CONCEPT APPLICATION LEVEL - II

SECTION - A

- **FILL IN THE BLANKS**

Q.1 Express 3^{-2} as a rational number _____.

Q.2 Express $\left[\left(\frac{3}{5}\right)^2\right]^{-4}$ with a positive exponent _____.

Q.3 Find the value of $\left(\frac{-11}{15}\right)^{-6} \times \left(\frac{-11}{15}\right)^{4} \times \left(\frac{-11}{15}\right)^{2}$. _____.

Q.4 Find the value of $(5^{-1})^{-1}$._____.

Q.5 Find the value of $(3^0 - 2^0) \times 5^2$._____.

Q.6 Find the value of $\left(\frac{1}{4}\right)^{-1} + \left(\frac{1}{2}\right)^{-1} + \left(\frac{1}{3}\right)^{-1}$. _____.

Q.7 $\left(\frac{13}{14}\right)^5 \div (\_\_\_\_\_)^2 = \left(\frac{13}{14}\right)^3$.

Q.8 Find the value of $(4^{-1} + 8^{-1})$. _____.

Q.9 Express $\left(\frac{4}{5}\right)^{-3}$ with a positive exponent. _____.

Q.10 $[(-3)^{-2}]^{-1}$ = _____.

SECTION - B

- **MULTIPLE CHOICE QUESTIONS**

Q.1 The value of $\left(\frac{-1}{2}\right)^4$ is :

(A) $\frac{1}{8}$ (B) $\frac{-1}{8}$ (C) $\frac{1}{16}$ (D) $\frac{-1}{16}$

Q.2 $\left(\frac{1}{3}\right)^0$ is equal to

(A) $\frac{1}{3}$ (B) 1 (C) 3 (D) 0

Q.3 $\left(\frac{1}{2}\right)^3 \times \left(\frac{1}{3}\right)^3$ is equal to

(A) $\frac{1}{216}$ (B) $\frac{1}{125}$ (C) $\frac{1}{54}$ (D) None of these

Q.4 When simplified $7^0 \times 5^0$, we get

(A) 1 (B) 0 (C) 35 (D) None of these

Q.5 Which of the following is true?

(A) $\left[\left(\frac{a}{b}\right)^m\right]^n = \left(\frac{a}{b}\right)^{m+n}$ (B) $\left[\left(\frac{a}{b}\right)^m\right]^n = \left(\frac{a}{b}\right)^{mn}$

(C) $\left(\frac{a}{b}\right)^0 = 0$ (D) $\left(\frac{a}{b}\right)^n = \frac{1}{\left(\frac{a}{b}\right)^n}$

Q.6 If n is an odd positive integer, then $(-1)^n$ is equal to

(A) 1 (B) 0 (C) –1 (D) None of these

Q.7 Which of the following is not equal to $\frac{-8}{27}$?

(A) $\left(\frac{2}{3}\right)^{-3}$ (B) $-\left(\frac{2}{3}\right)^3$

(C) $\left(\frac{-2}{3}\right)^3$ (D) $\left(\frac{-2}{3}\right)\times\left(\frac{-2}{3}\right)\times\left(\frac{-2}{3}\right)$

Q.8 $\left(\frac{2}{3}\right)^{-5}$ is equal to

(A) $\left(\frac{-2}{3}\right)^5$ (B) $\left(\frac{3}{2}\right)^5$ (C) $\frac{2\times(-5)}{3}$ (D) $\frac{2}{3\times5}$

Q.9 $\left(\frac{-3}{2}\right)^{-1}$ is equal to

(A) $\frac{2}{3}$ (B) $-\frac{2}{3}$ (C) $\frac{3}{2}$ (D) None of these

Q.10 $\left(-\frac{1}{5}\right)^3 \div \left(-\frac{1}{5}\right)^8$ is equal to

(A) $\left(-\frac{1}{5}\right)^5$ (B) $\left(-\frac{1}{5}\right)^{11}$ (C) $(-5)^5$ (D) $\left(\frac{1}{5}\right)^5$

