BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, Pilani
Mid semester test (Closed book)

MPBA G501 Managerial Economics — Date: 3rd Nov. '22
Max marks- 48 marks — Weightage: 24%

Q1. (a) ** A company XYZ makes PVC pipes for retail buyers. It is planning to enter one new market (market A or B). Its market development team has following data on expected investments and expected sales revenue for a period of 2 years. The team will use a discount rate of 6.5% and uses present value (PV) method to decide which one is a better market to enter into. Please note, investments are made in the beginning of any year and sales revenue is received at the end of the said year. **[3]**

	Market A		Market B	
	Year 2020	Year 2021	Year 2020	Year 2021
Expected investment	Rs. 10,000	Rs. 2,000	Rs. 10,000	Rs. 4,000
Expected sales revenue	Rs. 8,000	Rs. 18,000	Rs. 11,000	Rs. 20,000

Q. Find NPV or net present value for each market. Show all calculations. Which market should be chosen?

(b) The function for quantity demanded and quantity supplied of ice creams in a city is given by:

$Q_d = 3000 - 5P$

$Q_s = 2100 + 4P$

Find equilibrium price and quantity of ice creams in this market. Show all calculations. **[2]**

(c) Give one real world example to show sustainable practice and profits can happen together (in 20-25 words) **[3]**

Q2. a) As the price of butter increased from Rs. 60 per pack to Rs. 66 per pack, the demand of bread fell. The initial quantity demanded of bread was 300 units. If the cross price elasticity of demand for bread wrt butter is 2.5, then: **[3]**

(i) What is the quantity change in demand of bread? (Show all calculations)

(ii) If same company is producing both bread and butter, should the company go for this price change? Why?

b) Identify any two factors that affect price elasticity of demand. **[2]**

c) **Draw a well-labelled diagram to show the relationships among total revenue, marginal revenue, average revenue and price of a good that follows law of demand. **[3]**

Q3.(a) A company used multiple regression method to estimate how its product's (X's) quantity demanded (Q_x) is influenced by three variables, price of X (P_x), sales promotion spending (SP) and price of a related product Y (P_y). The regression equation is given here: **[4]**

$(Q_x) = 200 - 3P_x + 3.5\ SP + 2.7\ P_y$

Questions: (i) Interpret the variable coefficients to show how each IV is related to the DV.

(ii) If values of IV are given as here: P_x = Rs. 5, SP = Rs. 1000 & P_y = Rs. 8, what is the quantity demanded?

(iii) If p value of SP is .07, what does it mean?

(b) Why are experiments more reliable than surveys when one wants to understand demand conditions? Explain in 15-20 words. **[2]**

(c) What is auto correlation or multi-collinearity? (Explain any one term) **[2]**

Q4. (a) A company has the following actual sales (A) data for its product: **[4]**

Month	**Sales (A)**	Jul =>	163	Sep =>	184
Jun =>	154	Aug =>	171	Oct =>	192

Q. (i) Calculate the forecast for July, August, September, October and November using moving average method, with n=2. Show all calculations.

(iii) What is the RMSE for this data set when we use n=2? Show all calculations.

(b) Use the following data set and w = 0.8 **[4]**

Month	Sales (A)	Month	Sales (A)
Jan	106	Mar	124
Feb	122	Apr	131

i. Find forecast values for each month (using exponential smoothing method). Show all calculations.

ii. What is the error – use MAD to calculate it. Show all calculations.

iii. How is the right value of 'w' found out by managers?

Q5. (i) Given here is TP data with a fixed level of K. What is AP and MP for the highlighted cells? **[3]**
Write your answers in the empty highlighted cells. No need to show calculations.

L units	TP	AP	MP	L units	TP	AP	MP
2	1007			10	1237		
4	1056			12	1303		
6	1059			14	1364		
8	1220			16	1406		

(ii) **Attempt any one of the following **[4]**

a) With the help of a set of isoquants and budget lines, show how an expansion path for production can be created. Label the graph well. Show the un-economic regions of production on the same graph.

OR

b) A manager wants to decide if he should hire L or buy one more machine for cutting wood. The MP of L is 900 for 9 working hours; while the MP of machine is 2000. The price of labour is Rs. 300 while that of machine is Rs. 800. As per government rules, the labour must be given a break of 1 hour, so the

labour essentially produces only for 8 hours in the 9-hr shift. What should the manager choose – an extra L or an additional machine? Show all your calculations.

(iv) Attempt any one of the following **[4]**

a) Does this production function show increasing, constant or decreasing returns to scale?

$Q = 130 + 40L + 30 K$

$Q = 25*L^{0.75}K^{0.25}$

Show your calculations.

OR

b) If short run TP in another case is given by following function: $Q = 65L + 12 L^2 - 1/3 L^3$, what is the maximum TP value for this curve? What is the value of L at this maximum TP?

Q6. a) What is the difference between the following terms? **[2+3 = 5]**

i. Fixed cost and variable cost

ii. Social cost and private cost

b) **Attempt any one of the following:

If the TC function is given by the equation:

$TC = 210 + .45Q^2 + 3.6 Q$

(i) Then, write the following functions: AC, AVC, MC and AFC.

(ii) What will be AVC at Q = 25 units

OR

The AVC in Rs. is given by function: $AVC = 25 + 3.4 Q$

Questions?

i. What is the AVC for the following quantities: 10, 15, 18 and 20 units.

ii. If FC equals Rs. 500, then what are the TC and AFC functions?

iii. What will be the values of TC and ATC at Q = 18 units?

*****End***