Institute of Actuaries of India

Subject CB2-Business Economics

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

Solution 27: **i)** Mark-up pricing also call cost-based pricing is a pricing strategy i.e. determine selling price to the customer. [0.5]

Under this, company would add a fixed margin on the top of the average cost it takes to produce and market one unit of good to determine the price of the good. [0.5]

A limit price (or limit pricing) is a pricing strategy where an existing firm deliberately keeps its prices below the level that would maximise profits in the short-run so as to deter new entrants to the market. [1]

Although the firm's profits may be reduced in the short-run, this strategy may lead to greater long-run profits if new entrants are successfully deterred and completion thereby reduced. [0.5]

This approach relies on the existing firm having lower average costs than potential new entrants, e.g. due to economies of scale, or because the existing firm already employs the most efficient resources. [0.5]

[3]

ii) Launch: The initial phase of early sales and product recognition. [0.5]

Growth: The phase of a rapid growth in sales [0.5]

Maturity: A phase with a slower growth rate as the market matures and becomes saturated [0.5]

Decline: price-war, new versions of products and product is replaced by new superior good and technology [0.5]

[2]
[5 Marks]

Solution 28: **i)** *Price Floor:* Government often introduce minimum prices for agricultural produce in order to protect farmers' incomes. If left to the free market. Prices could be very volatile

as supply is subject to changeable and unpredictable growing/rearing condition. [0.5]

Assuming that the price floor is set above the free market equilibrium price P*, it will have the effect as shown in the Diagram-B.   [0.5]

With a price floor of Pmin, suppliers want to supply quantity Qs, but consumers will only demand quantity Qd. So the quantity traded will be Qd.   [0.5]

There is a surplus of (Qs-Qd). If the government wants to maintain the price floor, it will need to deal with the surplus.   [0.5]

Advantages of price Floor
- The guaranteed price provides farmers with a secure level of income regardless of fluctuations in the free-market price of their produce   [0.5]
- Without this support, farmers would suffer from volatile incomes and might leave the industry for occupations with a more predictable income.   [0.5]
- The public might not wish to see the decline of agricultural sector in a country for fear of being dependent on foreign countries for food and/or because of the consequences for the state of the countryside.   [0.5]
- A surplus could be stored in preparation for possible future shortages.   [0.5]

[Max 1 mark for advantages]

Disadvantages of Price Floor
- The government has to deal with the surplus, It could
  o buy up surplus and store – Expensive
  o Destroy it or sell it on the world market (at lower price than the floor price)
  o Reduce it by giving producers fixed-production quota
  o Reduce it by encouraging consumers to buy more
  o Reduce it by finding alternative uses for the product and hence increasing demand for it.

[1]

- If the government does not buy up the extra supply, some suppliers may be tempted to break the minimum price rule and offer goods for sale at less than the official minimum. [0.5]
- The support given to the farmers might reduce efforts to improve efficiency. [0.5]
- High prices for a particular product might discourage producers from producing alternative goods that they could produce more efficiently or which are in higher demand.   [0.5]
- Total consumption is lower than under the free market equilibrium, resulting in a loss of utility to consumers.   [0.5]

[Max 1 mark for disadvantages]

[4]

ii) *Price Ceiling:* The Diagram-A shows the situation in which a price ceiling is set at a price level below the free market equilibrium price P*.   [0.5]

With a price ceiling of Pmax, suppliers will want to supply Quantity Qs, whereas consumers will demand quantity Qd. The quantity traded will be Qs.   [0.5]

With only this amount available, a shortage of (Qd-Qs) will develop. [0.5]

A price ceiling set below the free market price therefore produces excess demand and shortages. [0.5]

Advantages of Price Ceiling:

* The lower price means that people will be able to afford the good who could not do so under the free market equilibrium. [0.5]
* Such ceilings are common in wartime/pandemic when essentials such as food and clothing would otherwise be very expensive and unaffordable for the poor. [0.5]

[Max 1 mark for advantages]

Disadvantages of Price Ceiling

* The available supply needs to be rationed, This could be done by
  o A formal system of rationing organised by government or agencies.
  o Queuing/waiting list
  o Random ballots
  o Firms adopting their own priorities , e.g. regular customers

[1]
* A shadow market may develop resulting in illegal sale of goods at a price above the price ceiling. [0.5]
* Cost of enforcement. [0.5]
* Total consumption may be lower than under free market equilibrium – with a consequent loss of utility to consumers. [0.5]
* The lower price deters suppliers and encourage them to produce something else instead, thus reducing suppliers further in future. [0.5]

