

Actuarial Society of India

EXAMINATIONS

14th May 2007

Subject CT7 – Economics

Time allowed: Three Hours (14.30 – 17.30 Hrs)

INSTRUCTIONS TO THE CANDIDATES

- 1) *Do not write your name anywhere on the answer sheets. You have only to write your Candidate's Number on each answer sheets.*
- 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) *Fasten your answer sheets together in numerical order of questions. This, you may complete immediately after expiry of the examination time.*
- 5) *In addition to this paper you should have available graph paper, Actuarial Tables and an electronic calculator.*

Professional Conduct:

“It is brought to your notice that in accordance with provisions contained in the Professional Conduct Standards, If any candidate is found copying or involved in any other form of malpractice, during or in connection with the examination, Disciplinary action will be taken against the candidate which may include expulsion or suspension from the membership of ASI.”

Candidates are advised that a reasonable standard of handwriting legibility is expected by the examiners and that candidates may be penalized if undue effort is required by the examiners to interpret scripts.

AT THE END OF THE EXAMINATION

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

Q.1)	GDP and GNP are the same in a country	
	<ul style="list-style-type: none"> A. that does not trade in merchandise with foreigners B. that does not trade in factor services with the rest of the world C. that does not borrow from or lends to foreigners D. that does not trade in assets with foreigners 	
		[1.5]
Q. 2)	Consider two sets of ex-post data for two economies, economy 1 and economy 2, in a given year. They are exactly the same except for the fact that in economy 1 transfer payments by government are larger. Which of the following alternatives is correct?	
	<ul style="list-style-type: none"> A. National income is larger in economy 1 as compared to economy 2. B. GDP is larger in economy 1 as compared to economy 2. C. Personal income is larger in economy 1 as compared to economy 2. D. National income in economy 1 is larger as compared to economy 2., but GDP is the same in the two economies. 	
		[1.5]
Q. 3)	Household (Personal) saving is equal to	
	<ul style="list-style-type: none"> A. Personal Disposable income less taxes and consumption expenditure B. Personal Disposable income less imports, taxes and consumption expenditure C. Personal Disposable income less imports and consumption expenditure D. Personal Disposable income less consumption expenditure 	
		[1.5]
Q. 4)	Suppose that in a simple Keynesian model for a closed economy without government, consumption function is given by $C = 100 + .8Y$ and investment demand is exogenously given at 50. At $Y = 500$	
	<ul style="list-style-type: none"> A. the goods market is in equilibrium B. there is excess demand of 250 units C. sellers' inventory falls involuntarily by 50 units D. none of the above. 	
		[1.5]
Q. 5)	Good B has a cross elasticity of demand of 2 with respect to price of Good A . 100 units of Good B are demanded when Good A costs Rs 100. A rise in price of Good A to Rs 150 will lead to a change in the demand for Good B to	
	<ul style="list-style-type: none"> A. 100 units B. 150 units C. 200 units D. 250 units 	
		[1.5]

Q. 6)	In a two commodity world, a consumer is found to be indifferent only among three commodity bundles, (5, 7), (9, 5) and (7, 6). This implies that:	
	A. MRS (marginal rate of substitution) is increasing. B. MRS is falling. C. MRS is constant. D. All of the above are possible.	[1.5]
Q. 7)	Which of the following will lead to the closure of a profit maximizing firm in the short run	
	I total revenue is less than total variable cost II total cost is greater than total revenue III fixed costs are greater than total revenue	
	A. I and II B. II and III C. I only D. III only	[1.5]
Q. 8)	A consumer's utility function is given by $U = x_1^2 + 2x_1x_2 + x_2^2$. Which of the following alternatives is correct?	
	A. x_1 and x_2 are not perfect substitutes. B. x_1 and x_2 are perfect complements. C. x_1 and x_2 are perfect substitutes. D. MRS of x_1 for x_2 is increasing.	[1.5]
Q. 9)	Consider a simple Keynesian model for an open economy. Suppose that a ban is imposed on imports. Following this, GDP	
	A. will decline B. will increase C. will remain unchanged D. nothing can be predicted without knowing the nature of the import function.	[1.5]
Q. 10)	If demand for money is not sensitive to interest rate, it implies that the LM curve	
	A. is horizontal B. is vertical C. is downward sloping D. retains its usual shape	[1.5]
Q. 11)	Consider a risk averse individual's utility as a function of wealth. For each unit increase in wealth, the additional utility derived by the individual	
	A. declines as the level of wealth increases B. increases as the level of wealth increases C. is independent of the level of wealth. D. Two of the above three options are possible.	[1.5]

