

The Open University of Sri Lanka

B.Sc/B.Ed Degree programme

APPLIED MATHEMATICS – Level 03

No Book Test (NBT) 2019/2020

ADU3302 – Differential Equations



Date: 16.08.2020

Time: 02.30 p.m. – 03.30 p.m.

Answer All Questions.

1. Solve the following differential equation.

$$(x^2 + y^2)dy + 2xydx = 0.$$

2. A body whose temperature is  $100^\circ$  placed in a medium which is kept at a constant temperature of  $20^\circ$ . In 10min the temperature of the body falls to  $60^\circ$ .
- (a) Write the equation for the rate of change of the temperature of that given body by considering  $k > 0$  as the proportionality constant.
- (b) Find the value for  $k$ .
- (c) Find the temperature  $T$  of the body as the function of the time  $t$ .
- (d) Find the temperature of the body after 30min.

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