

Time allowed: 2 Hrs 30 Min

Max Marks: 50

Roll No:

**Instruction:** Students are required to write Roll No on every page of the question paper, writing anything except the Roll No will be treated as **Unfair Means**. Please use answer sheet for rough work.

## SECTION-A

Sections	No. of Questions to attempt	Marks	Marks
A	3 out of 5(Short Questions)	5 Marks each	3*5=15
B	2 out of 3(Long Questions)	10 Marks each	2*10=20
C	Compulsory Case Study	15 Marks	15
		<b>Total Marks</b>	<b>50</b>

- The Potato Growers Association of India (PGA) estimates that the current demand and supply functions facing Indian Potato growers is:  
 $Q_d = 28 - 0.04 P$  and  $Q_s = -2 + 0.16 P$   
 Where  $Q_d$  and  $Q_s$  are in quintals per year, and price is measured in rupees per quintal. (i) find equilibrium price and quantity and (ii) PGA plans to begin a nationwide campaign to promote potato consumption by informing consumers of the nutritional benefits of Potatoes. PGA expects the campaign to increase demand to:  $Q_d = 40 - 0.05 P$ . (assume that supply ( $Q_s$ ) is unaffected) what is the impact of this campaign on the level of potato sales (i.e. demand and supply)?
- Corpus Industries produces a product at constant marginal cost that it sells in a certain market. In an attempt to bolster profits, the manager hired an economist to estimate the demand for its product. She found that the demand for the firm's product is log-linear, with an own price elasticity of demand of ( $E_Q$ ) -10 and an advertising elasticity of demand of 0.2. How much should the firm spend on advertising in order to maximize profits? Is this information useful in future planning? In what kind of markets the firms are likely/unlikely to advertise and why?
- Most workers view both leisure and income as goods and substitutes. Suppose a firm offers to pay a worker Rs 10 for each hour of leisure the worker gives up and the

worker consumes 16 hours of leisure. Analyse workers behaviour using the Ordinal utility model and explain how they make the optimum choice?

4. What can firms too small to compete effectively with larger firms in the market do to enhance their competitive position? Discuss critically in terms of Economies and diseconomies of scale.
5. Two airlines firms (A and B) face the situation shown in the payoff matrix. Suppose this is a one-shot simultaneous-move game: A. Determine the Dominant strategy of the two firms. B. Is cooperation for mutual benefit possible? explain

<b>Firm A</b>	<b>Firm B</b>		
	<b>Strategy</b>	<b>Low Price(\$6)</b>	<b>High Price (\$8)</b>
	<b>Low Price</b>	2,2	5,1
	<b>High Price</b>	1,5	3,3

### SECTION-B

1. A coffee company has estimated the following demand function for its brand of coffee (i.e. coffee X):

$$Q_x = 1.5 - 3.0 P_x + 0.8 I + 2.0 P_y - 0.6 P_s + 1.2 A$$

Where  $Q_x$  = sales of coffee brand X in lakhs of pounds per year;  $P_x$  = price of Coffee brand X in rupees per pound;  $I$  = personal disposable income in crores of rupees per year;  $P_y$  = price of the substitute brand of coffee, in rupees per pound;  $P_s$  = price of sugar in rupees per pound;  $A$  = advertisement expenditure for coffee brand X in lakhs of rupees per year.

Suppose that this year  $P_x = Rs 2$ ,  $I = Rs 2.5$ ,  $P_y = Rs 1.80$ ,  $P_s = Rs 0.50$  &  $A = Rs 1$ .

- a. How much X brand of coffee would the firm sell this year?
- b. Find the elasticity of demand for coffee brand X with respect to price, income, the price of the substitute coffee brand Y, the price of sugar and advertising?
- c. Interpret the elasticities.

2. Critically examine the issue of asymmetric information, adverse selection and the 'lemons problem'.

3. A branded detergent company is a leading producer and marketer of household detergents. At the time of the introduction of its rather pricey new super detergent (NSD), management wondered whether the company could successfully crack the market dominated by Procter & Gamble. The company rolled out its (NSD) in 19 regional test markets, and collected weekly demand data on (Q), price (P), income (I) and estimated a regression model results for NSD in these 19 regional markets:

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.978181049
R Square	0.956838164
Adjusted R Square	0.951442934
Standard Error	0.185874756
Observations	19

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	12.25460682	6.127303409	177.3489263	1.20448E-11
Residual	16	0.552790798	0.034549425		
Total	18	12.80739762			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	0.453076785	2.765629855	0.163824087	0.871921192	-5.409796561	6.315950132
(P) Logarithm of Price	-2.136516553	0.113880332	-18.7610671	2.55888E-12	-2.377932071	-1.895101035
(I) Logarithm of Income	0.90170075	0.262286975	3.437840363	0.003379215	0.345677205	1.457724296

- Write the log linear regression equation on the basis of the above results. What are the main functions of regression analysis?
- Interpret the coefficient estimate for each independent variable. If the current demand (Q) is 10,000 units what would be the demand when the price (P) rises by 10% (income (I) remaining unchanged)?

