Institute of Actuaries of India

Subject CT7 – Business Economics

April 2016 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 : 1.5 Mark to each answer

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

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

Solution 31:

Reduction in income tax

- Firms may be able to reduce costs by paying lower wages
- Tax cuts may encourage people to work more in exchange for less leisure time

- The labour supply then increases and firms may find it easier to hire the staff they need.
- However, the labour supply may decrease if people decide that they now need to work fewer hours to earn the money they need.
- People may work more enthusiastically which will increase firms' productivity.
- Higher disposable incomes may lead to higher spending and hence higher demand for firms' goods and services.

Reduction in corporation tax

- A reduction in corporation tax will increase after-tax profits.
- As a result, firms will have more profit to invest in their business.
- The higher after-tax return from an investment will increase the incentive for firms to invest.
- The possibility of higher profits will make it easier for firms to attract new investors.

[4 Marks]

Solution 32:

i)

A minimum reserve ratio is a minimum ratio of cash and liquid reserves to deposits that the central bank requires commercial banks to hold.

Provided that the reserve ratio is greater than the liquidity ratio banks would choose if left to their own devices, then reserve requirements restrict the banks' ability to expand the money supply through lending. In other words, the value of the money multiplier is reduced.

For example, if banks operate on a liquidity ratio of 10% and the government imposes a minimum reserve ratio of 20%, then, assuming the public deposits all cash in the banking system, the money multiplier will decrease from 10 to 5.

[3]

ii)

A change in banks' desired liquidity ratios will cause the value of the money multiplier to change.

Also, the banks might have a higher than desired liquidity ratio if customers do not wish to borrow. Again the central bank's purchase of bonds would not lead to the expected expansion of loans.

An increased minimum reserve requirement will only be effective if the reserve requirement is increased to a level higher than the banks would themselves have chosen on grounds of prudence. Similarly, a reduced ratio will only increase bank lending if the banks had previously been constrained by the reserve requirement.

[2]

[5 Marks]

Solution 33:

If unemployment is reduced below the natural rate, there is risk of inflation occurring.

This is because to reduce the rate of unemployment below the natural rate of unemployment requires an increase in demand and economic growth, which raises the rate of inflation.

However, Monetarists use a slightly different concept called the NAIRU. This is the nonaccelerating inflation rate of unemployment that is the unemployment rate consistent with a constant inflation rate.

At the NAIRU the upward and downward forces on price and wage inflation are in balance, so there is no tendency for inflation to change. It is the lowest unemployment rate which can be sustained without upward pressure on inflation.

Monetarists argue that reducing unemployment below the NAIRU will only cause inflation and the fall in unemployment will be temporary. Therefore, to keep unemployment below this natural rate requires an ever increasing rate of inflation.

[3 marks]

Solution 34:

i) C + I + G + X – Z
110 + 20 + (70 – 20) + 20 – 50 = 150 million

[1]

ii) GDP at market prices + net property income from abroad
150 + 10 = 160 million

[1]

iii) GDP market prices – indirect taxes
150 – 30 = 120 million

[1]

iv) (160m – 30m) / 0.5 million = 130 / 0.5 = 260

[1]

[4 Marks]

Solution 35:

An undervalued currency is helpful for exporters, but its main negative impact in a country is expensive imported products.

China's economy heavily depends on imported raw materials and oil for production. If the Yuan is undervalued, it means that domestic prices of imported products in China are expensive. These high prices of imported inputs increase the cost of production and push domestic prices of final products up in China.

Another negative impact is excess accumulation of foreign financial assets to continue to keep the value of the currency low. If the value of the dollar drops or interest rates on newly issued

U.S. financial assets increase sharply, the value of China's financial investment drops significantly. This fact lowers the flexibility of China in terms of using its monetary tools effectively.

