TB(2B) Ch. 8 Laws of Integral Indices
Multiple Choice Questions

1. [13-14 S.Test 2 #2]

Solve $4(2^x) = \dfrac{1}{16}$ for x.

A. -6
B. -2
C. 2
D. 4

2. [13-14 S.Test 2 #6]

Simplify $9^{1-a} \div 3^{a-1}$.

A. 27^{1-a}
B. 9^{3-3a}
C. 3^{1-3a}
D. 3^{2-2a}

3. [13-14 S.Test 2 #7]

Which of the following has/have the same value as $4(2^8 + 2^4 + 2^0)$?

I. 100010001_2
II. 444_{16}
III. 1092_{10}

A. III only
B. II and III only
C. I and II only
D. I and III only

4. [13-14 S.6 Mock Exam #7]

Convert $110010x0y1_2$ into denary number.

A. $801 + 8x + 2y$
B. $407 + 8x + 2y$
C. $1602 + 16x + 4y$
D. $417 + 16x + 4y$

5. [13-14 Final Exam #13]

$\dfrac{16^{2a} \cdot 9^{5a}}{4^{-a}} =$

A. 6^{10a} **B.** 6^{20a}
C. $2^{6a} \cdot 3^{10a}$ **D.** $2^{8a} \cdot 3^{10a}$

6.   [13-14 Final Exam #19]

$3 \times 2^8 + 2^6 + 4 \times 2^2 =$

    A. $101000100_{(2)}$.
    B. $1101010000_{(2)}$.
    C. $1101000100_{(2)}$.
    D. $1101010100_{(2)}$.

7.   [13-14 S.6 Mock Exam #2]

Simplify $\dfrac{\left(a^{\frac{3}{4}} b^{-4} \right)^2}{b^{-1} a^2}$.

    A. $\dfrac{1}{a^{\frac{1}{2}} b^7}$

    C. $\dfrac{a^{\frac{1}{2}}}{b^9}$

    B. $\dfrac{a^{\frac{1}{2}}}{b^7}$

    D. $\dfrac{1}{a^{\frac{1}{2}} b^9}$

8.   [13-14 S.6 Mock Exam #7]

Convert $110010x0y1_2$ into denary number.

    A. $801 + 8x + 2y$

    B. $407 + 8x + 2y$

    C. $1602 + 16x + 4y$

    D. $417 + 16x + 4y$

9.   [14-15 Standardized Test #3]

$111_{10} - 111_2 =$

    A. 0.   **B.** 68_{16}.
    C. 68_{10}.   **D.** 1101001_2.

10.   [14-15 Standardized Test #6]

$\left(5^{2a} \right)^0 \cdot \left(5^{2a} \right)^3 \div \left[2 \left(5^a \right) \right]^2 =$

    A. $\dfrac{5^{3a}}{2}$.   **B.** $\dfrac{5^{3a}}{4}$.

    C. $\dfrac{25^{2a}}{2}$.   **D.** $\dfrac{25^{2a}}{4}$.

11. **[14-15 S.6 Mock Exam #1]**

$$\frac{(p + 2p + 3p + 4p)^2}{p \cdot 2p \cdot 3p \cdot 4p} =$$

A. 24.

B. $\dfrac{25p^2}{6}$.

C. $\dfrac{24}{p^2}$.

D. $\dfrac{25}{6p^2}$.

12. **[14-15 S.6 Mock Exam #32]**

$1101011011_2 =$

A. $3 \times 2^9 + 5 \times 2^5 + 11$.

B. $3 \times 2^8 + 5 \times 2^4 + 5$.

C. $13 \times 2^7 + 2^5 + 5 \times 2^2 - 1$.

D. $13 \times 2^6 + 2^4 + 11$.

13. **[14-15 Final Exam #5]**

Arrange the followings in ascending order.

I. 111001_2

II. $3A_{16}$

III. 56_{10}

A. I < II < III   B.   II < III < I

C. III < I < II   D.   III < II < I

14. **[14-15 Final Exam #16]**

Calculate $35.4 \times 10^{2015} - 3.18 \times 10^{2017}$ and express the answer in scientific notation.

A. 3.222×10^{2015}

B. 3.222×10^{2017}

C. -2.826×10^{2015}

D. -2.826×10^{2017}

15. **[15-16 Final Exam #4]**

Calculate $8.3 \times 10^{2016} - 50 \times 10^{2015}$ and express the answer in scientific notation.

A. -4.17×10^{2016}

B. 3.3×10^{2015}

C. 33×10^{2015}

D. 3.3×10^{2016}

16. [15-16 Final Exam #11]
B000000F00014$_{16}$ =

    A. $11 \times 16^{12} + 15 \times 16^5 + 14$.
    B. $11 \times 16^{12} + 15 \times 16^5 + 20$.
    C. $11 \times 16^{12} + 14 \times 16^5 + 1 \times 16^1 + 4 \times 16^0$.
    D. $11 \times 16^{13} + 14 \times 16^6 + 1 \times 16^2 + 4 \times 16^1$.

17. [15-16 S.6 Mock Exam #1]

$$\frac{\left(3a^3\right)^2}{3a^4} =$$

    A. $2a^2$.
    B. $2a$.
    C. $3a^2$.
    D. $3a$.

18. [15-16 S.6 Mock Exam #32]
$2^2 \times 2^{x+2} - 2^x - 2 =$

    A. $30^x - 2$.
    B. 2^{x+4}.
    C.   16.
    D. $15(2^x) - 2$.

19. [16-17 S.6 Mock Exam #33]
  A5000BEEF0097$_{16}$ =

    A. $165 \times 16^{12} + 48879 \times 16^5 + 97$.
    B. $181 \times 16^{12} + 53248 \times 16^5 + 97$.
    C. $165 \times 16^{11} + 48879 \times 16^4 + 151$.
    D. $181 \times 16^{11} + 53248 \times 16^4 + 151$.

