B.A. DEGREE EXAMINATION,APRIL 2019
III Year V Semester
Mathematics for Economists

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define Matrix.

2. What is a Null Matrix?

3. What is closed input output model?

4. State any 2 assumptions of input output analysis.

5. Find $\frac{dy}{dx}$ if $x = at^3$ and y $= 3.at$

6. Differentiate $\left(\sqrt[3]{x}\right)^4$

7. State the Second order condition for minimum value.

8. State the First order condition for maximum value.

9. Find the partial derivatives of $Z = 4x^2 + 4xy + y^2$

10. $Z = x^3 e^2 y$; find partial derivatives.

11. What is maximum total revenue?

12. What is known as cost?

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. A $= \begin{bmatrix} 1 & -3 & 2 \\ 4 & x & x^2 \\ 0 & -2 & 4 \end{bmatrix}$ and B $= \begin{bmatrix} -1 & 3 & -2 \\ -4 & y & x \\ 0 & 2 & 4 \end{bmatrix}$ find A+B.

14. State the limitations of input-output analysis.

15. Find the third, fourth and fifth derivatives of $y = 8x^4$

16. Find the maximum and minimum values of the following function $y = 3x^4 10x^3 + 6x^2 + 5$

17. Find whether the following has minimum or maximum values and at what point? $Z = y^3 + y^2 xy + x^2 + 4e$

18. Explain the relation between Average and Marginal cost curves.

19. State the condition for maxima & minima of function involving two independent variables.

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Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

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20. Solve the following equation by Cramers rule.

    $x - 2y + 3z = 1$

    $3x - y + 4z = 3$

    $2y + y - 2z = -1$

21. Given A $= \begin{bmatrix} 0.1 & 0.3 & 0.1 \\ 0 & 0.2 & 0.2 \\ 0 & 0 & 0.3 \end{bmatrix}$ and final demands are F_1, F_2 and F_3. Find the output Levels consistent with the model. What will be the out Levels if $F_1 = 20$, $F_2 = 0$ and $F_3 = 100$?

22. State the rules of differentiation.

23. State the condition for profit maximisation.

24. Examine the following function for maximum and minimum values $Z = \frac{4}{3}x^3 + y^2 4x + 8y$

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