Q.11 For a non-zero rational number a, $a^7 \div a^{12}$ is equal to
(A) a^5 (B) a^{-19} (C) a^{-5} (D) a^{19}

Q.12 The value of $\left(\frac{4}{3}\right)^{-6} \div \left(\frac{4}{3}\right)^{-6}$ is

(A) $\frac{-4}{3}$ (B) 1 (C) 0 (D) $\left(\frac{-4}{3}\right)^{-12}$

Q.13 For a non-zero rational number a, $(a^3)^{-2}$ is equal to
(A) a^6 (B) a^{-6} (C) a^{-9} (D) a^5

Q.14 The value of $(7^{-1} - 8^{-1})^{-1} - (3^{-1} - 4^{-1})^{-1}$ is
(A) 56 (B) 12 (C) 68 (D) 44

Q.15 The value of x to make the statement $\left(\frac{5}{9}\right)^{-2} \times \left(\frac{18}{25}\right)^{-2} = x^{-2}$ true, is

(A) $\frac{5}{2}$ (B) $\left(\frac{5}{2}\right)^{-2}$ (C) $\left(\frac{-5}{2}\right)^{4}$ (D) $\frac{2}{5}$

Q.16 If $\frac{x}{y} = \left(\frac{2}{5}\right)^{-3} \times \left(\frac{15}{8}\right)^{-3}$, then $\left(\frac{x}{y}\right)^{-1}$ is equal to

(A) $\frac{27}{64}$ (B) $\frac{81}{64}$ (C) $\frac{-81}{64}$ (D) $\frac{-16}{81}$

Q.17 If $x = \left(8^{\frac{2}{3}} \cdot 32^{-\frac{2}{5}}\right)$, then $x^{-5} =$

(A) $\frac{1}{32}$ (B) -1 (C) 1 (D) -5

Q.18 $81^{\frac{1}{4}} \times 9^{\frac{3}{2}} \times 27^{-\frac{4}{3}} =$

(A) 1 (B) 3 (C) 9 (D) $\frac{1}{3}$

Q.19 If $4(4x)^7 = 4^{6^2}$, then what is the value of x?
(A) 5 (B) 25 (C) 64 (D) 256

Q.20 $\sqrt[5]{0.03125} =$

(A) 0.25 (B) 0.5 (C) 0.126 (D) 0.15

Q.21 Find the value of $(0.000064)^{\frac{2}{3}} \div (0.0016)^{\frac{3}{4}}$

(A) 3^{-1} (B) 4^{-1} (C) 5^{-1} (D) 10^{-1}

Q.22 Find the value of $(6561)^{(0.125)} + (3125)^{0.2}$

(A) 4 (B) 6 (C) 8 (D) None of these

Q.23 Which of the following statements is true about a rational number $\frac{-3}{4}$?

(A) It lies on the right side of 0 on the number line.
(B) It lies on the left side of 0 on the number line.
(C) It is not possible to represent it on the number line.
(D) It cannot be determined on which side of 0, the number lies.

Q.24 If $\frac{-4}{x} = \frac{x}{16}$, then x is

(A) A rational number (B) An integer (C) A natural number (D) Not a rational number

Q.25 Form the number from this expanded form :

$$3 \times \frac{1}{10} + 4 \times \frac{1}{10^2} + 6 \times \frac{1}{10^4} + 3 \times \frac{1}{10^5}$$

(A) 3463 (B) 0.34063 (C) 34.63 (D) 34063

Q.26 Form the number from this expanded form :

$$9 \times 10^3 + 3 \times \frac{1}{10^2} + 4 \times \frac{1}{10^3}$$

(A) 934 (B) 9.034 (C) 0.934 (D) 9000.034

Q.27 Form the number from this expanded form :

$$7 \times 10^3 + 2 \times 10^2 + 1 \times 10 + 2 \times \frac{1}{10} + 3 \times \frac{1}{10^3}$$