Q. 12)	The kinked demand curve is used to rationalize																	
	A. price rigidity B. price competition C. price leadership D. collusion	[1.5]																
Q. 13)	An increase in CRR (cash reserve ratio)																	
	A. squeezes credit supply and keeps money supply unchanged B. squeezes money supply and keeps credit supply unchanged C. squeezes credit supply and may keep money supply unchanged D. squeezes credit supply by the commercial banks and also money supply	[1.5]																
Q. 14)	In a simple IS-LM model, an exogenous increase in government expenditure																	
	A. may reduce investment B. will necessarily reduce investment C. will reduce consumption D. may reduce consumption	[1.5]																
Q. 15)	Which of the following is not an indirect tax																	
	A. Tax paid on rent received B. Tax on purchase of property C. Sales Tax D. Duty on alcohol	[1.5]																
Q. 16)	If the marginal rate of income tax is above the average rate, then																	
	A. Income Tax can be described as progressive B. Income Tax can be described as regressive C. The average rate of tax is falling D. None of the above	[1.5]																
Q. 17)	Consider the following information about total cost (TC) at different levels of output (Q) for a monopolist firm, given in Table 1																	
	<p style="text-align: center;">Table 1</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Q</th> <th>TC</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>12</td> </tr> <tr> <td>1</td> <td>20</td> </tr> <tr> <td>2</td> <td>26</td> </tr> <tr> <td>3</td> <td>30</td> </tr> <tr> <td>4</td> <td>34</td> </tr> <tr> <td>5</td> <td>40</td> </tr> <tr> <td>6</td> <td>48</td> </tr> </tbody> </table>	Q	TC	0	12	1	20	2	26	3	30	4	34	5	40	6	48	
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0	12																	
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	The total fixed cost for the monopolist is																	

	<p>A. 20 B. 8 C. cannot be determined from the given information D. 12</p>	[1.5]
Q. 18)	Cost function of a firm is given by $C = 3Q + Q^2 + 10$. Which of the following alternatives is correct?	
	<p>A. $Q = 4$ can be produced at the cost 40 B. $Q = 5$ can be produced at the cost 45 C. $Q = 3$ can be produced at the cost 27 D. None of the above</p>	
		[1.5]
Q. 19)	Average cost function of a firm is given by $AC = \frac{9}{Q} + Q + 3$. Which of the following alternatives is correct?	
	<p>A. Marginal cost at $Q = 4$ lies between 2 and 9. B. Marginal cost at $Q = 2$ is 10 C. Marginal cost at $Q = 3$ is 9 D. All of the above</p>	
		[1.5]
Q. 20)	In a perfectly competitive market, price is found to be 11. Cost function of a representative firm is given by $C = Q^2 + 3Q + 9$. Output produced by the representative firm in equilibrium is given by	
	<p>A. 4 B. 4.5 C. 6 D. 10</p>	
		[1.5]
Q. 21)	As we move along an indifference curve in an upward direction, the marginal rate of substitution of y for x (assume that X is measured along the horizontal axis and Y along the vertical axis)	
	<p>A. rises B. falls C. remains constant D. All of the above are possible</p>	
		[1.5]
Q. 22)	Suppose that the average cost is found to be an increasing function of output over a certain range of output, then over that range of output	
	<p>A. marginal cost is greater than the average cost B. marginal cost is less than the average cost</p>	

	C. marginal cost is equal to the average cost D. both A and C are possible	
		[1.5]
Q. 23)	Price elasticity of demand for a particular good is found to be greater than unity. This implies that	
	A. A decline in the price means that the buyers will spend more on X B. An increase in the price means that the buyers will spend more on X. C. An increase in the price means no change in the buyers' expenditure on X D. A decline in the price may lead to no change in the buyers' expenditure on X	
		[1.5]
Q. 24)	In a stable simple Keynesian model, at a level of Y which is greater than the equilibrium level of Y	
	A. unplanned addition to stock is positive B. unplanned addition to stock is negative C. planned addition to stock is necessarily positive D. whether A, B or C hold depends upon the value of the marginal propensity to spend	
		[1.5]
Q. 25)	An exogenous decrease in supply of money in a simple IS-LM model leads to	
	A. an increase in Y B. a fall in investment C. a rise in investment D. a fall in Y and a rise in investment	
		[1.5]
Q. 26)	Suppose that in a Simple Keynesian Model the income tax is lump sum. An increase in the lump sum tax by 5 units, when marginal propensity to consume out of disposable income is .5	
	A. will raise aggregate output B. will lower consumption demand at the initial equilibrium level of output by 5 units C. will lower equilibrium output by 5 units D. will lower consumption demand by more than 5 units	
		[1.5]
Q. 27)	Consider the following equations characterizing the goods market in an IS-LM model for a closed economy without government : $C = 500 + .8Y$ and $I = 2000 - 5r$	
	(i) Derive the equation of the IS curve.	(2)
	(ii) Draw the curve, indicate and specify the value of its slope. Also explain the meaning of the slope.	(3)
	(iii) It is given that this IS-LM model is in equilibrium at $r = 1, Y = 12,475$. It is also found that at $r = 2, Y = 12,500$ there is equilibrium in the money market. Derive the equation of the LM curve.	(4)
		[9]

