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. What is a column matrix?
2. Define Matrix.
3. Define Value added.
4. State any 2 assumption of input output analysis.
5. What is known as chain rule?
6. Differentiate $y = 7x^3 + 5^5 - 3x^6 + 8$
7. What is the condition for minimum value?
8. What is marginal cost?
9. $Z = x^3e^{2y}$, find partial derivatives.
10. What is Revenue?
11. What is Total cost?
12. What is average cost?

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

Answer any **FIVE** questions

13. A $= \begin{bmatrix} 2 & 3 & 4 \\ 5 & 6 & 7 \\ 4 & 7 & 6 \end{bmatrix}$ and B $= \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$ find AB.
14. State the limitations of input output analysis.
15. Briefly state the rules of differentiation.
16. Find the maximum and minimum values of $y = x^3 - 3x + 1$
17. State the properties of a homogeneous function.
18. A $= \begin{bmatrix} 2 & 4 \\ 3 & 2 \end{bmatrix}$ and B $= \begin{bmatrix} 1 & 0 \\ 3 & 2 \end{bmatrix}$ verify that $(A + B)^1 = A^1 + B^1$
19. Suppose we are given a short run total cost function as $C = Q^3 - 3Q^2 + 15Q + 27$, obtain AC+MC function.

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

Answer any **THREE** questions

20. A $= \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \end{bmatrix}$ and B $= \begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{33} \\ b_{31} & b_{32} \end{bmatrix}$ prove that AB $\neq$ BA

21. 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 output level if $F_1 = 20, F_2 = 0$ and $F_3 = 100$?

22. Show that y = x+$\frac{1}{x}$ has one maximum and one minimum value and the latter is larger than the former.

23. If the total cost function is C = $\frac{1}{3}Q^3$-3Q2+9Q, find at what level of output AC will be minimum and what level will it be?

24. State the condition for Maxima & Minima of function involving independent variables.

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