Institute of Actuaries of India

Subject CB2-Business Economics

December 2022 Examination

INDICATIVE SOLUTION

Introduction

The indicative solution has been written by the Examiners with the aim of helping candidates. The solutions given are only indicative. It is realized that there could be other points as valid answers and examiner have given credit for any alternative approach or interpretation which they consider to be reasonable.

Solution 1: D **[1.5 Marks]**
Solution 2: B **[1.5 Marks]**
Solution 3: C **[1.5 Marks]**
Solution 4: A **[1.5 Marks]**
Solution 5: B **[1.5 Marks]**
Solution 6: B **[1.5 Marks]**
Solution 7: C **[1.5 Marks]**
Solution 8: D **[1.5 Marks]**
Solution 9: C **[1.5 Marks]**
Solution 10: B **[1.5 Marks]**
Solution 11: C **[1.5 Marks]**
Solution 12: A **[1.5 Marks]**
Solution 13: D **[1.5 Marks]**
Solution 14: B **[1.5 Marks]**
Solution 15: D **[1.5 Marks]**
Solution 16: A **[1.5 Marks]**
Solution 17: D **[1.5 Marks]**
Solution 18: C **[1.5 Marks]**
Solution 19: D **[1.5 Marks]**
Solution 20: A **[1.5 Marks]**
Solution 21: A **[1.5 Marks]**
Solution 22: D **[1.5 Marks]**
Solution 23: D **[1.5 Marks]**
Solution 24: A **[1.5 Marks]**
Solution 25: C **[1.5 Marks]**
Solution 26: C **[1.5 Marks]**

Solution 27: Merit good provides benefits that are

(i) not fully appreciated by the user and

(ii) it has strong positive externalities (Social benefit > Private/Personal Benefit) i.e. consumption and production of merit good caused benefit to a third party) (1)

Pension:
As per (i): People often prefer to live for the present rather than save for the future
As per (ii): Benefit future tax payers by preventing them having to pay more tax to look after those who did not save for their pension during their working lives. (1)
Car Insurance:
As per (i): People do not understand the risk or believe that they will be safe
As per (ii): Offers protection for other people who might be injured and whose cars night be damaged by the insured driver. (1)

[3 Marks]

Solution 28: Possible ways for governments to regulate monopolies and oligopolies (Other possibilities exist and may be awarded marks):

- Controlling the level of output e.g. demanding that the socially optimal output level is produced) (0.5)

(0.5)

- Controlling prices e.g. setting a maximum price such that the monopolist would then choose to produce the socially optimal level of output. (0.5) (0.5)
- Breaking up monopolies or making monopolies illegal (0.5)
- Preventing mergers that would lead to monopolies (0.5)
- Allowing monopolies, but taxing them heavily, and using the taxes to pay redistributive benefits
- Nationalising the monopoly so that it can be run in the public interest

[3 Marks]

Solution 29: Economies of scale arise when long-run average costs decrease as output rises. (0.5)

Plant economies of scale are economies of scale that arise specifically because of the large size of the production facility. (0.5)

Plant economies of scale can arise from a number of sources:

- *Specialization:* the division of labour allows people to become experts at small parts of the production process, thus increasing the output per person. Similarly, more specialist machines can be employed as output rises. (1)
- *Indivisibilities:* Some pieces of equipment and some processes such as research must be of a certain minimum size. Thus efficiency increases as the output approaches the optimum for this equipment and these processes. (1)
- *The container principle:* The cost of producing storage containers might increase with surface area, while output increases with volume. So, as volume increases with size more rapidly than surface area, average costs will tend to decrease with higher output. (1)
- *The greater efficiency of large machines:* Large machinery may be more efficient to use than small machinery in combination with other factor inputs, e.g. labour and raw materials. For example, one worker might be needed to operate a small or a large machine. (1)
- *By products:* Large scale production may generate sufficient quantities of waste to produce by-products, e.g. heat, which can be sold commercially. (1)
- *Multi-stage production:* Combining different stages of production within a single factory may reduce overall average production costs, e.g. due to reduced transportation costs. (1)

[7 Marks]

Solution 30:

(i) **Barriers to entry in an industry**

Barriers to entry prevent new firms from entering an industry. Barriers may occur naturally, or may be established by the monopoly.

I. Natural (or innocent) barriers to entry include: (0.5)

- economies of scale, especially where the minimum efficient scale is large (0.5)

- economies of scope, where the firm produces a range of products and can spread overheads across the range (0.5)

- lower costs for an established firm, eg:
- specialised production techniques
- specialised marketing skills (2)
- relationships with cheapest / best suppliers – cheaper financing.

