1st SEM. 2016/17

UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

PROGRAMME: **BSc. in Agricultural & Biosystems Engineering Year I**
BSc. in Agricultural Economics and Agribusiness Management Year I
BSc. in Agricultural Education Year I
BSc. in Agricultural Extension Year I
BSc. in Agronomy Year I
BSc. in Animal Science Year I
BSc. in Animal Science Dairy Year I
BSc. in Food Science, Nutrition and Technology Year I
BSc. in consumer science Year I
BSc. in Consumer sciences Education Year I
BSc. in Horticulture Year I
BSc. in Textiles Apparel Design and Management Year I

COURSE CODE: **AEM 101**

TITLE OF PAPER: **MATHEMATICS**

TIME ALLOWED: **2:00 HOURS**

INSTRUCTION: **1.** ANSWER ALL QUESTIONS

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Question 1. (25 points)

1.1 Calculate the cost price when:

a) Selling price is E700.00 and profit per cent is 50%.

b) Selling price is E10.00 and profit per cent is 100%.

(13 points)

1.2 Factorize $25a^2 - 81$

(12 points)

Question 2 (25 points)

2.1. If $c=\sqrt{\frac{4b(a-b)}{5}}$ express a in terms of b and c. (12 points)

2.2. Express $\frac{2-p}{2p} - \frac{3-2p}{3p} - \frac{p+2}{6p}$ as a single fraction in the lowest terms. (13 points)

Question 3 (25 points)

3.1 A quantity of alloy has a mass of 400 kg. It contains copper, lead and tin in the ratios by mass of 15:3:2.Find the mass of lead .copper and tin in the alloy? (8 points)

3.2. Find the solution set of system of simultaneous equation. (8 points)

$3x + 2y = 13$

$xy = 2$

3.3 Find the solution set of logarithmic equation. (9 points)

$\log_2^{(3x-1)} + \log_2^{x} = 4$

Question 4 (25 points)

4.1 Find the maximum and minimum values of $y = 2x^3 - 3x^2 + 4$ (8 points)

4.2. Evaluate $\int_1^2 2x^3 + 5x - 7\,dx$ (8 points)

4.3. Find the area between the straight line $y = 12 + 3x$ and the curve $y = 2x^2 + 3$. And draw the figure. (9 points)

END OF PAPER