u9

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 sciences 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

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN GRANTED BY
THE CHIEF INVIGILATOR**

50

Question 1. (20 points)

1.1   Calculate the profit per cent when:
   a) Cost price is E1.50 and selling price is E 1.80.
   b) Cost price is 30c and selling price is 35c.   (10 points)

1.2 . Factorize $a^3 - b^3$ (5 points)

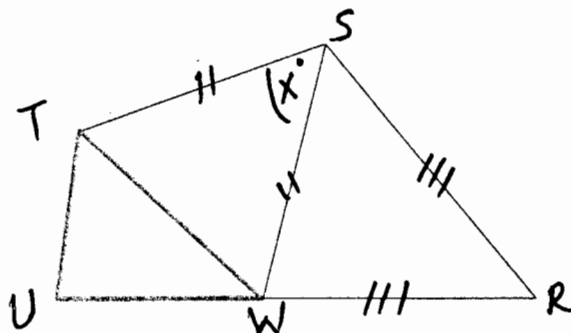1.3   Simplify $\frac{7}{x^2+3x-10} - \frac{2}{x^2+5x} - \frac{2}{x^2-2x}$ (5 points)

Question 2 (30 points)

2.1.   In the Fig. below, UWR is a straight line ,RS =RW,ST=SW,WT=WU and
   $<R = <TSW = x^0$.
   Prove that WS Bisects $<RWT$ and$<TWU = x^0$.   **(10 points)**

2.2. Express $\frac{2-p}{2p} - \frac{3-2p}{3p} - \frac{p+2}{6p}$ as a single fraction in the lowest terms. (10 points)

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

Question 3 (25 points)

3.1 Find the solution set of system of simultaneous equation.   (7 points)
   $x^2 + y^2 -6x +5y =2$
   $x + y = 9$

3.2. How long will it take the earth's population to double if it continuous to grow at the
   rate of 2 percent per year compounded continuously? (8 points)

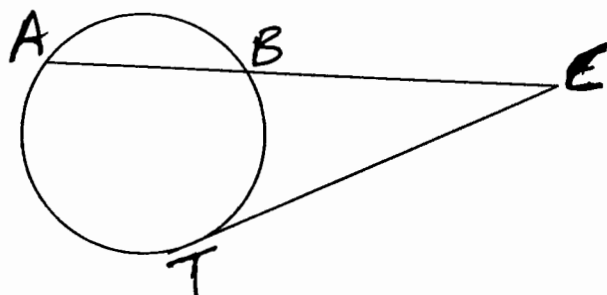3.3 Find the solution of exponential equation   (5 points)
   $x^{-3} = 1/8$

3.4 Find the solution set of logarithmic equation.   (5 points)
   $\log_2^{(3x-1)} + \log_2^{x} = 4$

2

Question 4 (25 points)

4.1 In the figure below, calculate the lengths of the chord BC.   (7 points)

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

4.3 The acceleration of a moving body at the end of t seconds from the commencement of motion is (9-t) meters per second. Find the velocity and distance travelled at the end of 2 seconds if the initial velocity is 5 metres per second.   (5 points)

4.4. Evaluate $\int_1^2 x^3 \, dx$ (5 points)

END OF PAPER