(A) 7210.203 (B) 721.23 (C) 721.203 (D) 72.123

Q.28 Express the following numbers in usual form :
3.02×10^{-6}

(A) 0.000032 (B) 0.000232 (C) 0.00000302 (D)0.000302

Q.29 Express the following numbers in standard form :
732000000

(A) 7.32×10^8 (B) 732×10^6 (C) 73.2×10^7 (D) 0.732×10^9

Q.30 Express the following number in the standard form
0.00000053
(A) 0.53×10^{-6} (B) 5.3×10^{-7} (C) 53×10^{-8} (D) 530×10^{-9}

Q.31 Express $(125)^{-3}$ as a power with base 5.
(A) $(5)^{-3}$ (B) $(5)^{-6}$ (C) 5^0 (D) $(5)^{-9}$

Q.32 Express $(64)^{-2}$ as a power with base 4.
(A) $(4)^{-6}$ (B) $(4)^{-5}$ (C) 4^1 (D) 4^2

Q.33 Find the value of $(8^0 + 7^{-1}) \times 2^3$
(A) 120 (B) 64 (C) $\frac{72}{7}$ (D) $\frac{64}{7}$

Q.34 Find the value of $(3^{-1} \times 4^{-1}) \div 6^{-2}$
(A) 3 (B) $\frac{1}{3}$ (C) 72 (D) $\frac{9}{2}$

Q.35 Find the value of $\left(\frac{1}{3}\right)^{-3} + \left(\frac{1}{4}\right)^{-3} + \left(\frac{1}{2}\right)^{-3}$
(A) 99 (B) 729 (C) $\left(\frac{12}{13}\right)^3$ (D) $\frac{1}{99}$

Q.36 Find the value of $\left(\frac{1}{2}\right)^{-1} + \left(\frac{1}{3}\right)^{-2} + \left(\frac{1}{4}\right)^{-3}$
(A) 75 (B) $\frac{1}{75}$ (C) $\frac{12}{13}$ (D) $\frac{1}{17}$

Q.37 Find the value of $\left\{\left(\frac{-6}{7}\right)^{-2}\right\}^{-2}$
(A) 1 (B) $\frac{-6}{7}$ (C) $\frac{1296}{2401}$ (D) $-\frac{1296}{2401}$

Q.38 $\left(\frac{-3}{5}\right)^{-1} \times \left(\frac{3}{5}\right)^2$
(A) $\frac{-5}{3}$ (B) $\frac{-3}{5}$ (C) $\frac{5}{3}$ (D) $\frac{3}{5}$

Q.39 By what number should $\left(\frac{-4}{7}\right)^2$ be multiplied to get $\left(\frac{49}{16}\right)^{-2}$?

(A) $\frac{7}{4}$ (B) $-\frac{7}{4}$ (C) $\frac{16}{49}$ (D) $-\frac{16}{49}$

Q.40 By what number should $(3)^{-2}$ be divided to get $(9)^{-3}$?

(A) 81 (B) $\frac{1}{81}$ (C) $\frac{1}{3}$ (D) $\frac{1}{9}$

Q.41 The product of two numbers is $\left(\frac{2}{5}\right)^{-3}$. If one of them is $\left(\frac{5}{4}\right)^{-2}$, find the other.

(A) $\frac{2^7}{5^5}$ (B) $\frac{2^2}{5^1}$ (C) $\frac{5^{-1}}{2^{-3}}$ (D) $\frac{5^5}{2^7}$

Q.42 If $(3^{2x+1}+9) \div 9 = 10$, find the value of x.

(A) $\frac{3}{2}$ (B) $\frac{2}{3}$ (C) $\frac{1}{2}$ (D) 1

Q.43 By what number should $(-5)^{-3}$ be multiplied to get $\left(\frac{1}{5}\right)^2$?

