

Institute of Actuaries of India

Subject CT7 – Business Economics

May 2015 Examinations

INDICATIVE SOLUTIONS

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 : 1.5 Mark to each answer

1. D
2. C
3. D
4. C
5. B
6. B
7. C
8. A
9. D
10. A
11. B
12. D
13. D
14. C
15. A
16. A
17. D
18. C
19. A
20. B
21. B
22. B
23. C
24. D
25. D
26. A
27. A
28. D
29. A
30. C

[Q.No. 1 to 30=45 Marks]

Solution 31 :

(i)

Yes, there is an increasing returns to scale.

We are given, $Q = 2 \times L^{\frac{2}{3}} \times K^{\frac{1}{2}}$

Let $L_1 = 2L$ and $K_1 = 2K$,

Then, $Q_1 = 2 \times L_1^{\frac{2}{3}} \times K_1^{\frac{1}{2}} = 2 \times (2L)^{\frac{2}{3}} \times (2K)^{\frac{1}{2}}$

$$Q_1 = 2 \times L^{\frac{2}{3}} \times K^{\frac{1}{2}} \times 2^{7/6} > 2 \times L^{\frac{2}{3}} \times K^{\frac{1}{2}} \times 2$$

$$Q_1 > Q \times 2$$

That is, when L and K increase by 100%, Q increases by more than 100%.

This proves that there is an increasing returns to scale. [3]

$$(ii) \text{MPP}_L = \frac{\partial}{\partial L} Q = 2 \times \frac{2}{3} \times L^{-\frac{1}{3}} \times K^{\frac{1}{2}}$$

$$\text{Or, MPP}_L = \frac{4}{3} \times \frac{1}{2} \times 3 = 2$$

$$\text{MPP}_K = \frac{\partial}{\partial K} Q = 2 \times \frac{1}{2} \times L^{\frac{2}{3}} \times K^{-\frac{1}{2}}$$

$$\text{Or, MPP}_K = \frac{2}{2} \times 4 \times \frac{1}{3} = \frac{4}{3} \quad [4]$$

[7 Marks]

Solution 32 :

(i)

Economies of scale refer to the situation where long-run average costs *fall* as the scale of production is increased. [1]

(ii)

- a. **Specialisation and the division of labour** – Two wheelers are generally manufactured at large plants where work is broken down into smaller and smaller tasks. The workers at these companies specialise in their respective tasks and thereby they become more efficient and productive.
- b. **Indivisibilities** – Two-wheelers are normally manufactured on a large scale, one person would not have sufficient demand for a two-wheelers manufacturing plant. A two-wheelers plant is only efficient to use when there are a sufficiently large number of two-wheelers being made.
- c. **Multistage production** – Two-wheelers manufacturing firm is able to provide a number of activities under one roof rather than moving production from one plant to another. For example - the cutting of the metal for the frame of the two-wheeler, the addition of electrical components and the fabric for the seats may be manufactured within the same plant along a production line.
- d. **Greater efficiency of large machines-** Large machines are generally more efficient. Only one worker may be required to operate the large machines that take a two-wheeler from one part of the plant to another.

[4]

[5 Marks]

Solution 33 :

(i)

Following are various reasons in favour of restricting trade by a developing country

- a. **The infant industry argument**– In a developing country there are many infant industries which may be too small at present to have sufficient economies of scale to withstand international competition. The government may therefore wish to take measures to protect this industry until it has grown sufficiently in size and expertise to compete internationally.
- b. **To reduce reliance on goods with little dynamic potential** – There is a danger that a developing economy becomes locked into industries with low income elasticities of demand such as agriculture. To avoid this problem, the government may act to protect domestic industries with the potential for higher growth in the long term.
- c. **To prevent “dumping” and other unfair trade practices.**
- d. **To prevent the establishment of a foreign-based monopoly** - If all domestic firms in an industry were driven out of business by an overseas firm, then the overseas firm could charge higher prices. To avoid this, the government may restrict imports or subsidise domestic firms.
- e. **To reduce the influence of trade on consumer tastes** – Multinational firms attempt to influence consumer tastes through their advertising. Governments may therefore wish to restrict this “producer power” and hence imports from such firms, particularly if the firms are believed to promote a culturally different or undesirable set of values.
- f. **To spread the risks of fluctuating markets** – Countries that specialise in the production of a single good will be highly exposed to fluctuations in the market for that good. The government may then decide to protect its other industries from overseas competition.

[6]

(ii)

- a. Maintaining self-sufficiency in case trade is denied in the future
- b. Imposing trade sanctions on countries with which it disagrees politically
- c. Maintaining traditional ways of life
- d. Maintaining a diverse society based on a range of industries.

[2]

[8 Marks]

Solution 34 :

(i)

- a. Part of the excess money balances will be spent on foreign assets, thereby increasing the supply of the domestic currency on the foreign exchange market
- b. Domestic interest rates will fall below those on foreign assets, causing a reduction in the demand for domestic assets and hence a reduction in the demand for the domestic currency
- c. Speculators expect the domestic currency to fall, so they sell it and buy foreign currencies.