20. [16-17 S.6 Mock Exam #1]

$$\left(-\frac{1}{9}\right)^{2017} \cdot 27^{2016} =$$

    A. $-\dfrac{1}{3^{2014}}$.

    B. $-\dfrac{1}{9^{2015}}$.

    C. -3^{2014} .

    D. -9^{2015} .

21. [15-16 Standardized Test #5]

Convert the decimal number $2^{13} + 2^{12} + 2^7 + 2^6 + 7$ to a binary number.

- **A.** 1100011000111_2
- **B.** 1100011000011_2
- **C.** 11000011000111_2
- **D.** 11000011000110_2

22. [15-16 Standardized Test #4]

Simplify $\dfrac{(a^{-2}b^3c^0)^{-1}}{(a^2b^{-2})^3}$.

- **A.** $\dfrac{a^6}{b^3}$

- **B.** $\dfrac{b^3}{a^4}$

- **C.** $\dfrac{1}{a^4b^3}$

- **D.** $\dfrac{1}{a^6b^{-3}c}$

23. [15-16 Standardized Test #9]

$$\frac{3^{n-1}+3^{n-2}}{3^{-2+n}}=$$

- **A.** 4.
- **B.** 3^{n-1}.
- **C.** $1+4^{n-1}$.
- **D.** $4\cdot 3^{n-2}$.

24. [15-16 Final Exam #4]

Calculate $8.3\times 10^{2016} - 50\times 10^{2015}$ and express the answer in scientific notation.

- **A.** -4.17×10^{2016}
- **B.** 3.3×10^{2015}
- **C.** 33×10^{2015}
- **D.** 3.3×10^{2016}

25. [15-16 Final Exam #11]

$B000000F00014_{16} =$

A. $11\times16^{12}+15\times16^{5}+14$.

B. $11\times16^{12}+15\times16^{5}+20$.

C. $11\times16^{12}+14\times16^{5}+1\times16^{1}+4\times16^{0}$.

D. $11\times16^{13}+14\times16^{6}+1\times16^{2}+4\times16^{1}$.

26. [16-17 Standardized Test #6]

$(-2m^{3})^{-3} =$

A. $\dfrac{6}{m^{9}}$.

B. $-\dfrac{6}{m^{9}}$.

C. $-\dfrac{1}{8m^{9}}$.

D. $-\dfrac{8}{m^{9}}$.

27. [16-17 Standardized Test #7]

$\dfrac{27^{n-1}}{9^{n+1}} =$

A. 3^{n-5}.

B. 3^{n-2}.

C. 3^{n-1}.

D. $\dfrac{3^{n-1}}{n+1}$.

28. [16-17 Standardized Test #8]

$\left(\dfrac{1}{4}\right)^{555}(-2)^{1112} =$

A. -4 .

B. 4 .

C. -0.5^{1667} .

D. 0.5^{1667} .

29. [16-17 Mid-Year Exam #5]

Simplify $\dfrac{24a^{6}b^{8}}{8a^{2}b^{4}}$.

A. $16a^{3}b^{2}$

B. $16a^{4}b^{4}$

C. $3a^{3}b^{2}$

D. $3a^{4}b^{4}$

30. **[16-17 Final Exam #5]**

$3^a \cdot 9^b =$

A. 27^{ab}.

B. 27^{a+b}.

C. 3^{2ab}.

D. 3^{a+2b}.

31. **[16-17 Final Exam, #20]**

It is given that x is a numeral in the hexadecimal system which satisfies the equation $3x2_{16} + 1010_2 = 940_{10}$. Find the numeral x.

A. 8

B. 9

C. A

D. B

32. **[17-18 S test 2 #2]**

Simplify $\dfrac{3^{2n-1} \cdot 27^{n+1}}{9^{3n}}$.

A. 3^2 B. 3^{2-n}

C. 3^{n-2} D. 9^{-n}

33. **[17-18 S test 2 #3]**

Solve the equation $6^{5-x} + 27 = 63$.

A. $x = -7$ B. $x = -3$

C. $x = 3$ D. $x = 7$

34. **[17-18 S test 2 #4]**

BAD000000066$_{16}$ =

A. $11 \times 16^{11} + 10 \times 16^{10} + 13 \times 16^9 + 1638$

B. $12 \times 16^{11} + 11 \times 16^{10} + 14 \times 16^9 + 1638$

C. $11 \times 16^{12} + 10 \times 16^{11} + 13 \times 16^{10} + 26208$

D. $12 \times 16^{12} + 11 \times 16^{11} + 14 \times 16^{10} + 26208$

35. **[17-18 S test 2 #6]**

Evaluate $6.5 \times 10^{2017} - 2.84 \times 10^{2018}$ and give your answer in scientific notation.

A. 6.216×10^{2017}

B. 1.846×10^{2018}

C. -2.19×10^{2018}

D. -3.66×10^{2018}

36.   [17-18 Final Exam #5]

$$\frac{8^{666}}{4^{333}} =$$

A. 2^{333}.

B. 2^{666}.

C. 4^{333}.

D. 4^{666}.

37.   [17-18 Final Exam #18]

$3 \times 16^{11} + 13 \times 16^{9} + 11 \times 16^{8} + 8 \times 16^{2} + 256 =$

A. $30EC000009000_{16}$.

B. $30EC00000900_{16}$.

C. $30DB0000900_{16}$.

D. $30DB00009000_{16}$.

~ End ~