INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

21st October 2009

Subject CT7 - Economics

Time allowed: Three Hours (10.00 to 13.00 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)   *In addition to this paper you will be provided with graph paper, if required.*

AT THE END OF THE EXAMINATION

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

Q. 1)   In an economy where only two goods are produced then efficiency has been achieved when:

     A. The quantity of both goods produced is equal
     B. It is possible to produce more of only one good
     C. It is possible to produce more of one good only by sacrificing some production of the other good
     D. It is possible to produce more of both goods   **[1.5]**

Q. 2)   Which of the following would NOT lead to a decrease in demand for residential house property:

     A. Consumer incomes falling
     B. Rising home loan interest rates
     C. Withdrawal of tax incentives/exemptions on home loan interest and capital payments
     D. Builders increasing the sale price due to rising cement prices   **[1.5]**

Q. 3)   There are two goods, X and Y. The price of good X changes from 4 to 5, the price of good Y from 10 to 11, the quantity demanded of Good X from 5 to 6 and the quantity demanded of good Y from 3 to 4. What is the cross price elasticity of demand for good X with respect to the price of good Y?

     A. 5
     B. 2
     C. 3.33
     D. -2   **[1.5]**

Q. 4)   Which one of the following is TRUE when economies of scale are present?

     A. The short run average cost declines
     B. If inputs are doubled then output less than doubles
     C. An increase in the variable factor of production holding the fixed factor of production constant leads to a decrease in output
     D. The long run average cost curve declines   **[1.5]**

Q. 5)   Which of the following reveals constant returns to scale?

     A. When more labour is added to a given amount of capital, the marginal product of labour remains unchanged
     B. When the ratio of labour to capital doubles, the output of the firm also doubles
     C. When the input of both capital and labour doubles, output remains constant
     D. When the input of capital and labour doubles, output doubles   **[1.5]**

Q. 6) A firm with fixed costs of Rs.100 per week and a constant average variable cost of Rs.3 per unit of output has the following information about its weekly sales:

Sales Total Revenue Rs

Sales	Total Revenue (Rs.)
10	100
20	180
30	240
40	280
50	300
60	300
70	280

Which level of output gives the highest profit?
- **A.** 30 units
- **B.** 40 units
- **C.** 50 units
- **D.** 70 units   **[1.5]**

Q. 7) If Ram says nothing comes close to a Pepsi, his demand for Pepsi is likely to be

- **A.** Relatively income elastic
- **B.** Relatively price inelastic
- **C.** Unit elastic
- **D.** Infinitely elastic   **[1.5]**

Q. 8) A successful advertising campaign would most likely:

- **A.** Increase price elasticity of demand by stressing the uniqueness of the product
- **B.** Reduce price elasticity of demand by stressing the uniqueness of the product
- **C.** Reduce price elasticity of demand by informing consumers of the availability of substitutes
- **D.** Generally make the demand curve shift inward   **[1.5]**

Q. 9)   The diagram below represents the market for groundnut. Answer the following questions using the data provided

(Price per kg)

(Quintals of ground nut per annum)
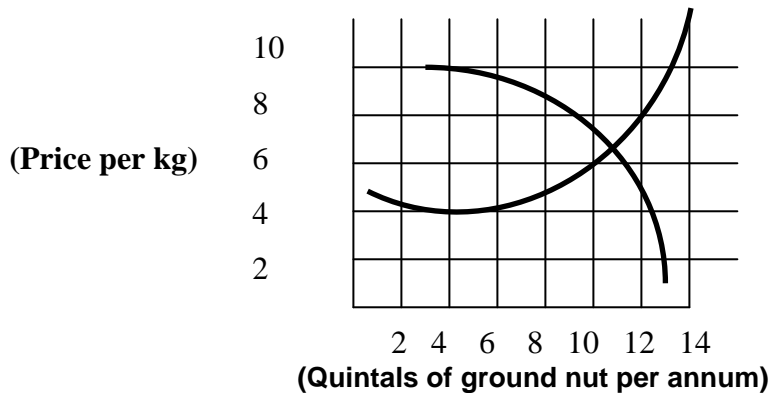
If a price ceiling of Rs 8 is imposed, we would expect that following quintals of ground nut are sold

   A. 9
   B. 12
   C. 11
   D. 8   **[1.5]**

Q. 10)   If a person overweighs small probabilities and underweighs large probabilities, and he has a linear value function, which statements are correct?

