Institute of Actuaries of India

Subject CT7 – Business Economics

September 2017 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. C
2. D
3. B
4. A
5. D
6. B
7. A
8. B
9. B
10. A
11. A
12. D
13. D
14. A
15. A
16. D
17. A
18. D
19. C
20. B
21. A
22. C
23. C
24. D
25. B
26. C
27. D
28. B
29. D
30. B

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

Solution 31:

i) Perfect competition – a market structure in which there are many firms; where there is freedom of entry to the industry; where all firms produce an identical product; and where all firms are price takers

ii) Monopolistic competition – a market structure where, like perfect competition, there are many firms and freedom of entry into the industry, but where each firm produces a differentiated product and thus has some control over its price

iii) Oligopoly – a market structure where there are few enough firms to enable barriers to be erected against the entry of new firms and each firm will be affected by its rivals' decisions and likewise, its decisions will affect its rivals; firms recognize the importance of this interdependence and it affects their decisions.

iv) Monopoly – a market structure where there is only one firm in the industry.

[4 Marks]

Solution 32:

a) Moral hazard: Moral hazard describes the fact that policyholders may, because they have insurance, act in a way that makes the insured event more likely. This is because the protection afforded by insurance means they have less incentive to take care against loss.

Example: while driving to work one day you realize that you forgot to lock the front door of your house. If you didn't have any household contents insurance, you might decide to go back and lock it. If you had adequate insurance, you might decide to carry on to work. This difference in behavior caused by the fact that you are insured is an example of "moral hazard".

b) Adverse selection: Adverse selection describes the fact that people who know that they are particularly bad risks are more inclined to take out insurance than those who know that they are good risks.

Example: A person is diagnosed as suffering from lung cancer caused by excessive smoking, and therefore tries to take out a life assurance contract without telling the life insurance company about the cancer

[3 Marks]

Solution 33:

i) This is an example of Horizontal Strategic Alliance. [1]

ii) Reasons:

- Entry to New Market: Since Country X is new to Burger King, by entering into strategic alliance with ABC Ltd., Burger King can benefit from expertise and resource of local player
- Risk Sharing: Since this is new market and new business, it will help both the company to share the risk and not gets exposed to the entire risk alone
- Capital pooling: This will help Burger King to raise capital through franchisee fees, which is can use to market its products, finance future growth strategy, advertise, etc.

- Cost efficient: If Burger King were to go all alone, then it may have to do research on location, investment on property, human resource, hire market consultants, etc. By entering into franchise, a lot of these expenditures would be reduced.
- Experience: Since Company ABC Ltd is a local player in Country X, it understands the market and customer needs better than Burger King, hence Burger King can actually benefit from this. Similarly Burger King being a global brand will help Company ABC Ltd. to market its product better. [5]

[6 Marks]

Solution 34:

i) Let P be the maximum insurance premium Mr. X is prepared to pay and Y be the loss he faces. Then Mr. X's utility with insurance is:

$U = \sqrt{10\,\text{lakh} + 100 - P}$

Whereas his expected utility without insurance is:

$E[U(10,00,000 - Y)] = (0.99 * \sqrt{10,00,100}) + (0.01 * \sqrt{100}) = 990.1495$

Equating these two expressions gives:

$(1000100 - P) \wedge (1/2) = 990.1495$

i.e. P = 19,703.97

The maximum premium of £19,703.97 exceeds the expected loss of £10,000. This is because

Mr. X is risk-averse.

[3]

ii) Let Q be the minimum premium required by ABC General Insurance Co Ltd, then its utility without insurance is 1,000,000,000

Whereas it's expected utility with insurance is:

$E[U(100\,\text{crore} + Q - Y)] = 0.99\,X(1,000,000,000) + Q + 0.01\,(999,000,000)$

$= 999,990,000 + Q$

Equating these two expressions gives:

$1,000,000,000 = 999,990,000 + Q$

$Q = 10,000$

So, the minimum premium (Q) required by ABC General Insurance Co. Ltd. is less than the maximum premium (P)

Mr. X is prepared to pay, which means that the insurance contract is feasible.

[3]

[6 Marks]

Solution 35:

i)   Possible reasons could include:
   a) Help the bank in its strategy to grow
   b) Quicker growth than opening new insurance company
   c) Insurance propositions and hence the bank can offer additional products for its existing bank customers
   d) Bank will get additional new customer base from Insurance Company to which it can sell its own banking products like loan, deposits etc. and vice-versa
   e) Benefit from reputation of Trust Life Insurance
   f) May help in economies of scale by avoiding duplication of effort (e.g. IT related, Human Resource, Branches etc.)
   g) Higher valuation of the company thereby benefiting the existing shareholders
   h) May help in gaining larger share in the financial sector of the country
   i) Helps in diversification of existing business, volatility of existing P&L will reduce
   j) Less prone to takeovers from other market players as it would be large entity post-merger
   k) Increased revenue to bank as it can now act as primary distributor of the Insurance Company and hence increase its revenue by way of commission fee
   l) Each company can gain from the expertise of each other

