



SUPP. 2007/2008

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UNIVERSITY OF SWAZILAND

supplementary EXAMINATION PAPER

PROGRAMME: BSc. in Agricultural Economics and Agribusiness
Management Year I
BSc. in Agricultural Education Year I
BSc. in Agronomy Year I
BSc. in Animal Science Year I
BSc. in Food Science, Nutrition and Technology Year I
BSc. in Home Economics Year I
BSc. in Home Economics Education Year I
BSc. in Horticulture Year I
BSc. in Land and Water Management Year I
BSc. in Textiles Apparel Design and Management Year

COURSE CODE: AEM 101

TITLE OF PAPER: MATHEMATICS

TIME ALLOWED: 2:00 HOURS

**INSTRUCTION: 1.ANSWER ANY 4 (FOUR) QUESTIONS
2.ALL QUESTIONS CARRIES 25 MARKS**

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INVIGILATOR**

Question 1

a. A line is to be divided into 3 parts in the ratio 2:7:11. If the line is 840mm long find the length of each part?

b. Factorize the following expression? $3x^2 - 3y^2 - 2x^2y$

c. Simplify $\frac{3x-7}{3} - \frac{2x-5}{2}$

d. Find the solution set of the following simultaneous equation

$$3x + 4y = 0$$

$$2x - 2y = 7$$

Question 2

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

b. Solve the equation

$$\frac{2x}{x+2} = \frac{3x}{x+5} - 1$$

Question 3

a. Find the solution set of each logarithmic equation.

i) $\log_3^x + \log_3^8 = 2$

ii) $\frac{1}{2} \log_3^x = \log_3^{(x-6)}$

b. Two straight line PQ and RS cut at X. If $PX = RX$ and $\angle SPX = \angle QRX$, Prove that $\triangle SPX \cong \triangle QRX$

c. If $a = 12\text{cm}$, $b = 16\text{cm}$ and $c = 25\text{cm}$, find whether C is acute or obtuse and find its magnitude?

Question4

A .Given that $y = 3x^2 + 7x + 3$, calculate

- i) the gradient of the tangent to the curves y at the point when $x = 1$?
- ii) the value of x for which y has its maximum value.

b. Evaluate the following definite integrals

$$\int_1^2 (2x^2 + 5x) dx$$

c. Find the area between the curves $y = x^2$ and, the x-axis and the line at $x = 1$ and $x = 3$.

Question5

a Find the inverse of the matrix

$$\begin{pmatrix} 1 & 2 \\ 4 & 3 \end{pmatrix}$$

b . AC is a diameter of a circle center o and CD is a chord, M is the mid-point of CD. the tangent at A meets MO produced at T. Prove that

- i) $\triangle CMO$ is similar to $\triangle TAO$
- ii) $TA \cdot MO = AO \cdot MC$