(A) 5 (B) –5 (C) $\frac{1}{5}$ (D) 5^2

Q.44 Find the value of $(2^{-1} \times 4^{-1}) \div 2^{-2}$

(A) 2 (B) $\frac{1}{2}$ (C) 4 (D) $\frac{1}{4}$

Q.45 Find the value of $\left(\frac{1}{2}\right)^{-2} + \left(\frac{1}{3}\right)^{-2} + \left(\frac{1}{4}\right)^{-2}$

(A) 29 (B) $\frac{1}{29}$ (C) $\frac{81}{144}$ (D) $\frac{169}{144}$

Q.46 Find the value of $\left\{5^{-1} + \left(\frac{1}{2}\right)^{-2} + 2^{-1}\right\}^0$

(A) 0 (B) 1 (C) $\frac{15}{2}$ (D) $\frac{47}{10}$

Q.47 By what number should $\left(\left(\frac{-2}{13}\right)^2\right)^{-3}$ be divided to obtain $\left(\frac{-2}{13}\right)^3$?

(A) $\left(\frac{-2}{13}\right)^9$ (B) $\left(\frac{13}{2}\right)^9$ (C) $\left(\frac{-13}{2}\right)^9$ (D) $\left(\frac{-13}{2}\right)^6$

Q.48 Simplify and express in the exponential form :

$\left(\frac{3}{11}\right)^2 \times \left(\frac{3}{11}\right)^5 \times \left(\frac{3}{11}\right)^9$

(A) $\left(\frac{3}{11}\right)^{16}$ (B) $\left(\frac{3}{11}\right)^{90}$ (C) $\left(\frac{27}{1331}\right)^9$ (D) $\left(\frac{6}{11}\right)^5$

Q.49 $\left(\frac{11}{7}\right)^9 \div \left(\frac{11}{7}\right)^7$

(A) $\left(\frac{7}{11}\right)^2$ (B) $\left(\frac{11}{7}\right)^2$ (C) $\left(\frac{11}{7}\right)^{16}$ (D) $\left(\frac{7}{11}\right)^{16}$

Q.50 $\left(\frac{2}{5}\right)^4 \times \left(\frac{15}{16}\right)^4$

(A) $\left(\frac{3}{8}\right)^4$ (B) $\left(\frac{3}{8}\right)^8$ (C) $\left(\frac{3}{8}\right)^{16}$ (D) $\left(\frac{30}{80}\right)^0$

Q.51 Subtract the sum of $\frac{-7}{8}$ and $\frac{-5}{6}$ from the sum of $\frac{2}{3}$ and $\frac{-8}{15}$.

(A) $\frac{221}{120}$ (B) $-\frac{221}{120}$ (C) $\frac{35}{48}$ (D) $\frac{16}{45}$

Q.52 Write the multiplicative inverse of $(-3)^3 \times \frac{1}{4^2}$

(A) 1 (B) $\frac{27}{16}$ (C) $\frac{-16}{27}$ (D) $-\frac{27}{16}$

Q.53 $\frac{1}{27} \div \frac{1}{3^4}$

(A) $\frac{1}{3}$ (B) 3 (C) 1 (D) 3^7

Q.54 Simplify : $[5^{-1} - 7^{-1}]^{-1}$

(A) $\frac{35}{2}$ (B) $\frac{-1}{2}$ (C) $\frac{2}{35}$ (D) -2

Q.55 Simplify : $\left[\left(\frac{2}{3}\right)^{-1} - \left(\frac{1}{2}\right)^{-1}\right]^{-1}$

(A) -2 (B) $\frac{-1}{2}$ (C) 1 (D) 6

Q.56 Find x, so that $(-6)^{x+1} \times (-6)^5 = (-6)^8$

(A) 0 (B) 1 (C) 2 (D) 3

Q.57 Simplify : $\left\{\left(\frac{1}{5}\right)^{-2} - \left(\frac{1}{2}\right)^{-3}\right\} \div \left(\frac{1}{4}\right)^{-2}$

(A) $\frac{1}{4}$ (B) $\frac{17}{16}$ (C) $\frac{18}{17}$ (D) $\frac{25}{16}$

Q.58 Simplify : $\left(\frac{3}{8}\right)^{-7} \times \left(\frac{8}{3}\right)^{-2}$

(A) $\left(\frac{3}{8}\right)^5$ (B) $\left(\frac{3}{8}\right)^{-9}$ (C) $\left(\frac{8}{3}\right)^5$ (D) $\left(\frac{8}{3}\right)^{-9}$

Q.59 Simplify : $\frac{3^{-5} \times 10^{-4} \times 5^4}{5^2 \times 6^{-5}}$

(A) $\frac{2}{5^2}$ (B) $\frac{6}{25}$ (C) 0 (D) 50

Q.60 Solve for x.
$2^{2x} \times 2^{x+9} = (4^3)^6$

(A) 0 (B) 9 (C) $\frac{1}{3}$ (D) 4

Q.61 Solve for x : $27 \times 3^{5x-2} = \frac{1}{81}$.