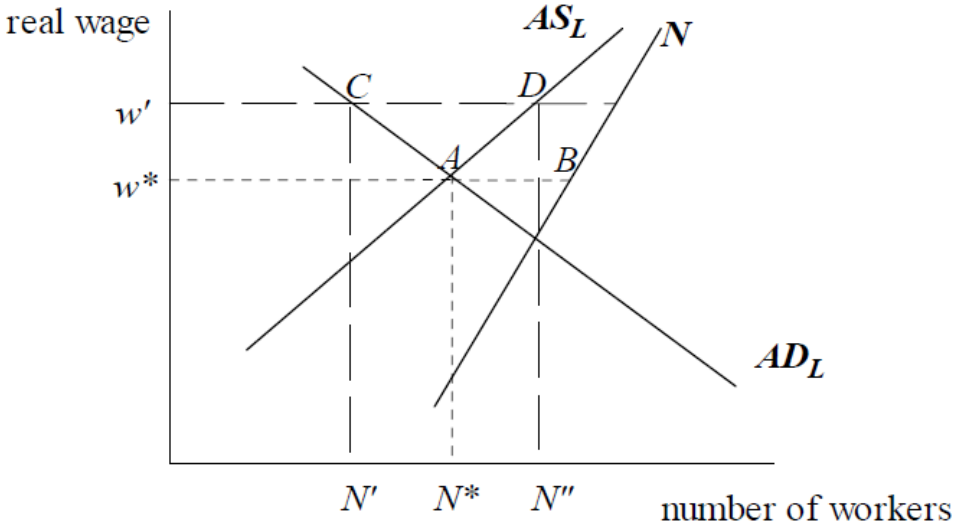
Another issue is imbalances throughout the world, which eventually affects China as well. The US was able to borrow in international markets easily because China was always there to purchase all type of US financial assets to peg the value of the Yuan to the US dollar.

It led to low interest rates in the US for a long period of time, which increased the risk level significantly. This is considered as one of the main reasons for the recent global financial and economic crisis.

[5 Marks]

Solution 36:

i) The labour market can be illustrated using following diagram.



Disequilibrium unemployment occurs when the wage rate is above the equilibrium wage rate. In the diagram above, if the wage rate is fixed at w' , then the actual level of employment is N ' , but N '' are willing to work at that wage rate, so CD is disequilibrium unemployment.

Disequilibrium unemployment CD could be caused by a reduction in the demand for labour (demand-deficient unemployment) and the failure of wages to fall in response to that (real-wage unemployment). It could also be caused by an increase in the labour supply (and the failure of wages to fall), but this is less likely because changes in supply tend to occur gradually over time.

[3]

ii) Policies to reduce disequilibrium unemployment include demand-management policies to ensure there is sufficient aggregate demand in the economy and also supply-side policies to increase the flexibility of the labour market.

Demand-management policies may be used continually to ensure there is sufficient aggregate demand in the economy, so that demand-deficient unemployment does not occur. However, if demand-deficient unemployment does occur, the following policies could be used:

- expansionary fiscal policies, ie increasing government spending and reducing taxation. The government could tailor its spending and taxation policies to tackle frictional and structural unemployment too, eg spending on training schemes, benefits for low-paid workers to increase the opportunity cost of being unemployed.
- expansionary monetary policies, ie increasing the money supply and reducing interest rates to increase consumer spending and investment.
- exchange rate policy, eg devaluing the currency under a fixed exchange rate to increase the demand for exports and reduce the demand for imports.
- direct controls, eg increased use of import controls to encourage spending on domestic goods.

Supply-side policies to increase wage flexibility include:

- reducing the power of trades unions so that they would be less able to resistwage cuts
- removing minimum wage legislation
- reducing the period of time for which wage contracts apply.

[4]

[7 Marks]

Solution 37:

i)

The price elasticity of demand (PED) measures the sensitivity of quantity demanded to a change in price.

It is defined as:

$$PED = \frac{\%\ change\ in\ quantity\ demanded}{\%\ change\ in\ price}$$

It is measured by two methods

1. The original method

$$PED = \frac{\frac{\Delta Q}{\text{Original Q}}}{\frac{\Delta P}{\text{Original P}}}$$

2. The "average" or "midpoint" method

$$PED = \frac{\frac{\Delta Q}{\text{Average Q}}}{\frac{\Delta P}{\text{Average P}}}$$

[2]

ii) Four factors affecting PED are (any four with explanations, or any other suitable suggestions)

(a) **The number and closeness of substitutes**

The more substitutes there are for a good and the closer the substitutes are, the more likely it is that people will switch to an alternative goods as the price of the good rises, hence the greater the PED.

(b) **The proportion of income spent on the good**

The greater the proportion of income that we spend on the good, the more we will change (reduce) our consumption following a price rise. The income effect will be large and demand is more elastic. Salt is a commonly used example as having a low PED. We don't tend to spend very much on salt as a proportion of our overall income. Therefore even a relatively large increase in the price of salt is unlikely to affect our demand for salt by very much. The effect will be larger if the item represents a relatively large proportion of our income.

