Name: _____

Student ID: _____

Instructor: _____

Section Number: _____   Class Time: _____

Instructions:

(1) Please fill in all the above information.

(2) You must use a #2 pencil on the answer sheet.

(3) On the answer sheet, fill in:

    a) Your last name, first name and middle initial **and** blacken the appropriate spaces.

    b) Your division and section number **and** blacken the appropriate spaces.
    (If you do not know your division and section number, ask your instructor.)

    c) Your student identification number **and** blacken the appropriate spaces.

    d) Leave the test/quiz number blank.

    e) Sign your name.

(4) **Make sure that the cover of this exam matches the color of your answer sheet.**

(5) There are 15 questions. On the answer sheet, blacken your choice of the correct answer in the spaces provided for questions 1-15. Do all of your work on the question sheets. Turn in the answer sheet when you leave and keep the question sheet. **Only the answer sheet will be graded.**

(6) All questions are worth the same. Please answer every question. No points will be deducted for wrong answers.

(7) **No calculators are allowed.**

(8) The exam is self-explanatory. **Do not** ask an instructor questions about any of the exam problems.

1) Write this inequality as the union of two intervals.
   $x \leq -7 \ or \ x > 4$

   A. $(-\infty, -7] \cup [4, \infty)$

   B. $(-\infty, -7] \cup (4, \infty)$

   C. $(-\infty, -7) \cup [4, \infty)$

   D. $(-\infty, -7) \cup (4, \infty)$

   E. None of these.

2) Evaluate this expression. Let $a = 2$ and $b = 3$.
   $$\frac{-5a^{-2}b^{-3}}{10a^{-3}b}$$

   A. $-\dfrac{1}{81}$

   B. $\dfrac{2}{405}$

   C. $-\dfrac{1}{12}$

   D. $-\dfrac{1}{576}$

   E. $\dfrac{1}{36}$

3) The speed of light is 2.9×10^5 kilometers per second. Compute the speed of light in kilometers per minute. Leave your answer in scientific notation.

   A. 1.74×10^5

   B. 4.83×10^5

   C. 4.83×10^3

   D. 4.83×10^7

   E. 1.74×10^7

4) Simplify. $\left(\dfrac{36m^{16}}{n^6 t^2} \right)^{\frac{1}{2}}$

A. $\dfrac{6m^4}{n^6 t^2}$

B. $\dfrac{18m^8}{n^3 t}$

C. $\dfrac{6m^4}{n^3 t}$

D. $\dfrac{18m^4}{n^3 t}$

E. None of these.

5) Simplify completely. $\sqrt{75} - \sqrt{48} + 2\sqrt{3}$

A. $2\sqrt{30}$

B. $11\sqrt{3}$

C. $5\sqrt{3}$

D. $9\sqrt{6} + 2\sqrt{3}$

E. $3\sqrt{3}$

6) Multiply. $(3k - 2p)(5k + p)$

A. $15k^2 - 7kp - 2p^2$

B. $8k^2 - p^2$

C. $15k^2 - 13kp - 2p^2$

D. $8k^2 - 7kp - p^2$

E. $15k^2 - 2p^2$

7) Rationalize the denominator. $\dfrac{12y}{\sqrt{5}+3}$

A. $\dfrac{3y\sqrt{5}}{2}$

B. $6y\left(\sqrt{5}-3\right)$

C. $\dfrac{3y\left(\sqrt{5}+3\right)}{14}$

D. $-3y\left(\sqrt{5}-3\right)$

E. $12y\left(\sqrt{5}-3\right)$

8) One factor of $-2x^3-9x^2-4x$ is:

A. x^3

B. $x-4$

C. $2x+4$

D. $2x+1$

E. x^2-4

9) Factor. d^4+12d^2+36

A. $\left(d^2+6\right)\left(d^2-6\right)$

B. $\left(d^2+6\right)^2$

C. $\left(d^2+12\right)\left(d^2+3\right)$

D. $\left(d+6\right)^2$

E. None of these.

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10) Divide. $\dfrac{2b^2-5b-3}{2b^2+19b+9} \div \dfrac{b^2-9}{b+9}$

A. $\dfrac{b-3}{(b-9)(b-1)}$

B. $\dfrac{(b-3)(b-1)}{b-9}$

C. $\dfrac{1}{19b+3}$

D. $\dfrac{1}{b+3}$

E. None of these.

11) Simplify. Assume that all denominators are nonzero.

$$\dfrac{\dfrac{x}{y}}{1-\dfrac{x}{y}}$$

A. $\dfrac{x}{1-x}$

B. $\dfrac{1}{y-1}$

C. $\dfrac{x}{y-x}$

D. $\dfrac{xy}{y^2-x}$

E. $\dfrac{x}{1-y}$

12) Transform this equation into an equivalent linear equation.

$$\dfrac{4}{n+3} - \dfrac{3}{n-2} = \dfrac{6}{n^2+n-6}$$

A. $4(n+3)+3(n-2)=6(n^2+n-6)$

B. $4(n-2)-3(n+3)=6$

C. $4(n+3)-3(n-2)=6$

D. $4(n-2)-3(n+3)=6(n^2+n-6)$

E. None of these.

13) Solve. $\frac{1}{3}(x+5)+2x+5=3$

A. $x=-\frac{1}{3}$

B. $x=\frac{29}{7}$

C. $x=-2$

D. $x=-\frac{11}{7}$

E. $x=-\frac{17}{7}$

14) An internet book company sells books at a discount of 33% off list price. They charge $3.50 for shipping on each book. If Janelle pays a total of $31.64 for a book from this company, what was the list price? Set up the equation necessary to solve this problem. Do not solve. Assume that x represents the list price of the book.

A. $.67x+3.50=31.64$

B. $-.33x+3.50=31.64$

C. $x-.33x=35.14$

D. $3.50x-.33=31.64$

E. None of these.

15) Dave invested a total of $18,000 in two accounts. The first account paid 3% annual interest and the second account paid 4%. How much was invested at 3% if he earned $605 in interest after one year?

A. $6,500

B. $8,643

C. $11,500

D. $5,750

E. $7,713