

INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

12th September 2016

Subject CT7 – Business Economics

Time allowed: Three Hours (10.30 to 13.30 Hrs.)

Total Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. *Please read the instructions on the front page of answer booklet and instructions to examinees sent along with hall ticket carefully and follow without exception.*
2. *Mark allocations are shown in brackets.*
3. *Attempt all questions, beginning your answer to each question on a separate sheet. However, answers to objective type questions could be written on the same sheet.*
4. *Please check if you have received complete Question Paper and no page is missing. If so kindly get new set of Question Paper from the Invigilator.*

AT THE END OF THE EXAMINATION

Please return your answer book and this question paper to the supervisor separately.

Q. 1) X's initial wealth is 10,000 and utility function is $U(w) = \sqrt{w}$

There is 50% chance that X will lose 6400. What is the maximum insurance premium that X would pay

- A. 3000
- B. 3200
- C. 3400
- D. 3600

[1.5]

Q. 2) A company has the following cost function:

$$C = 100 + 20q + \frac{q^2}{4}$$

Where C represents the total cost and q is the quantity produced. If the company produces at an output level of 20 units, which of the following is correct?

- A. Average cost is 20 and marginal cost is 30
- B. Average cost is 30 and marginal cost is 30
- C. Average cost is 30 and marginal cost is 20
- D. Average cost is 20 and marginal cost is 20

[1.5]

Q. 3) X is a risk averse individual. Which of the following is NOT true about X?

- I. He will accept a fair gamble.
- II. He will avoid all risk.
- III. The marginal utility of wealth decreases as wealth increases.
- IV. The insurance premium can be greater than the long-run average value of claims

- A. I
- B. I & II
- C. I & III
- D. III & IV

[1.5]

Q. 4) Consider three supply curves, where P is price and Q is the quantity supplied.

- I. $P = 5Q$
- II. $P = Q$
- III. $P = 15Q$

Which of the following statements is TRUE?

- A. Only option II has supply elasticity of 1 at all levels of output
- B. Supply elasticity of option III is 3 times that of option I
- C. None of them ever has a supply elasticity of 1
- D. All three curves have a supply elasticity of 1 at all levels of output

[1.5]

- Q. 5)** Consider the following data which shows demand and supply at various prices for a good.

The quantity supplied is reduced by 20 at each level of price.

Price	Quantity demanded	Quantity supplied
100	70	30
200	60	40
300	50	50
400	40	60
500	30	70
600	20	80

What is the new equilibrium price?

- A. 200
- B. 300
- C. 400
- D. 500

[1.5]

- Q. 6)** Which of the following is NOT an example of demand-side policy to influence aggregate demand?

- A. Cutting taxes
- B. Increasing government spending
- C. Reducing interest rates
- D. Introducing tax incentives for investment

[1.5]

- Q. 7)** X decides to move to the city ABC. He has two options- either work in the city of ABC or take up a course in ABC and increase his prospects of better job after one year.

The costs are as follows:

Description	Annual Costs
Boarding and lodging expenses	1,000
Course fees	5,000
Books and stationary expenses for course	1,000
Miscellaneous expenses	1,000

If X works in ABC, he can earn 10,000. If X decides to take up the course, what is the opportunity cost of a year in college?

- A. 10,000
- B. 12,000
- C. 16,000
- D. 20,000

[1.5]

- Q. 8)** Given that a firm's fixed costs are 2,000, the average total cost of its output is 6 and its average variable cost is 5.50, which one of the following will represent its total output per period?
- A. 3800 units
 - B. 3900 units
 - C. 4000 units
 - D. 4100 units
- [1.5]**
- Q. 9)** Let $Q=2K^{1/2}L^{1/2}$ be the Production function and let $P_K=2$ and $P_L=4$ be the prices of factors K and L.
- Which of the following is true about the cost minimising combination of K and L?
- A. $L=K$
 - B. $2L=K$
 - C. $L=2K$
 - D. None of the above
- [1.5]**
- Q. 10)** Which of the following has the least impact on the degree of competition in a market?
- A. Number of firms in the industry
 - B. Freedom of entry into the industry
 - C. Nature of the product
 - D. Size of the industry
- [1.5]**
- Q. 11)** Which of the following are collectively known as "imperfect competition"?
- A. Monopoly and Monopolistic competition
 - B. Monopoly and Oligopoly
 - C. Monopolistic competition and Oligopoly
 - D. None of the above
- [1.5]**
- Q. 12)** Which of the following does NOT help in collusion?
- A. Small number of firms
 - B. Existence of a dominant firm
 - C. Barriers to entry
 - D. Different production methods
- [1.5]**
- Q. 13)** A superstore sells two types of milk; Pasteurised and non-pasteurised. The pasteurised milk is sold at higher price. What type of strategy is this?
- A. Horizontal differentiation
 - B. Vertical differentiation
 - C. Diversification
 - D. None of the above
- [1.5]**

