B.A. DEGREE EXAMINATION,NOVEMBER 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 zero matrix?**
3. **What is closed input - output model?**
4. **State any 2 assumptions of input - output analysis.**
5. **Find dy/dx if x = at^{3}and y = 3.at**
6. **Differentiate (^{3}vx)^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 = 4^2 + 4xy + y^2**
10. **If, Z = x^{3}e^{2y}; find partial derivatives.**
11. **What is total revenue?**
12. **What is meant by cost?**

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

Answer any **FIVE** questions

13. **If A =** $\begin{bmatrix} 1 & -3 & 2 \\ 4 & x & x2 \\ 0 & -2 & -4 \end{bmatrix}$ **and B =** $\begin{bmatrix} -1 & 3 & -2 \\ -4 & y & x \\ 0 & 2 & 4 \end{bmatrix}$ **find the value of A+B**
14. **State the drawbacks of input-output analysis.**
15. **Find the third, fourth and fifth derivatives of y=8x^4**
16. **Find the maximum value of the following function**
    y=3x^4 – 10x^3 + 6x^2+5
17. **Find whether the following has minimum or maximum values?**
    Z=y^3+y^2 – xy+x^2+4e
18. **Discuss the relation between Average and Marginal cost curves.**

19. **Bring out the condition for maxima & minima of function involving two independent variables.**

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

Answer any **THREE** questions

20. **Solve the following equation by Cramer's rule.**

x – 2y + 3z =1

3x – y + 4z =3

2y + y - 2z = -1

21. **G**iven 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 levels if $F_1 = 20$, $F_2 = 0$ and $F_3 = 100$?

22. **Critically analyse the rules of differentiation.**

23. **Discuss the condition for profit maximisation in a business firm.**

24. **Examine the following function for maximum and minimum values**

Z = 4/3 x^3 + y^2 – 4x +8

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