

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, Pilani

End semester test (Closed book)

MPBA G501 Managerial Economics

Max marks- 25 marks

Time: 60 minutes

Date: 3rd Nov. '22

Weightage: 12.5%

Q1. (a) Market share maximization will always happen with a higher return on investment. [2+1+2=5]

Do you agree with this statement? State Yes/No _____

Why? _____

(b) What is rational decision making?

(b) Tomato ketchup market faces the following situations (other things remain same).

Due to good weather, there is bumper crop production of tomatoes.	What will happen to supply? What will happen to demand?
Consumers read an article, which says manufactured ketchup ingredients reduce immunity. This article goes viral.	What will happen to supply? What will happen to demand?

Q2. a) Find marginal rate of substitution (MRS) for the following consumption baskets having constant total utility. Each basket is made of items A and B. Show your calculations. [2]

Basket	Item A*	Item B*	MRS
1	100	20	
2	80	50	
3	50	70	

*Units

b) What is the difference between cardinal utility and ordinal utility assessment methods. [2]

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c) Calculate the values of consumer surplus from the following demand equation when market price is Rs. 900: $Q_d = 500 - 0.08P$ [1]

Q3. (a) Identify one factor at each of the following levels, which can influence a firm's quantity demanded: firm level, industry level and national economy level. For each factor state what is the effect on demand. [2]

	Factor name	Affect
Firm level 1		
Industry level 1		
Economy level 1		

(b) Correlation and regression both have the same maximum-minimum values. Do you agree with this statement? State yes/no. Give reason. [2]

(c) What are pretest and posttest in experiments? [1]

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Q4. (a) Differentiate between the following pair of terms: [3]

a) GDP vs. GNP (other than full form)

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b) Investment spending vs. consumer spending

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c) Seasonal factors vs cyclical factors in demand forecasting

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(b) A company operates for only 6 months every year and has following actual sales (A) data: [2]

Month	Sales (A)	Aug =>	1744	Oct =>	1382
Jun =>	1971	Sep =>	1493	Nov =>	1122
Jul =>	1840				

Q. The trend line equation for this data is:

$y = 2179 - 167.71x$, where x is time and its value = 1 for June month.

Find the month-wise seasonality index scores for this range of data. **Show all calculations.**

Q5. (i) After 6 months of increasing worker productivity at a wood carving workshop which employs a computer numerical control (CNC) machine and 4 workers, the manager found that further employment of 2 workers lead to falling average productivity. His understanding told him that workers had become overall more careless, lazy and wasteful of time. He directed the supervisor to keep a strict eye on workers and deal with them with a firm hand with respect to unmet productivity goals. [2]

(a) In the context of short-term production theory, explain why the manager's understanding and consequent directive to the supervisor would be expected to fail.

(b) If you were to guide the manager his input combinations, what would you suggest to him for higher production levels?

(ii) What is the **quantitative approach** for allocating just the right amount of investment across labour and capital employed in any factory? [2]

Is this approach feasible to implement in reality? How/why?

(iii) What is Marginal Rate of technical substitution? [1]

*****End****

Space for rough work

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, Pilani
End semester test (Open book)

MPBA G501 Managerial Economics

Max marks- 45 marks

Time: 120 minutes

Date: 24th Dec. '22

Weightage: 22.5%

Attempt all questions. Show calculations for all

Q1. (a) Alka opens a new nursery school on 1st January 2022. When she opened the school, she paid Rs. 1500 for business cards, Rs. 1,000 for a listing in local newspaper in a prime spot, and Rs. 3250 for a 5-year business license (non-returnable) to avail parking facilities for teachers and parents. She also bought a professional audio conferencing set up for Rs.12500. The school building has been taken on rent, which is Rs 14,000 per month that must be paid at the beginning of each month. There is no lease on the school building, so she can vacate it at the end of any month should she decide to move to a new location or to go out of business. The monthly cost of electricity is calculated depending on the number of hours the school is operational and paid on use basis. The school runs for 5 days a week, each working day for 8 hours, and 4 hours on Saturday, Sunday is complete shut off. During weekdays, every hour needs 80 units of electricity while on Saturday every hour need just 10 units. Each unit costs Rs. 6.00. 20 teachers are paid once every 15 days @ Rs. 20,000 per teacher. The school remains closed for summer (2 months – May and June) and winter (1 month - December). The current location is centrally located in the city, so there is no plan to change the location. School has an enrollment of 500 students, each paying fees on a monthly basis @ 2000 per month. [10]

- a. What are monthly fixed costs components for the school for February? Enumerate them and calculate their total.
- b. What are monthly variable costs for February? Make a list of all VCs along with their amounts.
- c. If Alka wants to close the school during vacation, identify all sunk costs and all avoidable costs.
- d. Do you think Alka could face some hidden costs as well? Identify at least two of them.
- e. Will Alka break even in her first month of operation? Support with calculations.
- f. How much profit/loss will she make by the end of February? Show your calculations.