Q. 28)	Suppose that the utility function of a consumer is given by $U = 0.5\log X + 0.5\log Y$, where X and Y denote the quantities of the two commodities consumed by the consumer. Her budget constraint is given by $100 = X + Y$.	
	(i) Write down the equation of an indifference curve. What is its slope? Draw it in a diagram. (ii) What is the marginal rate of substitution of X for Y at the point $(X = 1, Y = 2)$. Explain its meaning. (iii) Draw the budget line (in a graph). What is its slope? What is the meaning of its slope? (iv) Which (X, Y) does the consumer choose? What condition is satisfied at the chosen point? Consider the point $(X = 40, Y = 60)$ on the budget line. Is it the optimum point? If not, then explain why her utility increases if she substitutes one commodity for another along the budget line.	(3) (3) (3) (4)
		[13]
Q. 29)	Suppose that the demand function in a market is given by $Q = 100 - 2P$ (where Q is quantity demanded and P is price) and you are the only seller in this market. (i) Derive your total revenue and average revenue as functions of output, (ii) What output will you produce and what price will you charge, if average cost of production is constant and equal to 10? (iii) By how much will you change your supply, if the autonomous component of your demand schedule rises by 10? Explain.	(2) (3) (4)
		[9]
Q. 30)	Suppose the slopes of the inverse market demand and supply curves are $\frac{dp}{dq}(\text{demand}) = -\frac{3}{4}$ and $\frac{dp}{dq}(\text{supply}) = \frac{1}{2}$ respectively. Following a shift of the supply curve the equilibrium output in the market is found to increase by 40 units. What is the associated change in the price level?	[4]
Q. 31)	The world consists of two countries A and B and the only factor of production is labour. In Country A it takes 40 hours of labour to produce one unit of Good X and 10 hours of labour to produce one unit of Good Y. In Country B it takes 60 hours of labour to produce one unit of Good X and 30 hours of labour to produce one unit of Good Y. Suppose that each country has a total of 4800 hours of labour available each day. In the absence of trade, Country A uses 3200 hours of labour to produce Good X and 1600 hours of labour to produce Good Y. In the absence of trade, Country B uses 2400 hours of labour to produce Good X and 2400 hours of labour to produce Good Y.	
	a. Which country has an absolute advantage in the production of : (i) Good X; (ii) Good Y? b. Which country has a comparative advantage in the production of: (i) Good X; (ii) Good Y? c. In the absence of trade, calculate the output per day of two commodities X and Y in Country and in Country B. d. Suppose that the two countries decide to trade with each other. Assume that Country B sells 20 units of Good X in exchange for 60 units of Good Y. Assume that Country A desires the same units of consumption of Good Y (as it did in the absence of trade) but increased units of consumption of Good X after the trade. Country B desires the same units	(2) (2) (2) (2)

	of consumption of Good X (as it did in the absence of trade) but increased units of consumption of Good Y after the trade. Calculate the units of Goods X and Y available for consumption in Country A and in Country B after the trade. Have trade and specialization made both countries better off?	(3)
	e. In what range does the exchange rate between Good X and good Y lie such that it is beneficial to both countries A and B?	(2)
		[11]
Q. 32)	Two firms can either reduce their prices or keep them at the present level. If firm A cuts price, it will earn Rs. 10 crores in profit if firm B also cuts prices, and Rs. 100 crores in profit if firm B does not change prices. If firm A makes no price changes, it will incur a loss of Rs. 20 crores if firm B reduces prices, and will earn a profit of Rs. 140 crores if firm B makes no price change. If firm B cuts prices, it will earn Rs. 10 crores in profit if firm A also cuts prices, and Rs. 30 crores in profit if firm A does not change prices. If firm B makes no price changes, it will incur a loss of Rs. 30 crores if firm A reduces prices, and will earn a profit of Rs. 25 crores if firm A makes no price change	
	a. Develop the payoff matrix for this game.	(2)
	b. Does either firm have a dominant strategy? Explain	(3)
	c. Does the game have a Nash equilibrium?	(1)
		[6]
Q. 33)		
(a)	What is the difference between cost-push inflation and demand-pull inflation?	(3)
(b)	Identify and explain which of the following economic events will results in cost-push inflation and which will result in demand-pull inflation.	
(i)	An increase in government spending, ceteris paribus;	
(ii)	An increase in corporate profit margins, ceteris paribus;	
(iii)	An increase in nominal wages, ceteris paribus;	
(iv)	A decrease in the price of raw material, ceteris paribus;	
(v)	An increase in the income tax rate, ceteris paribus;	(6)
(vi)	An increase in governments transfer payments, ceteris paribus.	[9]
