but also set up a regulator to control the prices charged to consumers so that the firm supplying water can only make a reasonable return on their capital employed. Government may also subsidise the industry to lower prices.

[5]

Half of the total marks for this question were allowed for explaining why water supply is a natural monopoly where barriers to entry, duplication of resources, economies of scale and health and safety issues could be mentioned.

The other half of the marks was allocated to explaining the reasons for the need for government control, where essential good, the need for price control, direct provision, private provision overseen by a regulator and subsidies may be mentioned.

This question was moderately well answered.

Q31

(i)

The problem of information asymmetry arises because the landlord is not clear whether the prospective tenant intends to pay the rent on time and in full. The prospective tenant on the other hand has a better knowledge of their own finances and whether they intend to pay or not pay the rent on time. This information asymmetry can be reduced by the landlord performing credit checks on the person, asking to see evidence on pay and also taking out references on the prospective tenants.

[3]

(ii)

A rent control law that sets the rent below the free-market price will lead to a lower supply of property on the market and also a lower rental rate and as such it will lower the producer surplus. The more elastic the supply curve then the greater would be the quantity of rented property withdrawn from the market and therefore the greater the loss in producer surplus.

[2]

[Total 5]

In part (i) most candidates demonstrated their understanding of the concept of information asymmetry correctly although quite a few responses approached the answer from tenants' perspective and lost marks.

In part (ii) to gain the marks, the answer was expected to include both the effect on producer's surplus and the effect of elasticity.

Q32

Devaluation of the currency – this makes imports more expensive in domestic currency terms and exports cheaper in foreign currency terms. This should lead to a fall in import volumes and a rise in export volumes. One problem with this is that devaluation raises the cost of imports and therefore the cost of living in the country.

Fiscal restraint – a cut in fiscal expenditure (rise in taxes) will have reverse multiplier effects on national income resulting in reduced import expenditure via the marginal propensity to import. However, such a policy can lead to lower economic growth and higher unemployment.

Monetary restraint – as tight monetary policy will via higher interest rates restrain consumer expenditure and investment. This will reduce national income and import expenditure. However, such a policy will lower consumption and investment and slow down economic growth and unemployment.

Productivity improvements – increased productivity will improve the competitiveness of exports and the ability of import competing industries to compete against imports. But this will mean reforms, improved education and training and new investment which can be costly.

Subsidies – the government could subsidise exports of import competing industries. However, subsidies cost money, requiring financing from taxation and could lead to problems in relations with trading partners.

Government procurement policies could change such that government expenditure is switched away from imported goods to domestically produced goods so improving the trade balance. However, this can mean higher prices and lower quality than the imported goods and raise the size of the government budget deficit.

A government could introduce exchange controls that restrict its citizens ability to purchase foreign exchange and hence imports. If this is the case, then they may switch expenditure from imports to domestically produced goods. However, exchange rate controls restrict the ability of domestic residents to invest abroad and ability to obtain foreign consumer and investment goods that they may wish to purchase [5]

Explaining two-three government measures in detail was sufficient to gain the full mark for this question including the disadvantage of using each measure. Most candidates offered more than one measure but answers generally lacked detail and few answers gained the full mark for this question.

Q33

(i)
£285 million [1]

(ii)
£290 million [1]

(iii)
£285 million [1]

(iv)
A rise in the nominal GDP of 4% can be accompanied by a fall in the real GDP of 2% if the prices of goods and services that make up the GDP as measured by the GDP deflator rise by approximately 6%. Since the broad measure of inflation in the economy rises more than the nominal GDP then this can account for the fall of 2% in the real GDP. [1]

(v)
If a car is produced but not sold it will be included in the GDP figure as a rise in inventories and this is part of the investment figures in the GDP accounts. [1]

[Total 5]

This question for most parts was answered generally fairly well. Only the final correct answer in each part gained the mark.

However, in part (ii) where the incorrect answer in part (i) was used in the correct formula to arrive at an incorrect answer for part (ii), some credit was allowed.