- Q. 14)** Consider the following: Joint venture, involving a Franchise, Consortium, Outsourcing
- These are types of
- A. Vertical merger
 - B. Horizontal merger
 - C. Strategic alliance
 - D. Vertical integration
- [1.5]**
- Q. 15)** A firm determines the prices for all of its products collectively (rather than individually) so as to maximise total profits. This is an example of
- A. Inter-temporal pricing
 - B. Predatory pricing
 - C. Full range pricing
 - D. Transfer pricing
- [1.5]**
- Q. 16)** In the absence of externalities, which of the following conditions characterises the socially optimal output level?
- A. Marginal revenue = average cost
 - B. Average revenue = average cost
 - C. Marginal revenue = marginal cost
 - D. Average revenue = marginal cost
- [1.5]**
- Q. 17)** Which of the following are not the reason why market forces might fail to generate the required technological progress?
- A. R&D free riders
 - B. Monopolistic and oligopolistic structures
 - C. Diffusion
 - D. Duplication
- [1.5]**
- Q. 18)** All of the following are features of globalisation EXCEPT which ONE?
- A. Rising trade ratios for countries.
 - B. Increased international capital flows.
 - C. Improved terms of trade for all countries.
 - D. Reduced barriers to international factor movements.
- [1.5]**
- Q. 19)** Supply side policy is designed to
- A. Raise the level of aggregate monetary demand in the economy.
 - B. Manage the money supply in the economy.
 - C. Improve the ability of the economy to produce goods and services.
 - D. Reduce unemployment by limiting the supply of labour.
- [1.5]**

- Q. 20)** Assume two countries with the same level of technology and resources do not presently trade. In country X one unit of labour and one unit of capital can produce 5 mobiles or 2 laptops. In country Y one unit of labour and one unit of capital can produce 6 mobiles or 4 laptops. Which of the following statements is FALSE?
- A.** Country Y has an absolute advantage in the production of both goods
 - B.** Country Y has a comparative advantage in the production of mobiles
 - C.** Country X has a comparative advantage in the production of mobiles
 - D.** Country Y has a comparative advantage in the production of laptops
- [1.5]**
- Q. 21)** If the total output of goods and services increases and the price index remains constant nominal Gross Domestic Product (GDP) will:
- A.** Rise and real GDP will fall
 - B.** Stay the same and real GDP will rise
 - C.** Rise and real GDP will rise
 - D.** Fall and real GDP will rise
- [1.5]**
- Q. 22)** Country X will have a comparative advantage over Country Y in producing Good A when Country X:
- A.** Can produce Good A using less labour than Country Y
 - B.** Has a higher opportunity cost of producing Good A than Country Y
 - C.** Has a lower opportunity cost of producing Good A than Country Y
 - D.** Is in a free trade area
- [1.5]**
- Q. 23)** All of the following would tend to raise the exchange rate (appreciate) for a country's currency except one. Which ONE is the EXCEPTION?
- A.** A fall in the volume of imports
 - B.** A rise in foreign investment in the country
 - C.** A fall in domestic interest rates
 - D.** A rise in the country's invisible earnings
- [1.5]**
- Q. 24)** Assuming that the economy is not at full capacity, then an increase in injections or a decrease in withdrawals will NOT:
- A.** Increase national income (or output) and therefore cause economic growth
 - B.** Decrease employment
 - C.** Tend to increase prices and therefore cause inflation (the closer to full capacity, the greater the likelihood)
 - D.** Increase the demand for imports (as incomes grow) and reduce the demand for exports (as domestic inflation makes exports less competitive), so causing a deterioration in the balance of payments.
- [1.5]**
- Q. 25)** Which ONE of the following would lead to a fall in the value of the multiplier?
- A.** A decrease in the marginal propensity to consume.
 - B.** A fall in the level of public expenditure.
 - C.** Consumers saving a lower proportion of their income.
 - D.** A decrease in the marginal propensity to import.
- [1.5]**

