SIR ARTHUR LEWIS COMMUNITY COLLEGE
DIVISION OF AGRICULTURE
Associate Degree Programme – General agriculture
End of Semester Examination
Academic year 2006/07 Semester one
Course : Agricultural Mathematics AGM 105

Date: Dec 8, 2006,   Time 9: 00 am.   Duration 3 hours

#M28

Instruction: This paper comprises two (2) sections. Answer **all** the questions from
Section A and **any three** from Section B

Section A – answer all the questions in this section.

1.   (a)   Multiply: i. $(3x^2 - 2x + 4)(2x - 3)$ ii. $(a + 2/3)(a + \frac{1}{2})$

      (b)   Subtract :   i. $3x^5 - 4x^3 + 5$ from $7x^5 + x^3 - 9x$

                              Ii $9x^2 - 5x - 3$ from $5x^2 - 3x - 3$

      (c)   Divide   i. $a^2 + 11a - 19$ by $a - 4$

                              ii $2x^3 - 9x^2 - 5x + 12$ by $2x - 3$

2,   Simplify: (a) $(3/4)^{-2}$ leave your answer as a non-decimal fraction

                  (b) $\log_3 (81/27)$

                  (c) $\sqrt[4]{(16x^8 y^4)}$

                  (d) $(8a^2 b^6)^{2/3}$

3.   Factorize   (a) $9x^2 + 15x + 4$

                  (b) $4a3 - 49a$

                  (c) $8a^3 - 27$

4   Solve   (a) $5/4t = 7/(5t - 2)$

                  (b) $\sqrt{(a + 12)} = 2a$

                  (c) $4^{2x} = 32$

                  (d) $\log_6 (4x + 8) = 2$

5   Joe works at a fast food outlet where a 10 ounce cup of Soda water costs 95cents, a 14 ounce cup costs $1.15 and a 20 ounce cup costs $1.50. During a rush period Joe served 34 cups of Soda water and collected $39.60. In all 480 ounces of soda water were sold. How many cups of each size were sold?

6   A farmer has 200m of sheep fencing. He wishes to enclose a rectangular area as a temporary holding space for sheep. He plans to divide the enclosed area across its length to have three small paddocks.

   (a)   Write expressions for the length and the width of the rectangle
   (b)   Find the largest area he can enclose.
   (c)   Determine the width and the overall length of the largest area possible.

7   (a)   A fixed growth fund, which is advertised to farmers, offers 6% interest per annum compounded annually. If a farmer invests $29,000 in the fund, in what time will this amount double?

   (b) In laboratory analyses the pH of a substance is given as
                $pH = -\log[H+]$ where $[H+]$ is the concentration of hydrogen ions in moles per Litre.

      (i)   Calculate the pH of a blood sample if
             $[H+] = 3.98 \times 10^8$

      (ii)   Calculate the $[H+]$ of a soil sample if its pH is 5.2

8.   A batch of corn has a guaranteed protein content of 6% by weight. A Concentrate Supplement has a protein content of 32%.

   (a) How much of each ingredient is needed to produce 200kg a ration of 14% protein.

   (b) How much corn must be mixed with 100 lbs of concentrate that is 18% protein?