II. Strategic (or deliberate) barriers to entry include: (0.5)

- product differentiation and brand loyalty (0.5)
- ownership or control over key inputs (eg ownership of a key supplier) or outlets (0.5)
- threat of merger / takeover (0.5)
- aggressive tactics, eg selling loss leaders, advertising campaigns (which are paid for out of retained supernormal profit). (0.5)

Barriers to entry in a perfectly contestable market:
There are no barriers to entry in a perfectly contestable market. In case of perfectly contestable markets, the potential rivals:
(a) face no costs of entry and exit (1)
(b) can rapidly enter the market before the monopolist has time to respond

[7 Marks]

(ii) Since there are no entry or exit costs in a perfectly contestable market, the instant it becomes possible to earn supernormal profits, new firms will quickly enter the market and charge a price below the monopolist's price. (1)

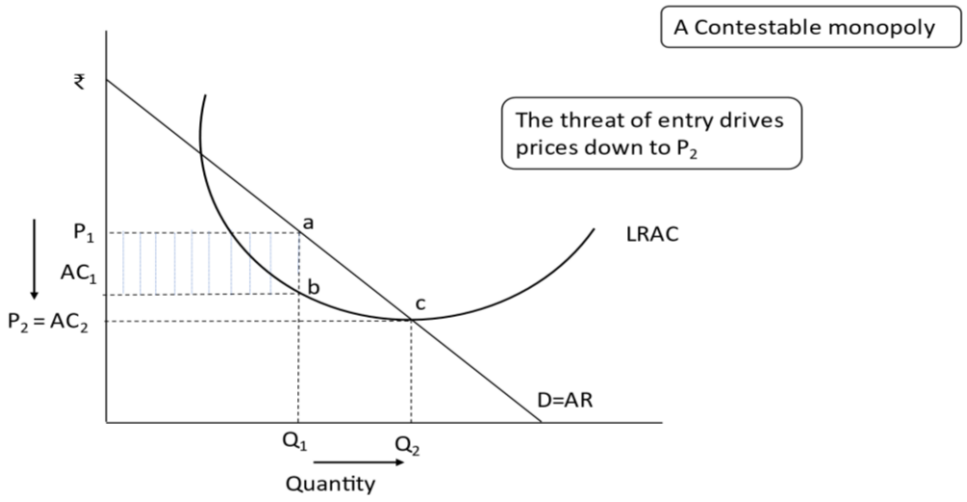
If the monopolist is unable to respond immediately, the new entrant sells to all of the customers in the market and makes supernormal profit. (1)

When the monopolist finally does respond by cutting its own prices, profits are driven back down towards their normal level. At that stage the new entrant is able to exit the market costlessly. This strategy is known as 'hit and run'. (1)

[3 Marks]

(iii) In order to avoid the situation described in (ii), the firm already in the market will
(a) keep its prices down, so that it just makes normal profits, and
(b) produce as efficiently as possible, taking advantage of any economies of scale and any new technology.

If it did not do this, rivals would enter, and potential competition would become actual competition. (1)



(2)

As illustrated in the diagram, assuming that there is only one firm in the industry, which faces a long-run average cost curve given by LRAC.

Suppose the profits are maximised at a price of P_1, with supernormal profits being shown by the area P_1abAC_1. (1)

If entry and exit costs are high, the price will remain at this level. If entry and exit costs are low, however, rival firms may be tempted to enter, charge a slightly lower price than the monopoly and take all of its customers. (1)

To avert this, the existing firm will have to lower its price. In the case of zero entry and exit costs, the monopolist will have to lower its price to P2, where price equals LRAC, and where, therefore, profits are normal and would not attract rival firms to enter. At the same time, the monopolist will have to ensure that its LRAC curve is as low as possible (i.e. that it avoids any X inefficiency for ex. Technical Inefficiency). (2)

[Max 6]

[16 Marks]

Solution 31:

i) The declaration of war is not in general good for the world economy as there are going to be a lot of supply side disruptions

Country R squeezing the supply of oil and gas to developed countries is likely to hit fuel prices in developed countries. (0.5)

Increase in fuel prices would lead to inflation in developed countries. (0.5)

Increase in inflation is likely to prompt the central banks of the developed countries to increase the interest rates. (0.5)

Increase in interest rates in developed countries may lead to hot money flowing to developed countries. (0.5)

Increased inflow of hot money is likely to depreciate the currency of country I as compared to developed countries. (0.5)

Due to war like scenario the global investors are likely to rush to safe investments like government bonds of developed countries. This would lead to capital flight from Country I as it's a developing country. (1)

This will further exacerbate the depreciation of exchange rate of country I. (0.5)

Inflation in developed countries could lead to reduced economic activity there as they are also recovering from the adverse impact of pandemic and suddenly the price of essentials are going up. This will lead to Country I not being able to take advantage of its competitive export prices due to its depreciated currency. (1)

Country I may face the heat of depreciated currency rates as it is a net importer. The imports are likely to cost more. This is going to lead to increase in inflation in Country I. (1)

To contain the slide of currency of Country I the Central bank of Country I will have to raise the interest rates. (0.5)

Given that Country I economy is just recovering from the economic impact of the Pandemic raising interest rates could pose problems in economic recovery of Country I. This could increase the cost of borrowing and likely to decrease economic activity. (1)

