1st SEM. 2018 / 2019

UNIVERSITY OF ESWATINI

RE-SIT/SUPPLEMENTARY 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 Dairy Year I
BSc. in Animal Science 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: ANSWER ALL QUESTIONS

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Question 1. (25 points)

1.1 Factorize completely X^8-y^8

(10 points)

1.2. Factorize $8(x-y)^2 -4(y-x)$

(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 A wholesaler sells an article to a retailer for E 460 which represents a profit to the wholesaler of 10%.The retailer then sells the articles to a customer at a profit of 15%.Calculate the total percentage profit based on the price the wholesaler paid? (10 points)

2.2 Solve the equation $\frac{x}{3} + \frac{3x-1}{4} = \frac{3x+7}{12}$ (10 points)

2.3 Find the solution set of system of simultaneous equation. (5 points)

$x^2 + y^2 -x +y =24$

$x + y = 7$

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Question 3(25 points)

3.1. Find the solution of exponential equation (5 points)

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

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

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

3.3 A man 1.9 m tall observes the angle of elevation of a tree to be 10^0. If he is standing 20 m from the tree, find the height of the tree. (10 points)

Question 4 (25 points)

4.1. Differentiate the following with respect to x

a) $y = -5x^3 + 9x^4 - 96x + 9$

b) $y = \frac{35}{x^3}$

(10 points)

4.2 If $\frac{dy}{dx} = 7 + 4x$ and $y = 5$ when $x = 2$,find y in terms of x. (10 points)

4.3 Evaluate $\int_0^1 x^3 + 6x + 5dx$ (5 points)

END OF PAPER