# AMELO TECHNICAL INSTITUTE

**P.O BOX 67 ADJUMANI.**

**TERM 2 COURSEWORK ASSESSMENT 1**

**APPLIED TECHNICIAN MATHEMATICS 1**

**Given: 08/06/2023.**

**Submission: 15/06/2023.**

**Instruction:** attempt all questions.t

1. Evaluate using laws of indices:
   a) $6^9 \times (-8)^{-7} \times \left(1\frac{1}{2}\right)^{-10}$
   b) $(3^{-2})^2 \div 2^{-6} \; x \; \left(\frac{2}{3}\right)^{-5}$
   c) $\frac{4^2 \; x \; 5^{\,3} + 5^2 \; x \; 4^3}{4^4 \; x \; 5^4}$
   d) $\frac{6^{-3} \; x \; 8^3}{7 \; x \; 6^{-4} \; x \; 8^4}$

**2. Solve the following indicial equations for x, each correct to 4 significant figures:**

a) $3^x = 6.4$

b) $2^x = 9$

c) $2^{x-1} = 3^{2x-1}$

d) $x^{1.5} = 14.91$

e) $4^{2x-1} = 5^{x+2}$

**3. In Problems 1 to 11, write as the logarithm of a single number:**

a) log 7 + log 21 − log 49

b) 2 log 2 + log 3

c) 2 log 2 + 3 log 5

d) 2 log 5 −log 81 + log 36

e) log 2 + log 3

**4. Evaluate the expressions given in Problems**

a) $\frac{\frac{1}{2}\log 16 - \frac{1}{3}log8}{\log 3}$

b) $\frac{\log 9 - log3 + \frac{1}{2}log81}{2log3}$

c) $512^{5x-1} = \left(\frac{1}{8}\right)^{-4-x}$

d) 5(7)5x = 60

e) 3e4x + 9 = 15

**5. Simplify the expressions given in Problems**.

a) log 27 − log 9 + log 81

b) log 64 + log 32 − log 128

c) log 8 − log 4 + log 32

**6. solve the equation.**

a) ln (4x − 7) = ln (x + 11)

b) ln (2x − 4) = ln (x + 6)

c) $\log_2(3x - 4) = \log_2 5$

d) $\log_2(4x + 8) = 5$

e) $\log_7(4x + 9) = 2$

7. a) use natural logarithms to evaluate expressing your answer in standard form correct to 4 S.f.

i. $\left(\frac{4.92\ x\ 10^{-1}\ x\ 2.541\ x\ 10^{2}}{5{,}682\ x\ 10^{-1}}\right)^{3}$

ii. $\sqrt{(2.463\ x\ 10^{-3})^{3}}$

b) use common logarithms to evaluate expressing your answer in standard form correct to 4 S.f.

i. $\frac{(3.817)^3}{(16.29)^2 - 14.3\ x\ 8.71}$

ii. $\frac{0.671\ x\ 8.423^2}{\sqrt{17.84} + 43.57\ x\ 0.0718}$

**THE END**