[Max 1 mark for disadvantages]

[4]
[8 Marks]

Solution 29: The *substitution effect* of a price change shows the change in quantity demanded due to the change in relative prices, holding the level of utility (or real income) constant. Consumers substitute the relatively cheaper product for the relatively dearer product. [1]

Example: When the price of strawberries increases, the quantity demanded of strawberries decreases because consumers substitute other relatively cheaper goods, e.g. raspberries, in place of strawberries. [0.5]

The *income effect* of a price change shows the change in the quantity demanded due to the change in real income arising from a price change, holding relative prices constant. If the price of a product rises, the consumer's real income decreases and this affects the quantity demanded. [1]

Example: If a household spends 20% of its income on wheat grains, a decline in the price of wheat grains will increase the household' disposable income which they can spend in purchasing more wheat grains. [0.5]

[3 Marks]

Solution 30: **i)** Bounded rationality is a situation in which the ability to make rational decisions is limited: [0.5]
  i. By lack of information [0.5]
  ii. By lack of time, effort, and perhaps expense, of obtaining the relevant information [0.5]
  iii. By a lack of understanding of complex situations [0.5]

[2]

ii) When in a situation of bounded rationality, individuals often resort to *heuristics,* i.e. the use of strategies that draw on simple lessons from past experience when faced with similar, though not identical, choices. [1]

For example, when considering a new type of product, a consumer might:

- Buy a well-liked brand (brand loyalty) [0.5]
- Stick to "rule of thumb" e.g. Angela buys this and she knows about these things [0.5]
- Engage in "trial and error" i.e. try out a new product and base future behaviour on this experience [0.5]

[Max 1.5 Marks]

Factors affecting the choice of strategy include the consumer's:

- Attitude to risk [0.5]
- Degree of optimism or pessimism [0.5]
- Desire for individuality/self-expression or desire to conform [0.5]

[Max 1.5 Marks]

[4]
[6 Marks]

Solution 31: The level of unemployment when the labour market is at equilibrium and demand for labour is met by supply, this is **equilibrium level of unemployment.** [0.5]

If wages are held above the equilibrium *and* workers who are not willing or able to accept a job at *this higher wage*, there is an excess supply of labour and this is called **disequilibrium unemployment**. [1]

Reasons for equilibrium unemployment
1. Frictional unemployment
2. Structural unemployment
3. Technological unemployment
4. Regional unemployment
5. Seasonal unemployment

[0.5 Marks each, Max 1.5 Marks]

Reasons for disequilibrium unemployment
1. Demand deficient unemployment
2. Real-wage unemployment
3. Growth in labour supply

[0.5 Marks each, Max 1 Mark]

[4 Marks]

Solution 32: **i)** $Y = C + I + G + X - Z$ [1]

$= 0.8 (Y-0.4Y) + 200 + 700 + 500 - 0.1Y$

⇨ $0.62Y = 1400, Y = 2258.06$

ii) Current account balance = Exports – Imports = 500 -225.81 = 274.19   [1]

iii) Surplus/ Deficit = tax revenue – govt spending = 0.4 x 2258.06 – 700 = 203.22
surplus   [1]

iv) Government expenditure changes to 840 Cr, new Y = 2483.87 and new surplus =
153.54   [1]

[4 Marks]

Solution 33: **i)** A (No explanation is required)   [1]

ii) Cost of forgone 'best' alternative is opportunity cost.   [1]

iii) 4 units of Good Y   [1]

iv) Country B will be better off if less than 4Y is traded for 1X and country A will be better
off if more than 2Y is traded for 1X.   [1]
This is because opportunity cost producing Good X in country A is 2 units of Good Y. So
Country A will be willing to trade in Y only if it receives more than 2Y for 1X.   [1]

[2]
[5 Marks]

Solution 34: **i)** Quantitative easing is a kind of monetary policy   [0.5]
where the central bank of a country prints new money and purchases financial assets, [0.5]
usually government bonds, corporate bonds and equity, from the open market   [0.5]
in order to increase money supply in the economy.   [0.5]

[2]

ii) Since the central bank purchases bonds, the supply of bonds in the market decreases.
[1]
This causes bond prices to rise and consequently yields to reduce.   [1]
Corporates may issue more bonds taking advantage of low yields   [0.5]
Speculators may buy bonds anticipating increase in prices, further pushing up prices   [0.5]

