BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION MO/2025)

CLASS: IMSC **SEMESTER : III**
BRANCH:QEDS **SESSION : MO/2025**

SUBJECT: ED24203 INTERMEDIATE MICROECONOMICS

TIME: 02 HOURS **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1	Given that Infosys is an existing leader and Vedant Tech Ltd is a fringe follower who joined the industry. Given $C_i = \frac{q^2_i}{2}; i = T, P$ are the cost functions they face and market demand P = 100 – Q^2; $(Q = q_T + q_P)$, derive the reaction function and find the Stackelberg equilibrium outputs of both firms.	[5]	1	
Q.2	Compare the Stackelberg outcome with what would happen if both firms behaved as Cournot competitors. Briefly comment on which firm benefits more from the Stackelberg leadership.	[5]	2	
Q.3	Sweet Crust Bakery produces artisanal bread loaves, which sell at the local market. The bakery's production depends on how many bakers (workers) it employs per hour. The table below shows the relationship between the number of bakers hired and the number of loaves produced per hour:	[3+2]	2	

Number of bakers hired (L)	Loaves produced per hour (q)
0	0
1	20
2	35
3	47
4	57
5	65
6	70

Currently, each baker is paid a wage of **$20 per hour**, and each loaf of bread sells for **$5**.
(a) Determine the profit-maximizing number of bakers that the bakery should employ.
(b) Suppose the price of bread remains at $5, but due to rising costs, the wage rate increases to **$25 per hour**. What is the new profit-maximizing number of bakers?

Q.4	a. Now assume the wage remains at $20 per hour, but demand rises and the selling price of bread increases to **$10 per loaf**. What is the new profit-maximizing number of bakers? b. Suppose that the price of the product remains at $5 and the wage at $20, but that there is a technological breakthrough that increases output by 25 % for any given level of labor. Find the new profit-maximizing *L*.	[2+3]	2	
Q.5	Suppose Silvy and Khushi are having a hostel room party where Silvy has 6 pizzas and 2 cokes. Khushi on the other hand, has 1 pizzas and 8 cokes. With these endowments, Silvy's marginal rate of substitution (MRS) of pizzas for cokes is 1 and Khushi's MRS of pizzas for cokes is equal to 4. Draw an Edgeworth box diagram to show whether this allocation of resources is efficient. If it is, explain why. If it is not, what exchanges will make both better off and Pareto efficient.	[5]	3	

:::::18/09/2025:::::E