PGDM (2016-18)

MANAGERIAL ECONOMICS

Subject Code: DM-103

Trimester – 1, End-Term Examination: September 2016

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
		Total Marks	**50**

1. Management of a major steel producer estimated the demand for the company's steel as under:

$$Q_s = 5000 - 1000P_s + 0.1I + 100P_a$$

Where Q_s is steel demanded in thousands of tons/per annum, P_s is price of steel (Rupees)/per kgs, I is income per capita (Rupees), and P_a is price of aluminium in (Rupees)/per kgs. Initially the price of steel is Rs 40/kgs, income per capita is Rs 20000, and the price of aluminium is 30/kgs.

A. How much steel will be demanded at the initial price and income? What is point income elasticity at the initial values? (1.5)

B. What is the point cross elasticity between steel and aluminium? Are they substitutes or complements? (1.5)

C. If the objective is to maintain the quantity of steel demanded as computed in part (A), What reduction in steel prices will be necessary to compensate for a Rs 5 reduction in the price of aluminium.(2)

2. You are the manager of a publication house and you are contemplating keeping your business open until midnight. In order to do this, you must hire additional workers. You have estimated that additional workers would generate the following total output (1 unit of output equals 100 printed pages). The price of each unit of output is Rs. 100 and wage of each additional worker is Rs.540 per day. How many workers will maximise output/production?

Workers hired	0	1	2	3	4	5	6
Total Product	0	12	22	30	36	40	42

3. Non-collusive oligopoly (Hall and Hitch & P Sweezy) demonstrated the real world phenomenon of price stability. Critically examine the model. (Use a diagram)

4. A packaging company hired an economist as an advisor who instituted an overtime payment plan at the company to meet the growing demand. Under the plan, workers earn $ 10 per hour for the first 8 hours worked each day and $15 per hour for each hour worked after 8 hours. This plan raised profits. Why did the advisor introduce overtime instead of simply raising the wage rate to raise the number of workers? Use a diagram to explain.

5. Suppose that firms in a perfectly competitive industry are earning less than normal rate of profit. In the long run, what price adjustments will occur in this industry? Is a firm operating in this market likely to reap economies of scale? Is it socially desirable? Why?

SECTION-B

1. A corporation estimated E_p= -11 and E_A= 0.3. Where E_p is the price elasticity of demand for the corporation's product and E_A is the advertisement/promotional elasticity of demand.
a. What fraction of revenues should the firm spend on Optimal advertising for optimum returns? (2)

b. In cases where elasticity is: Ep= -∞, Ep= 0, Ep<1 and Ep>1. Would the corporation find it optimal to engage in advertising/branding? Explain (4)

c. Is market power and demand sensitivity related to advertising expenditure? Explain with reference to the above. (4)

2. Explain critically the usefulness of Time series analysis for forecasting and the sources of variation/fluctuation in the time series data. When is a smoothing technique useful in forecasting the value of a time series? Can Barometric method complement and supplement time series analysis? Explain

3. Insurance companies encounter two problems in setting insurance premiums for cars:
a. What *information* does an insurance company require to know before it will insure a person to drive a car? (4)
b. How will the following reduce *Moral Hazard*: i) A no claims bonus ii) You having to pay a certain amount of any claim and iii) Offering lower premiums to those less likely to make a claim. (6)

SECTION-C

Case Study

Empirical Estimates of Production in Manufacturing Industries

There are many empirical studies of production functions in USA and in other countries *(including India)*. One comprehensive study of a number of manufacturing industries was made by John R. Moroney. Though the estimates pertain to the manufacturing industries in USA *but evidently the analysis is of particular relevance/importance for India*. He estimated the production function

$$Q = AK^{\alpha}L_1^{\beta}L_2^{\delta}$$

Where K is the dollar value of capital, L_1 is production worker-hours, and L_2 is nonproduction worker-hours. The data were taken from the Census of Manufactures, a comprehensive cross-section survey of all manufacturing firms in the United States that is made every five years by the U.S. Department of Commerce.

A summary of the estimated values of the parameters of the production function (i.e., α, β, δ) and R^2 for each industry is shown in the following table.

Note that the R^2 values are all very high. The lowest, being 0.951 for the lumber industry and the highest being 0.995 for Fabricated metals industry. A test of significance was made for each estimated parameter, α^, β^, δ^, using the standard *t-test.* Those estimated production elasticities that are statistically significant at the 0.05 level are noted with an asterisk.

Estimated Production Elasticities for 17 Industries

	Estimate of			
Industry	α	β	δ	R^2
Food and beverages	0.555*	0.438*	0.076*	0.987
Textiles	0.121	0.549*	0.335*	0.991
Apparel	0.128	0.437*	0.477*	0.982
Lumber	0.392*	0.504*	0.145	0.951
Furniture	0.205	0.802*	0.103	0.966
Paper and pulp	0.421 *	0.367	0.197*	0.990
Printing	0.459*	0.045*	0.574*	0.989
Chemicals	0.200*	0.553*	0.336*	0.970
Petroleum	0.308*	0.546*	0.093	0.983
Rubber and plastics	0.481 *	1.033*	-0.458	0.991
Leather	0.076	0.441*	0.523	0.990
Stone and clay	0.632*	0.032	0.366*	0.961
Primary metals	0.371 *	0.077	0.509*	0.969
Fabricated metals	0.151 *	0.512*	0.365*	0.995
Nonelectrical machinery	0.404*	0.228	0.389*	0.980
Electrical machinery	0.368*	0.429*	0.229*	0.983
Transportation equipment	0.234*	0.749*	0.041	0.972

*Indicates that the estimated parameter is significantly different from zero

Of somewhat more interest are the returns to scale in each industry.....

Source: J. R. Moroney, "Cobb-Douglas Production Functions and Returns to Scale in U.S. Manufacturing Industry," Western Economic Journal 6.

Questions:

1. Transform the production function into an estimable log form. What are the assumptions and properties of the Cobb Douglas (CD) production function? Explain its usefulness (4 marks)

2. Estimate the returns to scale in each industry. How many industries display increasing returns to scale? How confident are you about the increasing returns to scale in these industries? Why? Explain (5 marks)

3. Interpret the slope coefficients (α, β, δ), coefficients of determination and t test for the top six industries. Are the results statistically significant? Explain. (6 marks)