   A. He would prefer a gamble with large probability to win than its Expected Value
   B. He would prefer a gamble with small probability to win than its Expected Value
   C. His preference can violate the transitivity axiom
   D. His preference cannot violate the independence axiom   **[1.5]**

Q. 11)   The study of game theory is not as applicable to firms that are perfect competitors because:
   A. They cannot afford to hire strategists
   B. The firms in perfect competition are too interdependent
   C. Perfect competitors can sell all that they produce at the market price
   D. They have to be concerned that the strategy that they would opt for would generate a reaction by their competitors   **[1.5]**

Q. 12)   When a perfectly competitive industry is in long term equilibrium
   A. All firms in the industry will be operating at their lowest possible costs
   B. No firms will be earning profits, only a normal return on their investments
   C. Consumers will be obtaining the product at a price equal to the marginal costs of producing it
   D. All of the above AND no firms will be able to exercise power over buyers or other sellers in the industry   **[1.5]**

Q. 13) If the marginal cost of product is positive and falling
    A. Total cost is falling
    B. Total cost is increasing at an increasing rate
    C. Total cost is increasing at a falling rate
    D. Total cost is falling at a falling rate   **[1.5]**

Q. 14) When a company is making only normal profits, its shareholders are
    A. Making losses in the short term, but should continue in the long term
    B. Making an income equal to opportunity cost of their resources
    C. Making losses and should exit the business
    D. Making profits which they would have made in any other market in any other business   **[1.5]**

Q. 15) The term "Recession" strictly means a period when:

    A. the real GDP growth is negative for one or more consecutive quarters
    B. the nominal GDP growth is negative for one or more consecutive quarters
    C. the real GDP growth is negative for two or more consecutive quarters
    D. the nominal GDP growth is negative for two or more consecutive quarters   **[1.5]**

Q. 16) When the Reserve Bank of India lowers the reserve requirement

    A. Investors will purchase "open market" bonds.
    B. Banks must hold less money.
    C. People will deposit more money.
    D. Banks will create more money.   **[1.5]**

Q. 17) The accelerator effect refers to the effects of
    A. interest rate on investment
    B. changes in economy activity (i.e. output) on investment
    C. the money supply on inflation
    D. wages on inflation (i.e. cost-push inflation)   **[1.5]**

Q. 18) Which of the following components of government spending can be categorized as a consumption expenditure (CE) and which can be categorized as an investment expenditure (IE) respectively?

    A. CE: spending on food for the underprivileged; IE: salaries of the soldiers in the UN peace keeping forces
    B. CE: paying gardeners to maintain the Rashtrapati Bhavan grounds; IE: construction of a library
    C. CE: construction of new conference halls; IE: research and development expenditure
    D. CE: MPs' fringe benefits; IE: purchase of consumables for defense   **[1.5]**

Q. 19) If inflationary expectations _____, the results will be a(n) _____ in the rate of inflation even though the unemployment rate _____ have changed

    A. increase; decrease; may not
    B. increase; decrease; may
    C. decrease; increase; may not
    D. decrease; decrease; may not   **[1.5]**

Q. 20) One possible explanation for involuntary unemployment is:

    A. the wage rate does not adjust immediately to changes in the labor demand
    B. the labor market is perfectly competitive
    C. the firms, knowing the supply and demand curve for labor, implement the equilibrium wage, which happens to be so low that many people prefer to stay at home.
    D. maximum wages which are implemented   **[1.5]**

Q. 21) If there were no time lag between the input and output price changes, the _____ aggregate supply curve would be almost entirely _____

    A. long-run, horizontal
    B. long-run, negatively sloped
    C. short-run, vertical
    D. short-run, horizontal   **[1.5]**

Q. 22) Unanticipated inflation:
    A. Increases the opportunity cost of holding money and redistributes wealth from fixed rate borrowers to lenders.
    B. Increases the opportunity cost of holding money and redistributes wealth from fixed rate lenders to borrowers
    C. Reduces the opportunity cost of holding money and redistributes wealth from fixed rate borrowers to lenders
    D. Reduces the opportunity cost of holding money and redistributes wealth from fixed rate lenders to borrowers.   **[1.5]**

Q. 23) If, in a closed economy, national income increase from 25,000 to 35,000 while consumption expenditure increase from 20,000 to 22,500, then the marginal propensity to consume out of national income is:

    A. 0.25 and the multiplier is 1.33
    B. 0.25 and the multiplier is 4
    C. 0.75 and the multiplier is 4
    D. 0.75 and the multiplier is 1.33   **[1.5]**

Q. 24) Which of the following will not constituent investment in economic sense:

       I)   The building of a new factory
       II)   The purchase of share from Bombay stock Exchange
       III) Depositing money in a NBFC
       IV) Depositing money in State Bank of India

    A. II and III
    B. I and IV
    C. II and III
    D. II, III and IV   **[1.5]**

Q. 25) Which one of the following is NOT a cause of cost push inflation:

    A. an increase in the price of raw materials
    B. an increase in wages above increases in labour productivity
    C. an increase in profit margins applied by firms
    D. an increase in consumer and business confidence   **[1.5]**

Q. 26) The need to employee workers/employee with certain skills may decline even if the industry as a whole is not in decline. This form of unemployment is called:

    A. Structural
    B. Demand –deficient
    C. Regional
    D. Technological   **[1.5]**

Q. 27) Assume that the world economy consist of two countries, Switzerland and India. The countries produce cotton and wine. Labour is the only factor of production. Per hour of labour, the countries produce the following quantities:

	Switzerland	India
Cotton (bales)	3	2
Wine (litres)	9	4

If free trade would be introduced, world trade would be composed as follows:
    A. Switzerland will not trade, as it is more efficient in both products; this makes all trade impossible.
    B. Switzerland will export cotton, India will export wine
    C. Switzerland will export wine, India will export cotton
    D. India would not trade with Switzerland till Swiss Banks agree to provide Indian govt. with confidential details of Indian account holders of Swiss Banks   **[1.5]**

Q. 28) Given previous question, suppose that Switzerland has 18 hours of labour, and India has 30. Before free trade was introduced, both countries used half their labour force for each of the two products. What are the changes in world production of the two products?