(A) 0 (B) -1 (C) 2 (D) -3

Q.62 By what number $(4)^{-3}$ be multiplied so that the product becomes $\frac{1}{16}$?

(A) $\frac{1}{4^5}$ (B) 4^2 (C) $\frac{1}{16}$ (D) 4

Q.63 By what number should $\left(\frac{3}{4}\right)^{-3}$ be divided so that the quotient becomes 128.

(A) $\frac{1}{27}$ (B) $\frac{1}{54}$ (C) 27 (D) 54

Q.64 Simplify : $3^0 + 2^{-2}$

(A) $\frac{1}{25}$ (B) $\frac{5}{4}$ (C) $\frac{1}{4}$ (D) 5

Q.65 Find x so that $\left(\frac{7}{8}\right)^{-3} \times \left(\frac{7}{8}\right)^{5} = \left(\frac{7}{8}\right)^{x}$.

(A) 2 (B) 3 (C) 1 (D) –1

Q.66 Find x so that $\left(\frac{2}{3}\right)^{-2} \times \left(\frac{2}{3}\right)^{-9} = \left(\frac{2}{3}\right)^{2x+1}$.

(A) 6 (B) –6 (C) –8 (D) 4

Q.67 If $\frac{x}{y} = \left(\frac{3}{5}\right)^{-3} \times \left(\frac{5}{2}\right)^{-3}$, then find $\left(\frac{x}{y}\right)^{-1}$.

(A) $\frac{8}{27}$ (B) $\left(\frac{3}{2}\right)^{-6}$ (C) $\frac{27}{8}$ (D) $\frac{6}{25}$

Q.68 Find the value of x : $(4^{-1} + 8^{-1}) \times (3^{-1} - 9^{-1}) \div \frac{1}{12} = 5^x$.

(A) 0 (B) 1 (C) –6 (D) $\frac{1}{5}$

Q.69 Simplify : $\frac{\left[\left(\frac{2}{3}\right)^{-2} \div \left(\frac{2}{3}\right)^{-1}\right] \times \left(\frac{3}{2}\right)^{4}}{\left(\frac{3}{2}\right)^{2} \times \left(\frac{3}{2}\right)^{-3}}$.

(A) 1 (B) $\frac{1}{64}$ (C) $\frac{729}{64}$ (D) $\frac{64}{729}$

Q.70 Simplify : $(6^2 \times 3^{-2})\,(6^2 \div 3^{-2})$

(A) 16 (B) 296 (C) 324 (D) 1296

Q.71 Simplify : $(3^0 + 2^0) + (3^0 - 2^0)$

(A) 2 (B) 6 (C) 0 (D) 1

Q.72 Simplify : $\dfrac{27x^3yz^{-3}}{3x(y \times z)^3}$

(A) $9x^2$ (B) $\dfrac{9x^2}{y^2z^6}$ (C) $\dfrac{9x^3}{yz}$ (D) $\dfrac{9x^2y}{z^3}$

Q.73 Solve for x : $5^{-3x} : 5^{x+7} = 1 : 125$.

(A) –1 (B) 1 (C) 0 (D) 2

Q.74 Find the value of $\left(\dfrac{p}{q}\right)^3$ if $\left(\dfrac{7}{2}\right)^{-4} \times \left(\dfrac{4}{49}\right)^3 = \left(\dfrac{p}{q}\right)^{-10}$.

