Math 1201 :   Roots and Powers   **4.5 and 4.6 *SAMPLE TEST***

Section A: Place the letter which corresponds to the correct answer in the space at the
right. (5 Marks)

1. Evaluate: $8^{-\frac{1}{3}}$ 1._____

(A) $-\dfrac{8}{3}$ (B) -2 C) $\dfrac{1}{2}$ (D) $-\dfrac{1}{2}$

2. Which is equivalent to $\left(\dfrac{2}{3}\right)^{-4}$?   2._____

(A) $\left(\dfrac{3}{2}\right)^{4}$ (B) $\left(\dfrac{2}{3}\right)^{4}$ (C) $\left(-\dfrac{2}{3}\right)^{\frac{1}{4}}$ (D) $\left(-\dfrac{3}{2}\right)^{\frac{1}{4}}$

3.   Simplify: $(6xy^3)(3x^5y^2)$ 3._____

(A) $9x^5y^6$ (B) $9x^6y^5$ (C) $18x^5y^6$ (D) $18x^6y^5$

4. What is $5x^{-1}$ written with positive exponents?   4._____

(A) $5x$ (B) $\dfrac{1}{5x}$ (C) $\dfrac{5}{x}$ (D) $-5x$

5. Simplify: $\dfrac{15y^7}{5y^{-2}}$ 5._____

(A) $12y^9$ (B) $12y^5$ C) $3y^5$ (D) $3y^9$

Section B: Constructed Response   (28 Marks)
                 Answer all of the following questions showing all work.

6. Evaluate each power without using a calculator: (3 Marks)

A) $49^{-\frac{1}{2}}$ B) $16^{-\frac{5}{4}}$ C) $\left(\dfrac{25}{36}\right)^{-\frac{1}{2}}$

7. Simplify the following, writing all answers with positive exponents. (20 Marks)

(A) $\left(\dfrac{x^{-2}y^5}{xy^7}\right)^3$ [4]   (B) $\dfrac{(6x^3)^2}{3x^{-1}}$ [3]

(C) $\dfrac{12x^{\frac{1}{2}}}{18x^{-\frac{5}{2}}}$ [3] (D) $m^4 n^{-2} \bullet m^2 n^3$ [2]

(E) $\dfrac{9^{\frac{7}{4}} \cdot 9^{-\frac{1}{4}}}{9^{\frac{3}{2}}}$ [4] (F) $\left(\dfrac{c^{10} m^6}{36c^{-8} m^{-2}}\right)^{\frac{1}{2}}$ [4]

8. Use the formula $v = 0.155 s^{\frac{5}{3}} f^{-\frac{7}{6}}$ to estimate the speed of a dinosaur when
   s = 1.5 and f = 0.3. (2 Marks)

9. Identify any errors in the solution below and then write a correct solution. (3 marks)

$$\dfrac{10x^2 y^3}{2x^5 y^{-2}} = 8x^{2-5} y^{3-2}$$

$$= 8x^{-3} y^1$$

$$= \dfrac{8y}{x^3}$$