**Section C**  
**Case Study**

**Profit Maximization at the Movies**

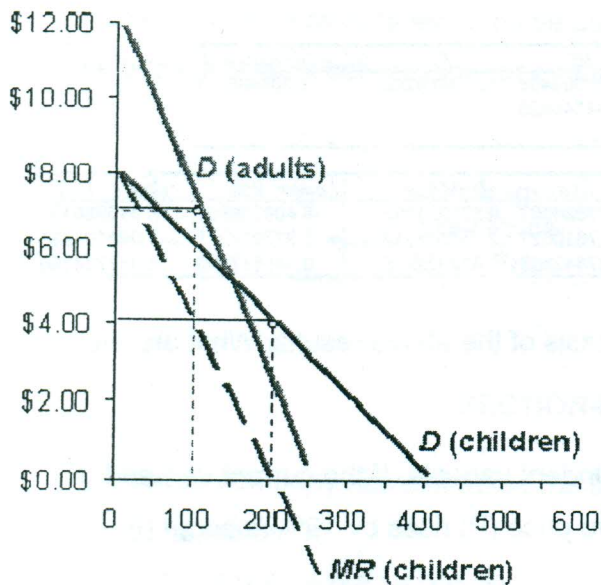
One of the commonest forms of price discrimination is where children are charged a lower price than adults, whether on public transport or for public entertainment. Take the case of movie tickets. In most cinemas, children pay less than adults during the day. In the evening, however, many cinemas charge both adults and children the same price. Cinemas also put-up attractive but often misleading posters exaggerating the story-line to attract adults/children Cinema owners and producers of movies get syndicated movie reviews to influence people to watch a particular movie. Why do they do so?

But more importantly why do cinemas charge children less during the day? After all, the child is seeing the same movie as the adult and occupying a whole seat. In other words, there is no difference in the 'product' that they are 'consuming'. And why are children charged the higher price in the evenings, given that the seat and the movie are the same as during the day?

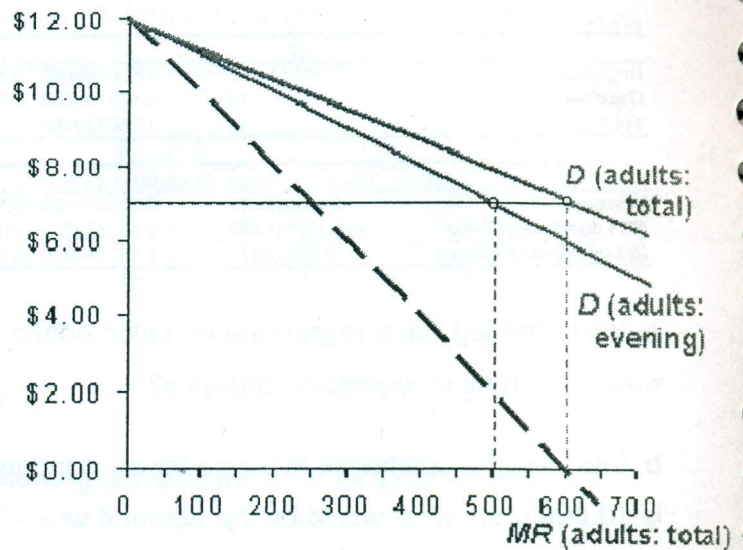
The answer has to do with revenue maximisation and the price elasticity of demand. Once a theatre has decided to show a movie, the marginal costs of an additional customer are zero. There are no additional staffing, film-hire, electricity or other costs. With marginal costs equal to zero, profits will be maximised where marginal revenue is also equal to zero: in other words, where total revenue is maximised.

Take the case of a cinema with 500 seats. This is illustrated in the following diagram, which shows the demand and marginal revenue curves of both adults and children. It is assumed that the elasticity of demand for children's tickets is greater than that for adults' tickets.

Diagram (a) shows demand during the late afternoon (i.e. after school). Here the demand by children is relatively high compared with adults, but the overall demand is low. Diagram (b) shows demand during the evening. Here there is a higher overall level of demand, especially by adults, many of whom work during the day.



(a) Number of tickets (afternoon)



(b) Number of tickets (evening and total)

For the afternoon screening (diagram (a)), revenue is maximised from children by charging them a price of \$4.00, i.e. at the point on the demand curve where  $\Delta MR = 0$ . At this price, 200 child tickets will be sold.

Assuming that the same adult price is charged in both the afternoon and the evening, we need to look at the *total* demand for full-priced tickets (i.e. for both afternoon and evening screenings) in order to ascertain the revenue-maximising price. This will be a price of \$7.00, where total adult  $MR = 0$  (see diagram (b)). This will lead to 100 adult tickets being sold in the afternoon and 500 in the evening.

But why are reduced-price tickets not available for children in the evening? In diagram (b), the sale of low-priced tickets for children would lead to demand exceeding the 500 seat capacity of the cinema. Each time an adult was turned away because the seat had already been sold to a child, the cinema would lose.

### Questions

1. Which type of price discrimination is the cinema pursuing?
2. If all cinema seats could be sold to adults in the evenings at the end of the week, but only a few on Mondays and Tuesdays, what price discrimination policy would you recommend to the cinema in order for it to maximise its weekly revenue?
3. Would the cinema make more profit if it could charge adults a different price in the afternoon and evenings?