18103802

QP CODE: 18103802

Reg.No. .....

Name: .....

B.Sc DEGREE (CBCS) EXAMINATION, DECEMBER 2018

First Semester

B.Sc. Electronics Model III

Complementary Course- MMICMT07- MATHEMATICS-CALCULUS AND TRIGONOMETRY

Maximum Marks: 80 **Time: 3 Hours**

Part A

Answer any ten questions.

Each question carries 2 marks.

1. If $y=x+2/x$ then find dy/dx at (1,3)
2. State Sandwich theorem.
3. Prove that $d\sin x/dx=\cos x$.
4. Find $\lim_{x\to 0} (\sin 3x)/4x$.
5. Define extreme values and critical point of function.
6. Define monotonic function.
7. Write the 1st and 2nd order partial derivatives.
8. Write the expansion of Sin nθ
9. Write the expansion of Tan 5θ in terms of Tanθ
10. Write circular function
11. Find $\int_{-1}^{+1} X+1\, dx$.
12. Evaluate $\int_{0}^{+1} X/(X^2+1)\, dx$

Part B

Answer any **six** questions

Each question carries **5** marks

13. If $y=2\sqrt{Cot(x^2)}$ then find dy/dx.

14. If $xy + y^2 = tanx + y$,find dy/dx

15. If $x=cos\theta-cos2\theta$ and $y = Sin\theta - Sin2\theta$, find dy/dx.

16. Verify mean value theorm for $f(x)=x^2-4x-3$ in [1,4]

17. Find the 2nd order partial derivatives of $f(x,y)=xCosy + ye^x$

18. Separate into the real & imaginary parts of the expression $Sin(\alpha +\beta i)$ and $Cosh(\alpha +\beta i)$

19. Define definite integration and write the properties of definite integral.

20. Find ${}_0\int^1 {}_x e x^2 dx$

21. Define the interior point and boundary point of a region R.

Part C

Answer any **two** questions

Each question carries **15** marks

22. Find dy/dx if $x=(Sin^3t)/\sqrt{Cos2t}$, $y=(Cos^3t)/\sqrt{Cos2t}$

23. State mean value theorem & verify $f(x) = x^3-5x^2-3x$ in [1,3]

24. If $w=x^2+y^2+z^2$,where $x=e^t$,$y=e^tCost$,$Z=e^tSint$ Find dw/dt at t=0

25. write circular and hyperbolic function. Also find the periods of circular and hyperbolic functions.