Increasing cost pressures on business due to supply side inflation and increased cost of borrowing may lead to them laying off employees or postponing their salary increases. This could lead to reduced spending in the economy. (1)

Country I being a net importer and heavily connected to global economy it will face supply side crunches. These crunch could reduce the economic activity (as supply of raw materials for industries e.g. semiconductors) in the country and hence reduce the tax income for the government. (1)

To control the supply side inflation the government might cut taxes (especially indirect taxes). This will again lead to drop in revenue for the government. (1)

Reduction in tax income for the government could lead to lower spending by the government and further reducing the economic activity by the multiplier effect. Reduced economic activity could lead to government spending more on welfare rather than more productive ventures like infrastructure. (2)

Reduction in revenue could lead to government borrowing more via government bonds (0.5)

Increased borrowing by the government could lead to financial crowding out of the market. Crowding out could lead to further increase in interest rates (1)

Further increase in interest rates might lead even higher interest rates for business who wish to borrow from the market. This could lead to even more reduced economic activity.)1)

[Max 12]

ii) Stagflation is a combination of inflation and stagnation of the economy. That is its simultaneous rise of unemployment and inflation. (1)

The biggest risk surrounding stagflation is that it cannot be corrected by increase in interest rates like a normal inflation can be corrected. Rise in interest rates could lead to further contraction of the economy and worsening of stagflation. (1)

Stagflation could be caused by supply side inflation where the cost of inputs increases with no particular increase in economic activity. For example a disruption of supply chains due to a war (1)

[3 Marks]

iii) The IS curve is the locus of combinations of the real interest rate and real national income such that market for goods and services is in equilibrium. This happens when aggregate demand is equal to national income or equivalently injections are equal to withdrawals so that there is no reason for the level of national income to change. (1)

The LM curve is the locus of combinations of real interest rates and real national income such that money market is in equilibrium. (1)

So that demand of money is equal to supply of money. It is drawn for a given money supply. (1)

The IS curve slopes downwards because if the real interest rates is reduced then the consumption and investment will rise increasing the aggregate demand and hence real national income (1)

The LM curve slopes upwards because starting from equilibrium in the money market a rise in real national income will increase the money demand. (1)

Thus for a given money supply interest rate is needed to counter the excess money demand so maintain equilibrium in money market (1)

[6 Marks]

iv) The following steps can be taken by the government to increase the domestic R&D

- Tax Incentives for R&D expenditure in the company (0.5)
- Funding of R&D in universities- This will encourage more students to join research in the universities because pay is comparable with a job that a student might get after completing studies. (1)
- Strengthening of patent laws- this will make it hard for a competitor to copy the innovation made by a particular firm. (1)
- Subsidies for firms performing R&D- Since R&D doesn't produce immediate results subsidy by government will increase the return on capital put in by the shareholders even in the case there are no results because of investment made in R&D. (1)

- Cash prizes by government to citizens creating something new which can benefit the society as a whole- This will encourage children to start thinking in the direction of innovation (1)

[Max 3]

v) The following are the positive effects of discretionary powers of the government

- Active intervention enables the government to respond appropriately to the unpredictable shocks that continually affect the economy. (1)
- Keynesian economists argue that without discretionary stabilisation policies the uncertainty caused by unpredictable fluctuations would be damaging to employment, investment and long-term growth. (1)
- The economists agree that in the past expansive monetary and fiscal policies taken up by the government helped prevent even a deeper inflation in 2008. It was because of discretionary powers of the government that it could take such massive steps. (1)
- Not always the same rule could be used for tackling the same crisis. (0.5)
- Not the same rule could be used to tackle the crisis which has a different magnitude (0.5)

[Max 3]

[27 marks]

Solution 32: The risks surrounding cryptocurrencies

- Cryptocurrencies are unregulated investments. In case something happens to the investment there is very limited help that the Government can provide in recoverin the investments (1)
- Since these are unregulated these are open to manipulation by the speculators. For example an influential businessman can say that he/she is accepting cryptocurrencies for payment. In the backend he/she could have bought a lot of cryptocurrency and as soon as the price goes up he/she could sell it in the open market. After recovering the investment he/she could backtrack on the promise. (2)
- There are news items that cryptocurrencies are used for financing terrorism and other sinful acts. This could be true due to their anonymity and recent ransoms demanded by cybercriminals in cryptocurrencies. This could lead to Government putting very high tax on it on the gains made by investors investing in these assets. (1)
- They are not accepted as legal tender so the person may have to liquidate these to use the money. They cannot be used as a collateral to get a loan. Cryptocurrencies could be difficult to liquidate especially the lesser known ones. (1)

Cryptocurrencies can lead to asset bubbles as they are not backed by anything and there are no constraints to its values. Investors may keep on investing and pumping up its price. This is because they don't want to miss out on the positive returns. All that increase in value could be a bubble as there is no underlying value and if a crash comes there could be hardly any buyers. (1.5)

[Max 5]

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