19U306 (Pages: 2) Name: .....

Reg.No: .....

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2020

(CBCSS - UG)

CC19U ME3 C03 - MATHEMATICAL ECONOMICS

(Complementary Course)

(2019 Admission - Regular)

Time : 2.00 Hours Maximum : 60 Marks

Credit : 3

Part A (Short answer questions)

Answer ***all*** questions. Each question carries 2 marks.

1. Find the order and degree of the given differntial equation $\frac{dy}{dx} = 2x + 6$
2. Explain the use of integrating factors and rules for finding integrating factors.
3. Explain Production curve.
4. Define Law of Diminishing returns.
5. Write a note on isoquants.
6. What are the conditions for minimization of cost in producer's equilibrium?
7. What is expansion path?
8. Write a short note Cobb-Douglass production function.
9. What is constatnt returns to scale?
10. An investment proposal requires an investment of Rs.60000.The cash flows estimated from project are as follows

Year	1	2	3	4	5	6	7	8
Cash flows	10000	12000	20000	18000	9000	9000	8700	7900

The maximum acceptable payback is 5 years.Workout the payback period and state whether the investment proposal be accepted or not.

11. What are the measurement of risk?
12. Define Risk.

(Ceiling: 20 Marks)

Part B (Short essay questions)

Answer ***all*** questions. Each question carries 5 marks.

13. Find the general formula for the first oreder difference equation $y_t = -7y_{t-1} + 16$ and $y_0 = 5$

14. Define cobweb model.

15. Explain the properties of Euler's theorem.

16. Write a short on limitations of Cobb-Douglass production function.

17. What are the limitations of C.E.S production function?

18. Optimize the C.E.S production function $P = 75[0.3k^{-0.4} + (1 - 0.3)l^{-0.4}]^{-1/0.4}$ subject to the constraint $4k + 3l = 120$

19. Write a short note on Decision tree approach and Sensitivity analysis.

(Ceiling: 30 Marks)

Part C (Essay questions)

Answer any ***one*** question. Each question carries 10 marks.

20. Construct an phase diagram for the following nonlinear differential equation $y = -y^2 + 6y - 5$

21. What is Profitability Index? Calculate it for the following information:

    Intial outlay : Rs.50000

    Cash in flows after tax:

    Year 1 : Rs.15000

    Year 2 : Rs.8000

    Year 3 : Rs.10000

    Year 4 : Rs.12000

    Year 5 : Rs.14000

    Year 6 : Rs.16000

    Use 10% discount rate.

(1 × 10 = 10 Marks)

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