



Sir Syed University of Engineering & Technology
Faculty of Basic & Applied Sciences
Department of _____ Computer Science _____

End Semester Examinations (Spring 2020)

Course Title with Code	MS-103: Calculus & Analytical Geometry	Program	BSCS
Instructor	Dr. Maqsood Sarwar	Semester	1st
Start date & Time	June 25, 2020 at 10:30 AM	Submission Deadline	June 25, 2020 at 02:30PM
Maximum Marks	50		

IMPORTANT INSTRUCTIONS:

Read the following Instructions carefully:

- Attempt All Questions on MS-Word. Font theme and size must be Times New Roman and 12 points respectively. Use line spacing 1.5. Convert file to PDF format before submitting.
- You may provide answers HANDWRITTEN. The scanned solution must be submitted in PDF file format (Use any suitable Mobile Application for Scanning)
- For Diagrams, you can use paper and share a clear visible snapshot in the same Answer Sheet.
- Arrange questions and their subsequent parts in sequence.
- Make sure that your answers are not plagiarized or copied from any other sources. In case of plagiarism, **ZERO** marks will be awarded.
- Provide relevant, original and conceptual answers, as this exam aims to test your ability to examine, explain, modify or develop concepts discussed during the course.
- Recheck your answer before the submission on **VLE** to correct any content or language related errors.
- You must upload your answers via the VLE platform **ONLY**.

You must follow general guideline for students before online examination and during online examination which had already been shared by email and WhatsApp.

This paper has a total of 02 pages including this title page



Sir Syed University of Engineering & Technology
Faculty of Basic & Applied Sciences
Department of Computer Science

Q.1. (10)

Find equations of tangent and normal lines for the curve $y = x^3 + 2x + 1$ at the point (a,b). for getting (a,b) just consider the first 2 digits of your own University roll number. For example if you have a roll number 1 consider 01, so $a = 0$ and $b = 1$ and if you have a roll number 243 in this case $a = 2$ and $b = 4$, omit (neglect) the last digit.

Q.2. (10)

By using your Father's or your own NIC number, (Also mention the NIC number) generate only 4 pair of points by starting at the beginning. For example your NIC no is ABCDE-FGHIJKL-M then $(x_1, y_1) = (A, B)$, $(x_2, y_2) = (C, D)$, $(x_3, y_3) = (E, F)$ and $(x_4, y_4) = (G, H)$. Trace these points on graph, also join these 4 points on graph with scale to get quadrilateral.

Q.3. (10)

Note-down your current weight in your answer sheet in kg (for example 65.3kg here $A=6$ & $B=5$ omit the decimals) then evaluate the following by L'Hospital's rule and replace A and B with the first two digits of your weight (only for part a).

$$(a) \lim_{x \rightarrow \infty} \frac{x^3 + (A)x^2 + 1}{x^3 + (B)x^2 + x} \quad \left(\frac{\infty}{\infty} \right)$$

$$(b) \lim_{x \rightarrow 0} \frac{x - \sin x}{x^3} \quad \left(\frac{0}{0} \right)$$

Q.4. (10)

Write-down your own date of birth in your answer sheet in the format DAY-MONTH-YEAR (for example 21-06-1998 here $A=0$ & $B=6$), then by using integration by parts evaluate the following, replace A and B with the two digits of your month.

$$(a) \int x^{A+B} \sin x \, dx$$

$$(b) \int e^{(A+B)x} x^3 \, dx$$

Q.5. (10)

Find speed and acceleration at a point (C,D), if distance of a particle is given by $S = 2t^3 - 3t^2 + 5$, where (C,D) are the last 2-digits of your father's or your NIC number (mention the NIC number used).