The Open University of Sri Lanka

B.Sc/B.Ed Degree programme

Applied Mathematics – Level 03

ADU3302- Differential Equations

No Book Test (NBT)- 2023/2024

Date: 02.02.2024	Time: 04.00 p.m. – 05.00 p.m.

Answer All Questions

1. Consider the equation $25\dfrac{dT}{dt} + T = 80e^{-0.04t}$.

   a. Transform the above equation into the form of a first-order linear differential equation and find its solutions.

   b. Find a suitable substitution to transform equation $\dfrac{dy}{dx} + xy = 6x\sqrt{y}$ into a first-order linear differential equation.

2. A body of mass 2 kg is dropped from a height of 200 m. Find the limiting velocity of the body if it encounters a resistance force equal to $-50v$.

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