In part (iii) to gain the mark, the answer needed to include the reason for the value of the car being included in the GDP figure. Only well prepared candidates gained the full mark for this question.

Q34

An expansionary monetary policy is implemented through the central bank purchasing short term treasury securities, which raises the prices of treasury securities and lowers the short-term interest rate. The fall in the short-term interest rates will have effects on consumer expenditure, investment, and the quantity of exports.

The lower interest rate will boost consumer expenditure by making borrowing cheaper and savings less attractive.

The fall in interest rates will boost investment by reducing the cost of borrowing and making the net present value of investment opportunities greater.

A fall in interest rates should lead to a depreciation of the domestic currency which will boost exports by making them more competitive on international markets.

So overall an expansionary monetary policy should boost aggregate demand and reduce unemployment.

It will also reduce the demand for imports which become more expensive so the Volume of imports will be lower but the impact on import values will depend upon whether the fall in volumes has greater or less impact than the fact that each unit of imports costs more when measured in terms of the domestic currency.

[5]

Full marks were only given for a good explanation including the fall in interest rates and the impact on consumer expenditure, investment, unemployment, exports and imports. Government spending may also be mentioned.

Only well prepared candidates offered a sufficiently detailed answer to this question.

Q35

(i)

In the Cournot model each firm assumes that the other firm produces a given amount of output and then deducts this from the market demand curve, the residual demand curve is then regarded as its demand curves. The firm then sets its profit maximising output. So Firm A assumes that Firm B produces a certain quantity of a good and then deducts this from the market demand curve. Similar reasoning also applies to firm B with respect to firm A's output. The Cournot equilibrium result is when the two firms both make the correct assumption about the output of the other firm and hence have no further incentive to change their own output. [2]

By contrast, under the Bertrand model of oligopoly, each firm takes the price of the other firm as given and then sets its optimal price. This means charging a lower price than the other firm. The other firm will also do likewise and this can lead to price cuts that eventually leave neither of the two firms able to cover their total costs and thus both become unprofitable. [2]

The Bertrand model is a good explanation of price wars that occasionally occur between supermarkets as they vie to get more customers. The problem is the price cuts eventually lead to a hit to profits that they find to be unsustainable in the longer term. This means that eventually the price cuts will be reversed enabling the firms to restore profit levels sufficiently to keep their owners and shareholder happy. [1]

(ii)

		Firm B's output	
		Low	High
Firm A's output	Low	£10 million A, £10 million B	£5 million A, £12 million B
	High	£12 million A, £5 million B	£8 million A, £8 million B

In the above Firm B will choose to set the high output as this is its dominant strategy regardless of whether Firm A sets a low or high output. Likewise Firm A will choose to set the high output as this is its dominant strategy regardless of whether Firm B sets a low or high output. The result is they both make profits of £8 million each if they act in isolation. However, if they were both to collude to both set a low output (a cooperation scenario) then the result would be higher profits of £10 million each. [5]

[Total 10]

In part (i) Most candidates offered a brief explanation of the two models but most answers lacked detail.

In part (ii) answers were expected to provide a numerical example of the game theory with profits resulting from price/output decisions. Candidates were also expected to analyse the strategies within the context of their example. Answers that provided only a table with numbers without correct reference to what the numbers represented and also answers where a general explanation of the prisoners' dilemma was given were not accepted.

Q36

(i)

Most economists today recognise that there is a need to distinguish between anticipated and unanticipated inflation when discussing the harmful effects of inflation. It is generally accepted that unanticipated inflation is more harmful than anticipated inflation since unanticipated inflation has not been factored in by firms, households, borrowers and lenders when making their decisions.

[1]

There are many harmful effects to the economy that are caused by unanticipated inflation. Inflation can arbitrarily redistribute incomes, For example, it erodes the purchasing power of those on fixed incomes.