    A. Total production of cotton will increase by 3 bales and wine production will increase by 21 litres.

    B. That depends on the quantities demanded. These quantities are not given, so the question cannot be answered.

    C. Total production of cotton will increase by 9 bales and wine production by 3 litres.

    D. Total production of cotton will increase by 9 bales and wine production will decrease by 3 litres. **[1.5]**

Q. 29) Minimum wage regulations

    a) Explain the effect of minimum wage regulations on labour supply and demand. Show an appropriate diagram to explain the effects clearly. (6)

    b) Teenage unemployment is generally higher than unemployment of people aged 20 and over. Explain why economists would attribute at least part of this difference to minimum-wage laws. (2)

    [8]

Q. 30) Utility theory

    a) List, and explain briefly, four axioms from which the expected utility theorem may be derived. (4)

    b) Explain how to overcome the problem of expressing an investor's behavior over all levels of wealth with a single utility function? (2)

    [6]

Q. 31) **a)** With constant power shifts and political vendetta between the two regional parties of a large northern Indian state, a sensitive citizen saddened by the prospect of another five years of recently elected government's rule has arrived in Delhi. More specifically, he has decided to drink and eat his worries away at a Connuaght Place eatery. His utility is defined by the following utility function:

U (B, P) = 10 LN (B) + 2 LN (P); Where B = pints of Beer and P = bowls of peanuts

Surveying the remainder of his money, he realizes that his income for the next week is INR 1000. According to the prices on the menu, a pint of Beer costs Rs 40 and a bowl of peanuts costs Rs 50. What mixture of pints of beer and bowls of peanuts will maximize his utility over the next week (assume he can buy fractions of both pints of beer and bowls of peanuts)? Illustrate his utility maximizing consumption decision in a diagram. (4)

b) It is reported that the beer plant has shut down due to the owner's excessive losses in his favorite passion F1 racing resulting in a decrease in supply of beer and a resulting increase in price. Now each pint that he buys costs him 120 instead of 40. Also his utility has changed to

$$U(B, P) = 5 \, LN(B) + 2 \, LN(P);$$

Calculate his new utility maximizing consumption decision assuming that the price of peanuts and his income has not changed.   (2)

[6]

Q. 32) **a)** Describe the differences between direct and indirect taxes and provide examples of both.   (2)

b) Describe the differences between progressive and regressive systems of taxation and provide examples of both.   (2)

[4]

Q. 33) You are given the following data on an economy:

	INR Millions
Investment expenditure	250
Government expenditure on goods and services	800
Exports	600

Notes:

- All tax revenues are derived from a uniform rate of income tax of 30% of income.

- Consumption expenditure is given by:

  $C = 0.75 \, Yd;$
  Where: Yd is disposable national income (i.e. income less taxes)
  C is consumption expenditure

- Import expenditure is given by:
  $Z = 0.15 \, Y$
  Where: Y is national income
  Z is import expenditure

  a) Calculate the equilibrium value of national income.
  b) Calculate the current account balance at the equilibrium value of national   (1)
  income.   (1)
  c) Calculate the fiscal surplus (+) or deficit (-) at the equilibrium value of
  national income.   (1)
  d) Calculate the effect of a rise in government expenditure of INR 160 million
  on the current account.   (1)

[4]

Q. 34) List the ways by which the government can pay for its expenditure. Also list separately the ways by which the government can finance its fiscal deficit. Explain why the two lists are not entirely the same.

[5]

Q. 35) **a)** List four ways in which government can improve its balance of payments deficit. (2)

b) Specify the Marsher Lenner condition and explain its working in detail if the chief import of a country is an essential good like petroleum and chief export of the country is another essential product like salt. Assume that this country is the only producer and supplier of salt in the world. (4)

[6]

Q. 36) A piece of land in a village is the only green Pasteur available where all cattle graze. Each cow costs 19 units and yields milk where the total yield for all the cows can be expressed as

$$T[c] = 100c - c^3 \text{ units where c is the total number of cows grazing}$$

a) Assuming that the Pasteur is privately owned i.e. only the owner can graze his cows, how many cows would the owner graze to maximize his profits (3)

b) Assuming that the Pasteur is publicly owned i.e. any villager can graze his cows, how many cows would graze in the Pasteur (3)

c) Based on answers from part a and b, calculate total yield under both scenarios and comment on results (3)

[For simplicity, assume that cost and yield belong to a single period only and hence ignore lifetime value concepts. Assume that yield and costs are in same monetary units]

[9]

Q 37) Briefly discuss the advantages, disadvantages and potential problems associated with using fiscal policy and monetary policy to boost economic activity in an open economy **[10]**

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