(A) $\dfrac{2}{7}$ (B) $\dfrac{7}{2}$ (C) $\dfrac{343}{8}$ (D) $\dfrac{8}{343}$

Q.75 Evaluate : $\left(\dfrac{5}{7}\right)^{2+3} \div \left(\dfrac{5}{7}\right)^5$

(A) 0 (B) 1 (C) –1 (D) $\left(\dfrac{5}{7}\right)^{10}$

Q.76 Simplify : $\left(\dfrac{-2}{3}\right)^4 \times \dfrac{27}{32}$

(A) $\dfrac{1}{2}$ (B) $\dfrac{1}{3}$ (C) $\dfrac{1}{6}$ (D) 3

Q.77 Simplify : $\left[\left(\dfrac{1}{5}\right)^6 \div \left(\dfrac{1}{5}\right)^5\right] \div \dfrac{1}{5}$

(A) $\dfrac{1}{5}$ (B) $\left(\dfrac{1}{5}\right)^{10}$ (C) 5 (D) 1

Q.78 Simplify : $\left[\left(\dfrac{-2}{3}\right)^3 \times \left(\dfrac{-2}{3}\right)\right] \div \left(\dfrac{4}{9}\right)^2$

(A) 1 (B) $\dfrac{2}{3}$ (C) $\dfrac{3}{4}$ (D) $\dfrac{4}{9}$

Q.79 Simplify : $\frac{18^{-1}\times p^{-3}}{3^{-2}\times 10^{-2}\times p^{-5}}, (p\neq 0)$

(A) p^2 (B) 1 (C) $50\,p^2$ (D) $\frac{p^2}{9}$

Q.80 Simplify : $\frac{a^{-4}\times 25\times b^{-2}}{(ab)^{-3}\times 10^{-1}}, (a, b\neq 0)$

(A) $\frac{250\,b}{a}$ (B) $\frac{25}{10}ab$ (C) $250a$ (D) $\frac{25}{10}ab^2$

Q.81 Find m, if $\left(\frac{3}{7}\right)^5\times\left(\frac{3}{7}\right)^{-2}=\left(\frac{3}{7}\right)^m$

(A) 2 (B) 3 (C) 7 (D) 5

Q.82 Find m, if $\left(\frac{1}{8}\right)^3\div\left(\frac{1}{8}\right)^6=8^m$

(A) 3 (B) 8 (C) 1 (D) 2

Q.83 Find x, if $\left(\frac{2}{3}\right)^{-5}\times\left(\frac{2}{3}\right)^{12}=\left(\frac{2}{3}\right)^{3x-2}$

(A) –2 (B) $\frac{1}{3}$ (C) $\frac{2}{3}$ (D) 3

Q.84 Find the value of x^{-2}, if $x=\left(\frac{3}{7}\right)^{-5}\div\left(\frac{11}{14}\right)^0$.

(A) $\left(\frac{3}{7}\right)^{-10}$ (B) $\frac{3}{7}$ (C) $\left(\frac{7}{3}\right)^5$ (D) $\left(\frac{7}{3}\right)^{-10}$

Q.85 Simplify $\left(\frac{2}{3}\right)^3\times\left(\frac{2}{3}\right)^{-2}\times\left[\left(\frac{1}{2}\right)^2\right]^{-2}\times\frac{1}{24}$

(A) 1 (B) $\frac{2}{3}$ (C) $\frac{4}{9}$ (D) $\frac{8}{24}$

Q.86 Find the value of $\frac{x}{y}$, if $\left(\frac{3}{5}\right)^{-4} \times \left(\frac{15}{10}\right)^{-4} = \left(\frac{x}{y}\right)^{-4}$

(A) 1 (B) $\frac{9}{10}$ (C) $\frac{10}{9}$ (D) $\frac{1}{4}$

Q.87 Evaluate $(14^2 - 13^2)^{5/3}$.

(A) 1 (B) $2^{10/3}$ (C) 243 (D) $\frac{5}{3}$

Q.88 If $21168 = x^4 \times y^3 \times z^2$, find $(x + y + z)^{\left(\frac{y+z}{x+y}\right)}$, where x, y and z are positive integers.

(A) 144 (B) 169 (C) 1 (D) $9^{5/7}$

Q.89 Simplify: $\frac{5(81)^{n+1} - 3^{4n+5}}{3 \times 3^{4n} + (81)^n}$.

