TribhuvanUniversity

Faculty of Humanities & Social Sciences

OFFICE OF THE DEAN

2018

Bachelor in Computer Applications **Full Marks: 60**
Course Title: Mathematics II **Pass Marks: 24**
Code No: CAMT 154 **Time: 3 hours**
Semester: II

Candidates are required to answer the questions in their own words as far as possible.

Group B

Attempt any SIX questions. **[6×5 = 30]**

1. If a function f(x) is defined as:

$$f(x) = \begin{cases} 3x^2 + 2 & \text{if } x < 1 \\ 2x + 3 & \text{if } x > 1 \\ 4 & \text{if } x = 1 \end{cases}$$

Discuss the continuity of function at x = 1.

2. Find the derivative of sin3x by using definition.

13. Using L-Hospital's rule evaluate:

$$\lim_{x\to\infty} \frac{2x^2 + 3x}{1 + 5x^2}$$

14. If demand function and cost function are given by
P(Q) = 1-3Q and
$C(Q) = Q^2 - 2Q$ respectively, Where Q is the quality (number) of the product then find output of the factor for the maximum profit.

15. Evaluate: a) $\int \frac{dx}{1-\sin x}$ b) $\int_0^1 (x^2 + 5)dx$

16. Solve: $\frac{dy}{dx} = \frac{xy + y}{xy + x}$

17. Examine the consistency of the system of equation and solve if possible.

$$x_1 + x_2 - x_3 = 1$$
$$2x_1 + 3x_2 + 3x_3 = 3$$
$$x_1 - 3x_2 + 3x_3 = 2$$

Group-C

Attempt any two questions **[2x10=20]**

18. Define Homogeneous equation and solve the following system of equations using Inverse Matrix Method.
-2x + 2y + z = -4
-8x + 7y – 4x = -47
9x – 8y + 5z = 55

19. State Rolle's Theorem and interpret it geometrically. Verify Rolle's theorem for
$f(x) = x^2 - 4$ in $-3 \le x \le 3$

20. Using Composite Trapezoidal Rule, compute $\int_0^2 (2x^2 - 1)dx$ with four intervals. Find the absolute error of approximation from its actual value.