[3]

(ii)

- a) The equation of exchange gives: $MV = PY$

Or, $V = PY/M = 50 \times 250 / 500 = 25$ [1]

b) Similarly, $P = MV/Y = 750 \times 25 / 250 = 75$ [1]
[5 Marks]

Solution 35 :

Advantages of advertising to society as a whole may include:

- providing information to consumers on availability of over the counter drugs
- breaking down barriers to entry, aiding the introduction of its on shelf drugs to market
- enables firm to emphasize on product features, thereby promoting home medication for minor ailments
- Price reduction by other players as a result of more competition on price
- increased sales leading to economies of scale and hence lower drug prices in future

Disadvantages of advertising to society as a whole may include:

- the opportunity cost; resources can alternatively be used for R&D
- might promote excessive use of the drug
- increased costs and so prices if there are no economies of scale
- unwanted side-effects for society, egof unwanted, unsightly or tasteless adverts.

[4 Marks]

Solution 36 :

The life cycle of a product typically has four stages:

The launch stage

Due to lack of substitutes, and resulting inelastic demand, the firm may charge high prices and make large profits, particularly for a new product that is unlike existing products.

However, in view of possible competition from new entrants, firms may charge a lower price to get as large a market share and as much brand loyalty as possible before new firms enter.

The growth stage

Rapid sales growth is likely to attract new entrants, possibly leading to an oligopolistic market in which firms may compete by offering slightly different products.

Price is maintained at a high level if demand is high, or reduced to capture additional customers

The maturity stage

As more firms enter the market, competition is more intense and any collusion might begin to break down. Price wars might break out and firms may innovate to try and prolong the life of the product.

Price might be reduced in response to the competition while avoiding a price war.

The decline stage

Competition may increase further as firms struggle to retain sales and some firms may be driven from the market. Eventually sales will level out at the replacement level, or else fall to zero if the product becomes obsolete.

Prices may be lowered to liquidate the inventory of discontinued product. Prices may be maintained for continued products serving a niche market.

[4 Marks]**Solution 37 :**

The main features of oligopoly include:

- a few firms share a large proportion of the industry
- there are barriers to the entry of new firms into the industry
- there are often differentiated products
- the oligopolist faces a downward-sloping demand curve
- supernormal profit can be earned in the long run
- firms are interdependent
- oligopolies can be collusive or non-collusive
- price stability is common (as illustrated by the kinked demand curve)
- non-price competition, eg advertising, is common
- the oligopolist produces less output than the socially optimal level of output.

[3 Marks]**Solution 38 :**

- i. If APPSUNG goes high, then SAMPLE should go low. If APPSUNG goes low, then SAMPLE should also go low, ie SAMPLE should always go low, so low is a dominant strategy for SAMPLE. **[1]**
- ii. Maximax for SAMPLE = Low
Maximin for SAMPLE = Low **[1]**
- iii. Maximax for APPSUNG = Low
Maximin for APPsung = Low **[1]**
- iv. A Nash equilibrium is the position resulting from everyone making their optimal decision based on their assumptions of rivals' decisions. Without collusion, neither firm can improve its payoff given the other firm's strategy, so there is no incentive for any firm to change its position.

The Nash equilibrium position is SAMPLE – low, APPSUNG – low.

[2]**[5 Marks]**

Solution 39 :

There are two implications of proposed action

1. Depreciation of currency will make the TrueAsia's exports relatively less expensive for foreigners.
2. Depreciation makes foreign products relatively more expensive for domestic consumers, thus discouraging imports.

This may help to increase the country's exports and decrease imports, and may therefore help to reduce the trade deficit. The proposed actions will help to reduce adverse trade balance over medium term post domestic currency depreciation.

However, the lower value of the TrueAsia's currency will lead to higher import prices, resulting in cost-push inflation.

Due to lower currency value, TrueAsia's products will be cheaper in the world market, leading to increased demand for its products and hence will result in exports. Similarly imported goods will be more expensive, there will be increased demand from TrueAsia's citizens for domestic products. These two factors will lead to demand-pull inflation.

Higher domestic prices will eventually offset the depreciation of the domestic currency.

A continuing devaluation will lead to higher inflation so that the improved trade balance will be temporary. Only an accelerating rate of depreciation would work, but will lead to hyperinflation.

[4 Marks]

Solution 40 :

Fiscal policy is the use of government spending and taxation to influence the level of aggregate demand in the economy.

An expansionary fiscal policy can come either through an increase in government expenditure, financed by increases in taxes and/or increased government borrowing, or by a decrease in taxes.

Government spending is an injection into the circular flow of income and so an increase in government spending would cause income to rise by a multiple of the increase in injections.

The greater the marginal propensity to consume domestically produced goods, the greater the multiplier effect on income.

This initial injection might be sufficient to pump prime the economy by causing an accelerator effect on investment and by increasing confidence and further stimulating consumption and investment.

In response to an expansionary fiscal policy national income and therefore employment will increase in the short run. Higher government expenditure will add directly to aggregate demand.

A reduction in taxation would be less effective in stimulating aggregate demand since only a proportion of the tax cuts would be spent on domestically produced goods.

The potential problems that may undermine the effectiveness of expansionary fiscal policy include:

- the difficulties in predicting the size of the effect on national income because of:
 - a) the unknown size of crowding out effects
 - b) difficulties in estimating the marginal propensity to consume domestically produced goods and hence the multiplier
 - c) difficulties in predicting the accelerator effect
 - d) random shocks to the economy, e.g. an oil price increase
- Time lags — timing difficulties arising because of the time taken:
 - a) to decide that action is required
 - b) to determine the required action
 - c) to implement the changes
 - d) for the changes to work their way through the economy via the multiplier and the accelerator.
- 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 will may lead to balance of payments problems and/or a depreciating currency which can lead to inflation.

[10 Marks]
