IPMAT / JIPMAT / IIM-B — PYQ Practice Sheet

Algebra: Indices

IIM Bangalore (BBA-DBE) 2024 Slot 1 | Algebra > Indices | Easy

Q1. If $2^{x+y} = 4^{x-y} = \sqrt{32}$, then $xy =$ ____.

(a) $\frac{75}{32}$

(b) $\frac{75}{64}$

(c) $\frac{75}{16}$

(d) $\frac{75}{128}$

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Q2. If $x^{\frac{1}{12}} = 49^{\frac{1}{24}}$, the value of x is:

(a) 4

(b) 7

(c) 6

(d) 5

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Q3. Determine the greatest number among the following four numbers:

(a) 2^{300}

(b) 3^{200}

(c) $2^{100} + 3^{100}$

(d) 4^{100}

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Q4. The set of all possible values of $f(x)$ for which $(81)^x + (81)^{f(x)} = 3$ is

(a) $(0.25, 3)$

(b) $(-\infty, 4)$

(c) $(-\infty, 0.25)$

(d) $(3, 4)$

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Q5. The greatest number among 2^{300}, 3^{200}, 4^{100}, $2^{100} + 3^{100}$ is

(a) 2^{300}

(b) 3^{200}

(c) $2^{100} + 3^{100}$

(d) 4^{100}

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Q6. Simplification: $25^{2.7} \times 5^{4.2} \div 5^{5.4} = ?$

(a) 5^{4}

(b) $5^{3.2}$

(c) $5^{4.1}$

(d) $5^{4.2}$

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Q7. What is the square root of 99999?

(a) 316.23

(b) 316.22

(c) 316.21

(d) 316.2

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Q8. What is the cube root of 55555?

(a) 38.17

(b) 38.16

(c) 38.15

(d) 38.14

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Q9. If $2^x = 3^y = 6^{-z}$, then $\left(\frac{1}{x}+\frac{1}{y}+\frac{1}{z}\right)$ is equal to

(a) 0

(b) 1

(c) 2

(d) 4

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Q10. Find the value of $\frac{\sqrt{5}+\sqrt{3}}{\sqrt{8-2\sqrt{15}}}+\frac{\sqrt{11+2\sqrt{30}}}{\sqrt{6}-\sqrt{5}}$

(a) $25+\sqrt{10}+2\sqrt{30}$

(b) $40+\sqrt{10}+2\sqrt{30}$

(c) $30+\sqrt{20}+2\sqrt{30}$

(d) $15+\sqrt{15}+2\sqrt{30}$

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Q11. $\sqrt{\sqrt{3}+\sqrt{5}}$ =

(a) $\sqrt{2}+1$

(b) $\sqrt{\frac{5}{2}}+\sqrt{\frac{1}{2}}$

(c) $\sqrt{\frac{7}{2}}-\sqrt{\frac{1}{2}}$

(d) $\sqrt{\frac{9}{2}}-\sqrt{\frac{3}{2}}$

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Q12. Match List I with List II:

(A) $\sqrt{15 \times 163 \div 5 - 89}$ → (I) 105

(B) $\sqrt{15^2 + 11 \times 3^2}$ → (II) 20

(C) $\sqrt{8^2 \times 7 \times 5^2 - 175}$ → (III) 10

(D) $\sqrt{91+\sqrt{70+\sqrt{121}}}$ → (IV) 18

(a) A-(III), B-(I), C-(IV), D-(II)

(b) A-(II), B-(III), C-(I), D-(IV)

(c) A-(II), B-(IV), C-(I), D-(III)

(d) A-(IV), B-(III), C-(II), D-(I)

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Q13. Simplify: $\frac{\sqrt[4]{0.0625}+\sqrt[3]{0.008}+\sqrt{0.09}-1}{\sqrt[3]{62.5} \times \sqrt[5]{32}}$

(a) 1.25 (b) $\frac{1}{5}$

(c) 0 (d) 24

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Q14. $\sqrt{2+\sqrt{3}} \times \sqrt{2+\sqrt{2+\sqrt{3}}} \times \sqrt{2+\sqrt{2+\sqrt{2+\sqrt{3}}}} \times \sqrt{2-\sqrt{2+\sqrt{2+\sqrt{3}}}}$

is equal to

(a) 1 (b) 2

(c) 4 (d) $\sqrt{6}$

Answer Key

Q1: (b)	Q2: (b)	Q3: (b)	Q4: (c)	Q5: (b)
Q6: (d)	Q7: (b)	Q8: (c)	Q9: (a)	Q10: (d)
Q11: (b)	Q12: (c)	Q13: (c)	Q14: (a)	