Inflation also tends to benefit borrowers of funds at fixed rates of interest while penalizing those that have lent at the fixed rate of interest and inflation can also reduces the value of savings to the extent that inflation rate is above the rate of return on savings. In addition, inflation adversely affects business planning and investment with businesses finding it harder to forecast costs, revenues and interest rates.

Inflation will harm a country's international competitiveness especially if the exchange rate of the domestic currency is fixed. A rise in prices, would make exports more expensive and imports cheaper with adverse effects on the current account balance. Inflation and expectations of future inflation lead to upward pressure on interest rates in the financial markets and this means increased government borrowing costs from the issuance of bonds. In turn, this will reduce investment in the economy and so lower the economic growth rate.

It should also be noted that the recorded inflation rate is an average of price rises in the economy. Some firms will raise their prices more than the average and others will raise them by less than the average. However, workers will tend to want wages rises that are in line with rises in the average rate of inflation and this will mean difficulty and lower profits for firms who are only able to raise their prices less than the average, and such firms may suffer from strikes and industrial disruption as workers seek compensation.

[5]

(ii)

Contractionary fiscal and monetary policies are potentially useful tools to control inflation. A contractionary fiscal policy involves reducing government expenditure and/or raising taxes. As such, a contractionary fiscal policy mainly helps to reduce inflationary pressures in the economy by reducing aggregate demand in the economy. A contractionary fiscal policy can also help in the longer run fight against inflation because less government borrowing will reduce the temptation for a government to print money to finance the national debt. However, it needs to be recognised that lower government expenditure and higher taxes can lower employment and economic growth in the short term.

A contractionary monetary policy operates through government sales of treasury securities which lowers the price of treasury securities and thereby implies higher short term interest rates. A contractionary open market operation results in the public holding more treasury securities and less narrow money which in turn will reduce the broad money supply due to the link between the broad and narrow money supply as given by the money multiplier. Less broad money in the economy will in turn imply a reduced demand for goods and services and lower investment, the fall in aggregate demand should then lead to a lower inflation rate and lower employment. In addition, monetarist argue that there is a link between the rate of growth of the money supply and the rate of inflation so slower monetary growth will have the effect of lowering current and expected inflation rates. In an open economy context, the higher short term interest rate associated with tighter monetary policy may lead to an appreciation of the domestic currency lowering the cost of imports and thereby reducing the recorded rate of inflation. Since most economies are fairly open this can represent a significant contribution to inflation control especially as lower prices for goods will in turn encourage wage moderation. Of course, tighter monetary policy may well have adverse impacts on investment, consumption, economic growth and unemployment rates.

[5]

[Total 10]

In order to gain the mark for part (i) answers needed to include a brief explanation of the distinction between anticipated and unanticipated inflation and two-three effects of unanticipated inflation. Many answers to this part lacked sufficient detail to gain the full mark.

In part (ii) most candidates offered the correct policies but answers generally lacked sufficient detail in regards to the impact of the policies on the economy and inflation.

[Paper Total 100]

END OF EXAMINERS' REPORT



Institute
and Faculty
of Actuaries

Beijing

14F China World Office 1 · 1 Jianwai Avenue · Beijing · China 100004
Tel: +86 (10) 6535 0248

Edinburgh

Level 2 · Exchange Crescent · 7 Conference Square · Edinburgh · EH3 8RA
Tel: +44 (0) 131 240 1300

Hong Kong

1803 Tower One · Lippo Centre · 89 Queensway · Hong Kong
Tel: +852 2147 9418

London (registered office)

7th Floor · Holborn Gate · 326-330 High Holborn · London · WC1V 7PP
Tel: +44 (0) 20 7632 2100

Oxford

1st Floor · Belsyre Court · 57 Woodstock Road · Oxford · OX2 6HJ
Tel: +44 (0) 1865 268 200

Singapore

5 Shenton Way · UIC Building · #10-01 · Singapore 068808
Tel: +65 8778 1784

www.actuaries.org.uk

© 2021 Institute and Faculty of Actuaries