Chapter: Exponents and Powers **Class:** 7
Test Code: 2026/Exponents/VII/05
Max Marks: 15

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1. Rewrite the bases as powers of 5:

$$(5^2)^{x-3} = (5^3)^{2x-4} \implies 5^{2(x-3)} = 5^{3(2x-4)}$$

Equate the exponents:

$$2(x-3) = 3(2x-4) \implies 2x-6 = 6x-12 \implies -4x = -6 \implies x = \frac{3}{2}$$

Answer: $\boxed{A}$

2. Simplify the left-hand side:

$$(-2)^{k+1} \times (-2)^k = (-2)^{2k+1}$$

Simplify the right-hand side:

$$(-2)^7\boldsymbol{\nabla}\cdot(-2)^2 = (-2)^{7-2} = (-2)^5$$

Equate the exponents:

$$2k+1 = 5 \implies 2k = 4 \implies k = 2$$

Answer: $\boxed{A}$

3. Simplify each term:

$$\left(\frac{3}{5}\right)^{-1} = \frac{5}{3}, \quad \left(\frac{1}{3}\right)^{-1} = 3$$

Substitute and simplify:

$$\left[\frac{5}{3} - 3\right]^{-1} = \left[\frac{5-9}{3}\right]^{-1} = \left[\frac{-4}{3}\right]^{-1} = -\frac{3}{4}$$

Answer: $\boxed{A}$

4. Simplify the expression:

$$\frac{2^{10} \times 7^3}{(2^3)^3 \times 7} = \frac{2^{10} \times 7^3}{2^9 \times 7} = 2^{10-9} \times 7^{3-1} = 2^1 \times 7^2 = 2 \times 49 = 98$$

Answer: $\boxed{B}$

5. Simplify the expression:

$$x = \left(\frac{3}{2}\right)^2 \times \left(\frac{3}{2}\right)^4 = \left(\frac{3}{2}\right)^6$$

Find x^{-1}:

$$x^{-1} = \left(\frac{3}{2}\right)^{-6} = \left(\frac{2}{3}\right)^6$$

Answer: $\boxed{A}$

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6. Rewrite in standard form:

$$0.00000000000000000016 = 1.6 \times 10^{-19}$$

Answer: $\boxed{A}$

7. Calculate the value:

$$(6^2 + 8^2)^{1/2} = (36 + 64)^{1/2} = 100^{1/2} = 10$$

Answer: $\boxed{A}$

8. Factorize 2160:

$$2160 = 2^4 \times 3^3 \times 5^1$$

Equate the exponents:

$$x = 4, \quad y = 3, \quad z = 1$$

Sum the exponents:

$$x + y + z = 4 + 3 + 1 = 8$$

Answer: $\boxed{A}$

9. Simplify the exponents:

$$\frac{a^{2n+1+(2n+1)(2n-1)}}{a^n} = \frac{a^{2n+1+4n^2-1}}{a^n} = \frac{a^{4n^2+2n}}{a^n} = a^{4n^2+n}$$

Answer: $\boxed{A}$

10. Rewrite 125 as a power of 5:

$$(5^3) \times (5^3) \times (5^3) = 5^{3+3+3} = 5^9$$

Equate the exponents:

$$x = 9$$

Answer: $\boxed{C}$

11. Simplify the expression:

$$\left(x^{a-b}\right) \times \left(x^{b-c}\right) \times \left(x^{c-a}\right) = x^{a-b+b-c+c-a} = x^0 = 1$$

Answer: $\boxed{A}$

12. Evaluate each option:

$$2^3 = 8, \quad 3^2 = 9 \implies 2^3 < 3^2$$
$$5^2 = 25, \quad 2^5 = 32 \implies 5^2 < 2^5$$
$$10^2 = 100, \quad 2^{10} = 1024 \implies 10^2 \neq 2^{10}$$
$$4^3 = 64, \quad 3^4 = 81 \implies 4^3 \neq 3^4$$

The correct statement is $5^2 < 2^5$. **Answer:** $\boxed{B}$

13. Rewrite the equation:

$$2^{n-5} \times 5^{n-4} = 5^1$$

Equate the exponents of 5:

$$n - 4 = 1 \implies n = 5$$

Answer: $\boxed{B}$

14. Simplify the expression:

$$\left[\left(\frac{1}{4}\right)^{-2}\right]^{-1} = \left[4^2\right]^{-1} = 16^{-1} = \frac{1}{16}$$

Answer: $\boxed{A}$

15. Substitute $x = 2$ and $y = 4$:

$$2^4 = 16, \quad 4^2 = 16 \implies 2^4 = 4^2$$

The statement is true. **Answer:** $\boxed{A}$