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 consumer science Year I
    BSc. in Consumer science education Year I
    BSc. in Horticulture Year I
    BSc. in Agricultural & bios stems Engineering 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

        2.ALL QUESTIONS CARRIES 25 MARKS.

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Question 1

1.1 A,B and C share a sum of money in the ratio 3 :4:5 .If C receives E11 more
than B find the sum of money that was shared?

1.2 A line is to be divided into 3 parts in the ratio 1:2:5. If the line
is 800cm long find the length of each part?

1.3 Find the solution set of $2^x = 256$?

1.4 Find the solution set of system of simultaneous equation.

$$\begin{cases} 3x - 6y = 8 \\ x - y = 10 \end{cases}$$

Question 2

2.1 Sketch the graph of $y = x^2 - 4$ using the intercepts and the coordinates of the
vertex?

2.2 Find the solution set of logarithmic equation.
$$\log_2{}^{(x\text{-}3)} + 2 \log_2{}^2 = 3$$

2.3 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

2.31 $\triangle$CMO is similar to $\triangle$TAO

2.32.   TA. MO = AO. MC

Question 3

3.1 If $\cos A = \dfrac{5}{13}$ then find $\sin A$?

3.2 Two straight line PQ and RS cut at X. If PX = RX and
   <SPX = < QRX,
   Prove that $\triangle SPX \equiv \triangle QRX$

3.3 Given that $y = -x^2 + x + 7$, calculate
   3.31 the gradient of the tangent to the curve of y at the point
         Where x = -1.
   3.33 The value of x for which y has its maximum value.

3.4 In the following fig. AC is parallel to the tangent DE. Prove that
   3.41. $\triangle$ ADC is isosceles;
   3.42 < ABC = 2 < DAC
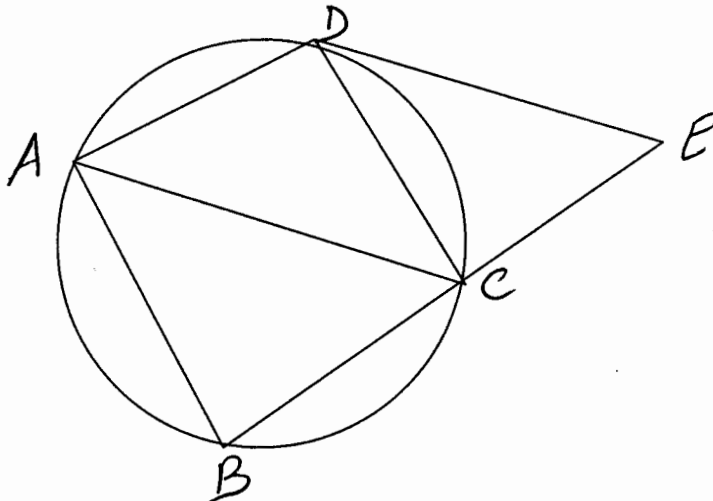
Question 4

4.1 .Evaluate the following definite integral;

$$\int_{2}^{5} x\,dx$$

4.2. Find the inverse of the matrix $\begin{pmatrix} 2 & 7 \\ 2 & 3 \end{pmatrix}$

4.3. To find the height of a tower a surveyor stands some distance from its base and
     finds the angle of elevation to the top of the tower is 30^0. He moves 150 m nearer to
     the base and finds the angle of elevation is now 60^0. if the ground is horizontal, then
     what will be the height of tower ?

END OF PAPER