QP CODE: 19103211

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Reg No : .....

Name : .....

B A DEGREE (CBCS)EXAMINATION, NOVEMBER 2019

First Semester

B.A Economics Model I

Complementary Course - MM1CMT04 - MATHEMATICS - GRAPHING FUNCTIONS, EQUATIONS, DIFFERENTIAL CALCULUS AND LOGARITHMIC AND EXPONENTIAL FUNCTIONS

2017 Admission Onwards

F50306DD

Time: 3 Hours Maximum Marks :80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. Add $\frac{6}{x+8} + \frac{7}{x}$
2. What is the slope of a line perpendicular to X axis
3. What is profit function
4. Write the general form of a quadratic function and a rational function.
5. Define underconstrained linear system and overconstrained linear system.
6. What is IS-LM analysis?
7. Find the derivative of $y = 5x^3 - 4x^2 + 7x + 21$
8. Define a decreasing function
9. Find the critical points of f(x) = $3x^3 - 54x^2 + 288x - 22.$
10. State any two properties of logarithmic function.
11. Convert $5^3 = 125$ into logarithmic form.
12. State the properties of natural logarithm.

(10×2=20)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. (a)Subtract the polynomials $(42x^2 + 23x) - (5x^2 + 11x - 82)$
(b)Perform $0.5x^2y^3z^5 + 0.9x^2y^3z^5$

14. Solve $\frac{x}{4}$-$\frac{x}{5}$= 6.

15. Solve the quadratic equation $2x^2 - 30x + 20 = 0$ using quadratic formula.

16. Solve the system of linear equations
$2x + 8y = 38$
$4x - 6y = -12$ by substitution method.

17. Find $\lim_{x \to 2}\left(\frac{x^2 - 5x + 6}{x^2 - 4}\right)$

18. Find the derivative of $y = (3x^2 + 5)^2(2x^3 - 3)$

19. Find first and second order derivatives of y = $10x^3 + 8x^2 + 19$.

20. Differentiate $f(x) = \frac{e^{2x}}{4x - 3}$

21. Find the present value of Rs.1000 to be paid 4 years from now,When the current interest rate is 6%, if interest is compounded (a) anually (b)quarterly

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. (a)Derive the equation for a straight line having slope $-\frac{2}{3}$, y intercept (0,49)
(b)Use the point slope formula to derive the equation for the straight line passing through (-10,12),slope $\frac{1}{2}$
(c)Use two point formula to derive the equation for a straight line pssing through (-1,10),(4,-5)

23. (a). The demand function of a monopolist firm is $P = 15 - 2x$ and the cost function is $C(x) = x^2 + 2x$ Find (i) Total Revenue(ii) Marginal revenue(iii) Marginal Cost (iv) Average Cost
Also evaluate them when the output x=4 units
(b). If $f(x) = 3x^2 - 7x + 8$ and $g(x) = 9x - 4$. Find
$(i)(f + g)(x)$ $(ii)(f.g)(x)$ (iii) $(f \circ g)(x)$ and (iv) $(g \circ f)(x)$

24. Maximize the total revenue function TR = $96Q - 2Q^2$ and the total profit function $\pi = -Q^2 + 25Q - 12$ by finding the critical values. Also find the maximum TR and profit.

25. (i)Find the present value of Rs.1500 to be paid in 8 years when the current interset rate is 5%,if the interest is compounded (a)annually (b) semi annually and (c) quarterly
(ii)Find the amount A of a principal Rs.10000 set out an interset rate 9% for 3 years, when compounded (a)semi annually (b)monthly

(2×15=30)