[Max 2 marks]

iii)
a) If the major trade partner of this country does not implement similar QE, the exchange
rate of domestic currency versus this partner's currency will depreciate.   [0.5]
This is because the supply of domestic currency increases and interest rates fall

[0.5]
demand for local currency reduces   [0.5]

[1.5]

b) If both countries implement QE, the depreciation/ appreciation would depend on the
extent to which QE is implemented in the other country.   [0.5]
Relative difference in demands for the currencies determines the extent of change in
exchange rates.   [1]

[1.5]

iv) In general, QE increases money supply in the economy.   [0.5]
Lending rates will reduce   [0.5]
Cheaper loans mean more investment spending by companies   [0.5]
This would generate an increase in employment   [0.5]

More disposable income will lead to an increase in consumption spending   [0.5]
The overall effect would be an expansion in economy   [0.5]

[3]

v) QE would result in an increase in asset prices   [0.5]
Money supply increases due to the central bank infusing the money into the economy.
This leads to more demand, pushing up prices and resulting in demand pull inflation
                                                                                   [0.5]
Lockdowns and supply side shortages could lead to cost push inflation as well   [1]
In case candidates mention increased cost of healthcare in due to the pandemic credit
partial   [0.5]

[Max 2 marks]

vi) QE alone cannot help boost the economy.   [0.5]
Since during the pandemic, measures such as lockdowns, travel restrictions, reduced
workforce   [0.5]
in offices or factories due to social distancing norms make it harder for companies to
work to their full potential.   [0.5]
This leads to supply side shortages such as supply chain disruptions and scarce/ reduced
labour.   [0.5]

[Max 2 marks]
[14 Marks]

Solution 35: **i)** The Pareto optimum (or socially efficient) output level is the level of output at which it
is impossible to make anyone better off without making someone else worse-off.   [1]
This occurs where marginal social benefit (MSB) is equal to marginal social cost (MSC).
                                                                                   [0.5]
The MSB is equal to the marginal private benefit plus the marginal external benefit.
                                                                                   [0.5]
The demand curve- which we assume shows consumers' valuation of each extra unit of
output – shows the marginal private benefit of each extra unit consumed.   [0.5]
Assuming diminishing marginal utility, the demand curve slops downwards.   [0.5]
So, assuming that the marginal external benefit is constant, the MSB curve slops
downwards.   [0.5]
The MSC is equal to the marginal private cost plus the marginal external cost.   [0.5]
Assuming the marginal external cost is constant, the MSC curve is J-shaped.   [0.5]
As long as MSB exceeds MSC, social welfare can be increased by increasing output by an
additional unit.   [0.5]
The Pareto optimum output level occurs where the rising MSC curve cuts the falling MSB
curve.   [0.5]

[Max 4 Marks]

ii) Assuming there are no externalities, the Pareto optimal level of output is characterised
by the condition that the private cost is equal to marginal private benefit (or price or
average revenue)   [0.5]

Since, for a monopolist, AR>MR, the profit-maximising level of output for the monopolist
(where MC = MR) occurs where P> MC and therefore is less than the Pareto optimum. [0.5]

However, the monopolist might produce at the socially optimum level of output if:

- It is required by government regulations to abandon profit maximisation and to
  produce at the level where price is equal to marginal cost   [0.5]
- It engages in first degree price discrimination (where P= MR)   [0.5]

[Max 2 Marks]

iii) The characteristics of merit goods are that benefits are not *fully appreciated* by the user and they confer *external benefits.*   [1]

Examples:

Clean water (this improves hygiene and health)

Private parks (they improve the environment and attract tourists)

Museums (they are educational, tend to lead to enriched local culture and attract tourist)

Pensions (they remove the burden from society of financing retirement)

Healthcare (this improves general levels of health across the population and increases productivity)

Education (well-educated tend to contribute more to society)

Insurance for unemployment and sickness (they remove the burden from society of financing standard of life and medical cost)

[0.5 Marks for each example with explanation]

[Max 3 Marks]

iv) Possible ways the government can regulate monopolies and oligopolies
- Controlling the level of output e.g. demanding that socially optimal level of output is produced
- Controlling prices e.g. setting a maximum price such that monopolists would then choose to produce the socially optimal level of output
- Breaking up monopolies
- Preventing mergers that would lead to monopolies
- 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

[0.5 marks for each point]

[Max 3 Marks]

[12 Marks]

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