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VIRTUAL COACHING CLASSES
ORGANISED BY BOS (ACADEMIC), ICAI

FOUNDATION LEVEL PAPER 3:
BUSINESS MATHEMATICS LOGICAL REASONING AND STATISTICS

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INDICES

Consider a^n = a x a x a x……. n times

Here ‘a’ is called the base and n is called the power or index

LAW 1 $a^m \times a^n = a^{m+n}$

LAW 2 $\frac{a^m}{a^n} = a^{m-n}$

LAW 3 $(a^m)^n = a^{m \times n}$

LAW 4 $(ab)^n = a^n \times b^n$

INDICES

IMPORTANT

- $a^0 = 1$
- $\sqrt{a} = a^{1/2}$
- $\sqrt[3]{a} = a^{1/3}$
- $\sqrt[m]{a} = a^{1/m}$
- $\frac{1}{a} = a^{-1}$
- $a^{-m} = \frac{1}{a^m}$

INDICES

a) $4^3 \times 4^4 = ?$

b) $(5^{-1})^{-1} = ?$

c) $x^{-11} \times x^6 = ?$

d) $\frac{1}{(2a)^{-1}} = ?$

e) $(2x^2)^5 \times (4x^3)^2 = ?$

f) $\frac{(b^2)^3 \times b^{-2}}{b^3} = ?$

g) If $2^{x+3} = 16$, find 'x'

INDICES

Ex 1 C page 1.21

1. $4x^{-1/4}$ is expressed as

   (a) $-4x^{1/4}$ (b) x^{-1} (c) $4/x^{1/4}$ (d) none of these

2. The value of $8^{1/3}$ is

   (a) $\sqrt[3]{2}$ (b) 4 (c) 2 (d) none of these

3. The value of $2 \times (32)^{1/5}$ is

   (a) 2 (b) 10 (c) 4 (d) none of these

4. The value of $4/(32)^{1/5}$ is

   (a) 8 (b) 2 (c) 4 (d) none of these

5. The value of $(8/27)^{1/3}$ is

   (a) 2/3 (b) 3/2 (c) 2/9 (d) none of these

6. The value of $2(256)^{-1/8}$ is

   (a) 1 (b) 2 (c) 1/2 (d) none of these

INDICES

8. $\left(\frac{81x^4}{y^{-8}}\right)^{\frac{1}{4}}$ has simplified value equal to

(a) xy^2 (b) x^2y (c) $9xy^2$ (d) none of these

9. $x^{a-b} \times x^{b-c} \times x^{c-a}$ is equal to

(a) x (b) 1 (c) 0 (d) none of these

10. The value of $\left(\frac{2p^2q^3}{3xy}\right)^0$ where p, q, x, y $\neq 0$ is equal to

(a) 0 (b) 2/3 (c) 1 (d) none of these

11. $\{(3^3)^2 \times (4^2)^3 \times (5^3)^2\} / \{(3^2)^3 \times (4^3)^2 \times (5^2)^3\}$ is

(a) 3/4 (b) 4/5 (c) 4/7 (d) 1

12. Which is True ?

(a) $2^0 > (1/2)^0$ (b) $2^0 < (1/2)^0$ (c) $2^0 = (1/2)^0$ (d) none of these

INDICES

24. Using $(a-b)^3 = a^3-b^3-3ab(a-b)$ tick the correct of these when $x = p^{1/3} - p^{-1/3}$

(a) $x^3+3x = p + 1/p$ (b) $x^3 + 3x = p - 1/p$ (c) $x^3 + 3x = p + 1$ (d) none of these

25. On simplification, $1/(1+a^{m-n}+a^{m-p}) + 1/(1+a^{n-m}+a^{n-p}) + 1/(1+a^{p-m}+a^{p-n})$ is equal to

(a) 0 (b) a (c) 1 (d) 1/a

26. The value of $\left(\frac{x^a}{x^b}\right)^{a+b} \times \left(\frac{x^b}{x^c}\right)^{b+c} \times \left(\frac{x^c}{x^a}\right)^{c+a}$

(a) 1 (b) 0 (c) 2 (d) none of these

27. If $x = 3^{\frac{1}{3}}+3^{-\frac{1}{3}}$, then $3x^3-9x$ is

(a) 15 (b) 10 (c) 12 (d) none of these

INDICES

28. If $a^x = b$, $b^y = c$, $c^z = a$, then xyz is

(a) 1 (b) 2 (c) 3 (d) none of these

29. The value of $\left(\frac{x^a}{x^b}\right)^{(a^2+ab+b^2)} \times \left(\frac{x^b}{x^c}\right)^{(b^2+bc+c^2)} \times \left(\frac{x^c}{x^a}\right)^{(c^2+ca+a^2)}$

(a) 1 (b) 0 (c) –1 (d) none of these

30. If $2^x = 3^y = 6^{-z}$, $\frac{1}{x}+\frac{1}{y}+\frac{1}{z}$ is

(a) 1 (b) 0 (c) 2 (d) none of these

INDICES - AQB

1. The value of $\left(\frac{6^{-1}7^{2}}{6^{2}7^{-4}}\right)^{7/2} \times \left(\frac{6^{-2}7^{3}}{6^{3}7^{-5}}\right)^{-5/2}$ is

(a) 0 (b) 252 (c) 250 (d) 248

2. The value of $\frac{x^{2/7}}{z^{-1/2}} \times \frac{x^{2/5}}{z^{2/3}} \times \frac{x^{-9/7}}{z^{2/3}} \times \frac{z^{5/6}}{x^{-3/5}}$ is

(a) 1 (b) –1 (c) 0 (d) None

3. On simplification $\frac{2^{x+3} \times 3^{2x-y} \times 5^{x+y+3} \times 6^{y+1}}{6^{x+1} \times 10^{y+3} \times 15^{x}}$ reduces to

(a) –1 (b) 0 (c) 1 (d) 10

INDICES- AQB

13. If $2^{x+y} = 4x8x16$, then $(x+y)^2$ is equal to

(a) 16 (b) 81 (c) 32 (d) 64

17. The value of z is given by the following if $z^{z\sqrt{z}} = \left(z\sqrt{z}\right)^z$

(a) 2 (b) $\frac{3}{2}$ (c) $-\frac{3}{2}$ (d) $\frac{9}{4}$

21. If $x=4^{1/3}+4^{-1/3}$ prove that $4x^3-12x$ is given by

(a) 12 (b) 13 (c) 15 (d) 17

THANK YOU