(c)**The time period since price change**

The greater the time period that has elapsed since the price change, the more elastic demand will be. Demand for a good tends to be inelastic in the short run as there may not be many alternatives.

(d) **Type of good – necessity or luxury**

Necessity goods have a relatively inelastic demand whereas luxurious goods tend to be more elastic. Demand for basic goods is fairly constant regardless of changes in price. People tend to be more price-sensitive to a good which is not essential.

(e) **Whether the good is subject to habitual consumption –**

consumers become less sensitive to the price of the good of they buy something out of habit (it has become the default choice) e.g. cigarettes

[4]

iii)

Assuming that the income of the student studying at university is close to zero, the proportion of income that has to be spent on buying a laptop will be large.

Compared to this, a qualified Actuary (assuming working for at least 3 years) will have more income than the university student. So the proportion of income spent on laptop will be smaller compared to the university student.

Hence the demand for laptop by the university student will be more elastic. [2]

[8 Marks]

Solution 38:

i)

Research and Development. Monopolies can make supernormal profit; this can be used to fund high cost capital investment spending. Successful research can be used for improved products and lower costs in the long term

Economies of scale. Increased output will lead to a decrease in average costs of production. These can be passed on to consumers in the form of lower prices.

Monopoly avoids duplication and hence wastage of resources. It also costs like Advertising and other associated marketing costs. Again these benefits can be passed to the consumers

Cross subsidies: Monopolies may use price discrimination which benefits the economically weaker sections of the society. For example, Indian railways provide discounts to students and senior citizens travelling through its network

Efficiency. Monopolies can afford to invest in latest technology and machinery in order to be efficient and to avoid competition. The benefits from efficiency can be beneficial for consumers

[4]

ii) - Railways

- City bus services e.g BEST in Mumbai
- Electricity generation and distribution in many states

- BSNL (in many states)-landline telephone
- Nuclear power generation
- HAL for production of aircrafts
- Metro rail services in various cities

[1.5]

iii) A perfectly contestable market is a market where there is free and costless entry and exit.

The firm in a perfectly contestable market will keep prices down (so that it is making only normal profits) and produce as efficiently as possible.

[1.5]

[7 Marks]

Solution 39:

i)

A merger occurs when two firms agree to combine their business operations. A takeover (or acquisition) occurs when one firm buys sufficient shares in another firm to take control of that firm.

1. A merger is agreed between the two firms, whereas a takeover can be either friendly, if both parties agree to it, or hostile.

2. A merger doesn't require finance, whereas a takeover requires finance to pay for the shares purchased in the target firm.

3. A merger usually leads to the retention of some part of management from both firms, whereas a takeover may lead to the dismissal of all of the management of the firm acquired

[3]

ii)

1. A horizontal merger involves two firms at the same stage of the same production process in the same industry.

Examples: Bank merging with another bank, Insurance Company merging with another insurance Company, a steel manufacturing company merging with another steel manufacturing company,

2. A vertical merger involves two firms at different stages of the same production process in the same industry.

Examples: Insurance company merging with bank so that it can sell insurance to bank customers, A mobile manufacturing merging with the company that makes mobile software, a film production company merging with a chain of cinema halls, Steel manufacturing company merging with an automobile manufacturing company

3. A conglomerate merger involves two firms in entirely unrelated industries.

A financial conglomerate merging with Software Company, An oil company merging with an insurance company or a bank. [3]

iii)

Regulators may not allow two firms to merge if they believe that the merger will give the merged firm too much power over supply of a good or service by having significantly large market share and it affects the competition.

They may also not allow two firms to merge, if having one large merged firm is too risky for consumers/industry.

Examples. Two large banks may not be allowed to merge, two large insurance companies, two petroleum firms, [2]

[8 Marks]

Solution 40:

i)

Expected value of X's wealth if X decides to go on holiday

=40% x (6400 – 1500) + 20% x (6400-2800) + 20% x (64000-3900) + 20% x (6400 – 4800)

= 3500 [1]

ii)

Expected utility of X if X decides not to go on holiday

= (6400)^(1/2)

=80

Expected utility of X if X decides to go on holiday

= 40% x (6400 – 1500) ^(1/2) + 20% x (6400-2800) ^(1/2) + 20% x (64000-3900) ^(1/2)+ 20% x (6400 – 4800) ^(1/2)

= 58

So expected utility from holiday = 58-80 = -22 [2]

iii) risk averse [1]

[4 Marks]

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