1st SEM. 2017/2018

UNIVERSITY OF SWAZILAND

RE-SIT EXAMINATION PAPER

PROGRAMME: BSc. in Agricultural and 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 Horticulture Year I

BSc. in Food Science, Nutrition and Technology Year I

BSc. in Consumer Science Year I

BSc. in Consumer Science Education Year I

BSc. in Textiles Apparel Design and Management Year I

COURSE CODE: AEM101

TITLE OF PAPER: MATHEMATICS

TIME ALLOWED: 2: 00 HOURS

INSTRUCTION: 1. ANSWER ALL FOUR QUESTIONS
                        2. EACH QUESTION CARRIES 25 MARKS

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Question 1. (25 points)

1.1 A wholesaler sells an article to a retailer for E 260 which represents a profit to the wholesaler of 30%.The retailer then sells the articles to a customer at a profit of 25%.Calculate the total percentage profit based on the price the wholesaler paid?

(10 points)

1.2. Factorize $(a +b)^2 -4c^2$

(10 points)

1.3 Express $\frac{2-p}{2p} - \frac{3-2p}{3p} - \frac{p+2}{6p}$ as a single fraction in the lowest terms.

(5 points)

Question 2   (25 points)

2.1 Solve the equation $\frac{x}{3} + \frac{3x-1}{4} = \frac{3x+7}{12}$

(10 points)

2.2 Find the solution set of system of simultaneous equation.   (10 points)

$x^2 + y^2 -6x +5y =2$

$x + y = 9$

2.3. Find the solution of exponential equation

(5 points)

$x^{-3} = 1/27$

Question 3(25 points)

3.1. Find the solution set of logarithmic equation. (10 points)

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

3.2. If $\cos A = \frac{12}{13}$ find the values of sin A and tan A without calculator? (10 points)

3.3 A man 1.5 m tall observes the angle of elevation of a tree to be 20^0. If he is standing 10 m from the tree, find the height of the tree. (5 points)

Question 4 (25 points)

4.1. Differentiate the following with respect to x
   a) $y = -4x^4 + 2x^2 - 0.8x + 84$
   b) $y = \frac{4}{x^3}$
   (7 points)

4.2 If $\frac{dy}{dx} = 5 + 8x$ and $y = 10$ when $x = 1$, find y in terms of x. (6 points)

4.3 Evaluate $\int_0^1 x^4 + 5x + 47 dx$

(6 points)

END OF PAPER