[5]

ii)   Challenges that could be faced:
   a) Human resource: The merged entity could result in over-staffing. Hard decisions related to reducing of staff may need to be taken
   b) The broad visions and strategy of each of the individual entity may not be similar, hence coming to common conclusions may be difficult
   c) Increased Cost: if both decide to merge their IT infra then it may result heavy capital investment in such projects
   d) Existing litigations / court case of any one entity may adversely impact the brand image of the merged entity
   e) Any mis-priced product / loopholes in the business model of any one entity may adversely impact the financial strength / solvency of the merged entity.
   f) The shareholder of one firm may not agree with the swap ratio at which shareholders of both the firm will have control over the combined entity. This may create dissent among the existing shareholders.
   g) Regulatory / government objection to such merger
   h) Increased management focus on merger activity and thereby diverting attention from core business activities

[3]
[8 Marks]

Solution 36:

i) A negative externality in consumption occurs when the marginal social benefit (MSB) of consuming something is less than the marginal private benefit (MB).

[1]

ii) An example would be when people use their cars other people suffer from the exhaust fumes, someone playing their radio loud in a public place can lead to disruption for others, smokers can similarly upset others because of the smoke they generate.

[1]

iii)
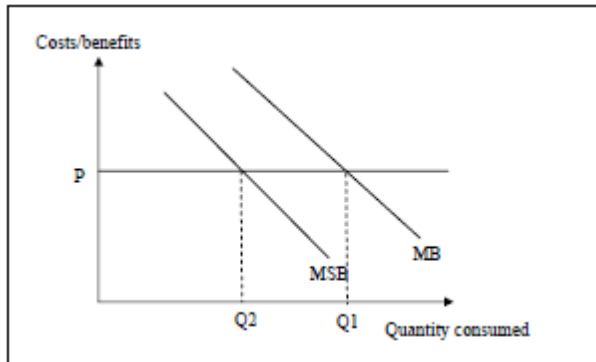
In the diagram the marginal social benefit (MSB) is below the marginal private benefit (MB).

The result is that at a market price P the private consumption will be Q1 while the optimal social consumption level would be Q2. The free market leads to consumption over what is socially desired in the presence of negative consumption externalities.

[3]

[5 Marks]

Solution 37:
i) This year's budget deficit may be financed by bond sales which will increase the size of the general government debt. A higher government debt will then impact upon next year's budget deficit because interest on the debt is part of the government expenditure used to calculate the budget deficit.

[2]

ii) The general government debt of a country is the outstanding stock of government bonds in the market. The higher a country's government debt the higher the stock of bonds available on the market and, other things being equal, the higher the interest rate. Apart from this, governments with a high government debt tend to be distrusted by the financial markets. The markets may attach a higher risk to countries with high government debts for fear that the government may ultimately redeem the debt by printing money which could lead to inflation. This extra inflation risk will tend to be priced into the rate at which the government can borrow

[3]
[5 Marks]

Solution 38:

The Phillips curve shows the relationship between inflation and unemployment. Phillips curves are drawn on a graph with inflation on the vertical axis and unemployment on the horizontal axis.
The two most popular ones are the demand pull explanation and the union explanation.

The demand explanation argues that when aggregate demand in the economy is high unemployment will tend to be low and inflationary pressures high.

The union explanation argues that when unemployment is low unions are strong and therefore wage cost pressures lead to inflationary pressures in the economy.

The long-run Phillips curve (LRPC) is vertical at the natural level of unemployment. The short-run Phillips curve (SRPC) slopes downwards.

It is easiest to see why the LRPC is vertical by ignoring productivity gains. In the long-run wage contracts can be re-negotiated and money illusion is overcome. Thus if the money supply expands at, say, x% p.a. (so long run inflation should also be x% p.a.) wages should also increase at x% p.a. This means that there is no incentive for firms to change the level of output/employment. This is true at any inflation rate.

Hence, in the long-run, there is no trade-off between unemployment and inflation.

The SRPC is drawn for a given level of expected inflation. It slopes downwards because in the short-run money illusion and wage contracts may prevent wages from responding to changes in the rate of growth of the money supply.

[10 Marks]

Solution 39:

  i) $Y = C + I + G + X – M$

$= 0.8\ Y(1 - 0.25) + 80 + 70 + 50 - 0.1Y$

$= 0.5\ Y + 200$

$0.5\ Y = 200$

$Y = 400$ Cr

[1]

  ii)   50 Cr less 0.1 X (400 Cr)

$=$ surplus 10 Cr

[1]

  iii)   Tax revenue $= 0.25X\ (400) = 100$ cr

Government expenditure $= 70$ Cr

Hence budget is in surplus by amount of 30 Cr

[1]

  iv)

National income would rise by 2×30 Cr $= 60$ Cr

Therefore the current account would deteriorate by:

60 million X (0.1) = 6 Cr   [2]

[5 Marks]

Solution 40:

The direct effect of a rise in interest rates is to raise the cost of current government borrowing and so raise the fiscal deficit. In addition, it will raise the cost of financing the national debt to the extent that the debt has been financed by floating rate debt. The indirect effects of a rise in interest payments are also likely to widen the fiscal deficit initially since the interest rate rise will slow down the economy so increasing government expenditure on social security and dampening government tax revenues.

[3 Marks]

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