Q.2 Answer the following questions about market structures faced by managers:

(a) Consider a perfectly competitive market in the short run. Assume that market demand is $P = 100 - 4Q_D$ and market supply is $P = Q_s$. Denoting firm level quantity by q , assume $TC = 50 + 4q + 2q^2$. [5]

- i. What is the market equilibrium price and quantity?
- ii. How many firms are in the industry in the short run?
- iii. Do firms make a profit or loss in the short run, and how much are these profits/losses?
- iv. What will happen in the long run? Explain qualitatively.

(b) A monopoly faces a market demand curve: $P = 100 - Q$. Its marginal cost, $MC = 1.5 Q$. [5]

- i. What is the equation for the marginal revenue?
- ii. b. Find the profit-maximizing level of production for this monopolist.
- iii. c. What price will the monopolist charge?
- iv. d. What is this monopolist's total revenue?

Q.3 (a) The market for e-commerce in India is a monopolistic market with several aspects of non-price competition among the players. [4]

- i. Identify any three bases of non-price competition, with supporting evidence from real world.
- ii. However, when it comes to accepting or rejecting a plan for such non-price factors, companies will follow $MR = MC$ rule – how does this make sense? Explain in 20-25 words.

(b) In an typical oligopoly market for cellular services, the firm demand function (Q.f) and whole market demand function are given by the following equations: [3]

$$Q.f = 500 - .05 P.f$$

$$Q.m = 600 - .25 P.m$$

- i. What are the price and quantity at the kink?
- ii. What is the range in which equilibrium MR values exist?
- iii. If a firm existing at kink, increases price by 10%, what is the expected change in it's quantity demanded?

(c) **Answer any one of these questions A or B**

A. Consider an oligopoly market structure with 4 firms, their products being identical. Their cost is also constant and each firm has an $MC = Rs. 15$. The market demand function is given by the following equation:

$$P = 215 - 5 Q \quad [3]$$

- i. What is the quantity supplied by each firm?
 - ii. How much is the deadweight loss in units of the item sold?
 - iii. How much is the currency value of deadweight loss?
 - iv. What would have happened if this was perfect competition market structure?
- B. Suppose a cartel is made of 2 firms and it's aggregate market demand curve which faces the whole cartel is given by: $Q = 5,00,000 - 10,000 P$. The cartel knows by some estimate that its profit-maximizing price is Rs. 40 per unit. The two firms face the following MC functions:

$$MC_1 = 7 + .001Q_1$$

$$MC_2 = 16.6 + .0002Q_2$$

Q. (a) What is the MR of the cartel at the profit-maximizing output?

(b) What is the quantity allotted to each firm? Show all calculations.

Q4. (a) Given below is the payoff matrix for 2 companies: Yellow (shaded part) and White. [4]

What will be the following if it is “a one shot game”:

- i. Each player's strategy (in terms of low or high output) with ref to matrix.
- ii. Identify the type of strategy for both companies
- iii. What do you expect to find if it was a multiple move game?
- iv. Is there a possibility of collaboration? Explain with ref to matrix.

		White's Output Strategy	
		Low	High
Yellow's Output Strategy	Low	\$120 / \$120	\$160 / \$50
	High	\$100 / \$160	\$50 / \$100

(in millions of dollars)

(b) Given below is the payoff matrix for two companies, assume that this is a one shot sequential game with no collusive possibilities. Each one also does not know from beforehand what the other one will do. [6]

		Samsung	
		Offline	Online
Sony	Offline	450 / 80	400 / 60
	Online	300 / 130	310 / 90

- What will be the strategy of Sony & Samsung – offline or online and where in the matrix? Justify your choice in reference to the matrix values.
- Is Sony moves first, what will it decide to do? Why?
- What could be the reasons for higher payoff values for Sony as compared to Samsung? Provide two distinct reasons.
- What would happen if Samsung moves first and a second move was possible?

Q5. (a) If the demand & functions for a firm, involving in first-degree price discrimination is given by:

$$P = 2000 - 10Q$$

$$TC = 1500 + 2Q^2 + 8Q$$

- What is the equilibrium price and quantity?
- What is the producer's surplus?
- What is the consumer's surplus?
- What is deadweight loss?

(b) List two challenges for a company practicing first-degree price discrimination in 20-25 words.

*****End****