



ALLAMA IQBAL OPEN UNIVERSITY

Semester Terminal Exam Autumn 2020

Program /level:	BS	Maximum Marks	100
Title /Course Code	Mathematics for Computing-I (9423)	Pass marks	50

Instructions for Exams:

1. Attempt All Questions.
2. Write answers in your own words and avoid copying from an internet source or any book.
3. Be precise, avoid unnecessary details, answer to each question must be between 600-800 words.
4. Students are advised to upload their answer sheets/solutions on LMS portal as soon as they complete their answers and not to wait for 8:30 PM.
5. Submissions after due date & time will not be entertained. Attach undertaking with each course code which were allowed to attempt in Urdu.
6. If plagiarism found, Student may be declared fail.

Question No. 1 [11+11+11]

- a. Define Rational numbers and plot the solution of; $|1 - 2x| - 3 \geq 3$ on number line.
- b. Solve the following inequality and represent on the number line:
$$\frac{3x-1}{x+1} \leq 1$$
- c. Solve $|x + 4| = 10$ and graph the solution.

Question No. 2 [11+11+11]

- a. Classify the lines l_1 and l_2 as parallel, perpendicular or neither;
 $l_1: 4x + 5y + 5 = 0$ and $l_2: 4x + 8y + 2 = 0$
- b. Use definition to find $f'(x)$ when $f(x) = 2x^2 + 1$
- c. Find the slope of tangent line to the curve $x^2 + y^2 = 1$ at the points $p_1(1,0)$ and $p_2(\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}})$.

Question No. 3 [12+11+11]

- a. Evaluate the integral by making the indicated substitution:
 $\int (1 + \sin t)^9 \cos t \, dt$; let $u = 1 + \sin t$
- b. Evaluate the integral: $\int \frac{x^2}{\sqrt{x^2+1}} \, dx$
- c. Show that; $\frac{1}{1.2} + \frac{1}{2.3} + \frac{1}{3.4} + \dots + \frac{1}{n(n+1)} = \frac{n}{n+1}$