MAY 2024 **U/ID 32506/URM2A**

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer any TEN questions.

1. What is coordinates in graph example?

2. What types of graphs are used in economics?

3. Write the equation of the line passing through the point $(0,0)$ with slope-4.

4. What is the function of mathematical economics?

5. What are the 3 linear functions?

6. Write an example for non-linear function.

7. What is matrix and its notations?

8. What are the importance of linear programming in economics?

9. What is the difference between maximizing and minimizing optimization?

10. What is an example of differentiation in economics?

11. What is exponential function in mathematical economics?

12. How do you calculate consumer surplus table?

PART B — ($5 \times 5 = 25$ marks)

Answer any FIVE questions.

13. The equation of a line is $3x + 4y + 5 = 0$. Determine the slope and y–intercept of the line using the slope intercept form.

14. List the steps to find the equation of a line using the slope-intercept form. Give an example.

15. A consumer has an income of \$200 to spend on two goods, X and Y. Prices of X and Y are \$20 and \$5 respectively. If the consumer spends the whole \$200 on X and Y, draw his budget line.

16. Draw the demand function $Q = 40 - 2P$ and the corresponding inverse demand function.

17. Write a note on investment appraisal.

18. List the conditions for Maxima and Minima of One Explanatory variable.

19. Why is the log of an exponential term equal to the power times the log of the base of the exponential?

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

20. Find the equation of the straight line that has slope $m = -1$ and passes through the point $(2, -3)$.

21. Let P be the price per container of peaches. Each container has hundreds of peaches. Supply $Q = 300 + 3P$, Demand $Q = 1{,}800 - 2P$.

(a) Solve for the current market equilibrium price.

(b) If new research shows that the antioxidants in Peaches are effective in fighting various viruses, in what direction will the equilibrium price move?

22. A car is purchased for Rs. 80,000. Depreciation is calculated at 5% per annum for the first 3 years and 10% per annum for the next 3 years. Find the money value of the car after a period of 6 years.

23. Let us consider a function with two explanatory variables such that $Z = 3x^2 - 12x + 4xy + 2y^2 - 8y + 100$. To determine the extreme value (maximum or minimum).

24. The demand function of a commodity is $y = 36 - x^2$. Find the consumer's surplus for $y_0 = 11$.