- Q. 26)** In the circular flow model of the economy, the level of national income will always reach equilibrium because:
- A. Injections and withdrawals are always equal.
 - B. Withdrawals are a function of the level of income.
 - C. Governments will change taxes and expenditure to ensure equilibrium.
 - D. Expenditure equals income. [1.5]
- Q. 27)** The deadweight welfare loss is defined as
- A. The loss of consumer and producer surplus in perfect Competition
 - B. The loss of consumer and producer surplus under monopoly
 - C. The loss of consumer and producer surplus in imperfect markets when compared with perfect competition.
 - D. None of the above [1.5]
- Q. 28)** Given the following data on Country A's balance of payments:
- | | |
|--|------|
| Exports of goods | +300 |
| Imports of goods | -250 |
| Exports of services | +220 |
| Imports of services | -160 |
| Interest, profits and dividends received | +45 |
| Interest, profits and dividends paid | -20 |
| Unilateral receipts | +40 |
| Unilateral payments | -40 |
- the "invisibles" balance is
- A. 135
 - B. 60
 - C. 25
 - D. 85 [1.5]
- Q. 29)** Which of the following statement is FALSE?
- A. In a free market, firms only consider their private costs and benefits and therefore social efficiency is unlikely to be achieved
 - B. If $\text{Marginal Social Benefit} > \text{Marginal Social Cost}$, then total welfare will increase by producing more of the product
 - C. The free market usually fails to achieve social efficiency
 - D. Social efficiency is achieved when $\text{Marginal Social Benefit} > \text{Marginal Social Cost}$ [1.5]
- Q. 30)** All of the following government policies would tend to raise national income over time EXCEPT which ONE?
- A. Increased expenditure on the economic infrastructure.
 - B. Tax cuts to encourage higher demand from consumers.
 - C. Policies to encourage the training of labour.
 - D. Financial incentives to encourage personal and corporate saving. [1.5]

- Q. 31)** Consider the following game in which each firm has two possible strategy options and the payoffs are as follows

		Firm B	
		High	Low
Firm A	High	(12, 8)	(4, 12)
	Low	(16, 0)	(8, 4)

- i) Define Nash equilibrium (1)
- ii) Find the Nash equilibrium in the above game (2)
- iii) Show the above game using a decision tree diagram, assuming A moves first (1)
- iv) Does any firm have first mover advantage? Why or why not? (1)
- [5]**
- Q. 32)** i) Describe expected utility theorem and give formula for calculating expected utility. Define all terms (2)
- ii) Using suitable utility function and an example, show that maximising expected wealth is not same as maximising expected utility (3)
- iii) Draw the utility curves for a risk averse, risk neutral and risk loving individuals. Clearly define the utility function for each of them. (3)
- [8]**
- Q. 33)** i) State four key assumptions under perfect competition (2)
- Consider the quantity demanded and supplied in a perfectly competitive industry in which there are 25 firms
 $QD = 1625 - 50P$
 $QS = 25 + 30P$
- ii) Calculate market equilibrium price and quantity and the output each firm produces (2)
- Assume that total cost function of each firm in the industry is
 $TC = 5 + 10Q + 0.2Q^2$
- iii) Are each of the firms producing at profit maximising level of output? (2)
- iv) Is each firm in the industry in long run equilibrium position? (2)
- [8]**
- Q. 34)** i) Describe the ratio which indicates the advertising intensity? What does it depend upon and what is its key limitation? (2)
- ii) Describe three advantages and three disadvantages of advertising. (3)
- iii) Describe using a suitable diagram the intended effects of advertising (2)
- [7]**

- Q. 35)** Describe three possible market-orientated supply-side policies? [3]
- Q. 36)** What are the cures for disequilibrium unemployment? [5]
- Q. 37)** Define the short-run aggregate supply curve and explain why it slopes upwards. [4]
- Q. 38)** Assume Public hold cash equivalent to 60% of their money and bank's reserve ratio is 0.2.
- i)** Calculate the value of the monetary base when the broad money supply is INR 100 billion. (1)
 - ii)** Calculate the value of the broad money supply if the monetary base were INR 70 million and the banks were to increase their reserve ratio from 0.2 to 0.3 while the proportion of deposits held by the public as cash fell to 40%. (1)
 - iii)** Outline three main ways in which the central bank may control the moneysupply. (3)
- [5]
- Q. 39)** Assuming both India and US are allowed to float freely, discuss the factors that determine the exchange rate for Indian Rupees against the US dollar in the short term and in the long term. [10]
