



Department Of CED

Final Term Summer-2020

**Subject:** Applied Mathematics-II  
**Instructor:** Anwar Shamim

**Duration:** 04 Hours  
**Total Marks:** 50

**Note:** Attempt all questions. Manage your time properly.

**Q.No. 1** **(10+10)**

**Find the solution of the following.**

- (a) The sum of two numbers is  $k$ . Find the minimum value of the sum of their cubes.
- (b) The sum of two positive numbers is 2. Find the smallest value possible for the sum of the cube of one number and the square of the other.

**Q.No.(02)** **(10+10)**

**Find the solution of the following.**

- a)** Let  $f(x)$  be a differentiable function such that  $f(3)=12$ ,  $f'(3)=-2$ . Estimate the value of  $f(3.5)$  using the local approximation at  $a=3$ .
- b)** Estimate  $3\sqrt{9}$  using a linear approximation at  $a=8$

**Q.No.(03)** **(10)**

**Solve the following differential equation.**

$$2xy - 9x^2 + (2y + x^2 + 1) \frac{dy}{dx} = 0$$