(A) $\frac{2}{81}$ (B) $\frac{81}{2}$ (C) $\frac{3}{81}$ (D) $\frac{81}{4}$

Q.90 If $\left(\frac{32}{243}\right)^n = \frac{8}{27}$, find $\left(\frac{n + 0.4}{1024}\right)^{-n}$.

(A) 96 (B) 1 (C) 64 (D) $\frac{3}{5}$

Q.91 If $16200 = 2^a \times 3^b \times 5^c$, then find a, b and c.

(A) a = 3, b = 4, c = 2 (B) a = 4, b = 2, c = 3
(C) a = 2, b = 3, c = 4 (D) a = 3, b = 2, c = 4

Q.92 Simplify: $\left(\frac{p^a}{p^b}\right)^c \times \left(\frac{p^b}{p^c}\right)^a \times \left(\frac{p^c}{p^a}\right)^b$.

(A) 0 (B) 1 (C) p^{abc} (D) $p^{\frac{1}{abc}}$

Q.93 If $\left[\sqrt[9]{\left(\frac{2}{3}\right)^5}\right]^{\sqrt{x-5}} = a^0$, find the value of x.

(A) 1 (B) 0 (C) 5 (D) $\frac{1}{5}$

Q.94 Simplify: $\dfrac{(p^{a+b})^5 \cdot (p^{b+c})^5 \cdot (p^{c+a})^5}{(p^a \cdot p^b \cdot p^c)^{10}}$

(A) $\dfrac{1}{p}$ (B) 1 (C) p^{5abc} (D) $p^{\frac{5}{abc}}$

Q.95 If $5^{3x+2} = 25 \times 5^{(4x-1)}$, find the value of x.

(A) 1 (B) 2 (C) –1 (D) 0

Q.96 Simplify: $\dfrac{(a+b+c)^{a+b} \cdot (a+b+c)^{b+c} \cdot (a+b+c)^{c+a}}{[(a+b+c)^a\ (a+b+c)^b\ (a+b+c)^c]^2}$

(A) 0 (B) 1 (C) (a + b + c) (D) $\dfrac{1}{a+b+c}$

Q.97 Simplify: $(a^{p+q})^{p-q} \cdot (a^{q+r})^{q-r} \cdot (a^{r+p})^{r-p}$

(A) a (B) a^{p+q+r} (C) 0 (D) 1

Q.98 Simplify: $\left[\left(\dfrac{a}{b}\right)^{\sqrt{p}+\sqrt{q}}\right]^{\sqrt{p}-\sqrt{q}} \left[\left(\dfrac{a}{b}\right)^{\sqrt{q}+\sqrt{r}}\right]^{\sqrt{q}-\sqrt{r}} \left[\left(\dfrac{a}{b}\right)^{\sqrt{r}+\sqrt{p}}\right]^{\sqrt{r}-\sqrt{p}}$

(A) $\left(\dfrac{a}{b}\right)$ (B) 1 (C) $\left(\dfrac{a}{b}\right)^{\sqrt{p}+\sqrt{q}+\sqrt{r}}$ (D) $\left(\dfrac{a}{b}\right)^{\sqrt{p}+\sqrt{q}-\sqrt{r}}$

Q.99 $\left(\dfrac{x^{-1}+y^{-1}}{x^{-1}}\right)^{-1} + \left(\dfrac{x^{-1}-y^{-1}}{x^{-1}}\right)^{-1}$

(A) $\dfrac{2y^2}{y^2-x^2}$ (B) $\dfrac{2x^2}{y^2+x^2}$ (C) $\dfrac{2(x+y)}{x}$ (D) $\dfrac{2(x+y)}{y}$

Q.100 If a, b, c are real numbers, then $\sqrt[5]{ab^{-1}} \times \sqrt[5]{bc^{-1}} \times \sqrt[5]{ca^{-1}}$.

(A) $(abc)^{-1/5}$ (B) 1 (C) $(abc)^{-5}$ (D) $\dfrac{1}{abc}$