Exponents

QUESTIONS

1. Which among the following is a perfect square?

455562, 323761, 675487, 897568, 347860

(a) 455562 (b) 323761

(c) 675487 (d) 897568

(e) None of these

2. Find the unit's digit in the product of $\frac{2^{32} \times 3^{42} \times 847^{42}}{9^{14}}$.

(a) 9 (b) 6

(c) 3 (d) 1

(e) None of these

3. simplify $\frac{(-2)^{24} \times (-3)^{17} \times 847^{42}}{(12)^{16} \times (27)^{6}}$

(a) $\frac{-1}{2^{35} \times 3^{17}}$ (b) $\frac{1}{2^{35} \times 3^{17}}$

(c) $\frac{1}{3^{16} \times 2^{34}}$ (d) $\frac{-1}{3^{16} \times 2^{34}}$

(e) None of these

4. Which one among the following statements is incorrect?

(a) The multiplicative inverse of 10^{-1000} is $\frac{1}{10^{1000}}$.

(b) The reciprocal of $\left(\frac{1}{5}\right)^{\frac{-1}{2}}$ is $\frac{1}{\sqrt{5}}$

(c) $\frac{1}{\left(x^{m}\right)^{-n}}$ is equal to $(x^{-n})^{-m}$

(d) $\left(\frac{1}{2}\right)^{-1/2}$ is equal to $\sqrt{2}$.

(e) None of these

5. Which one among the following is the reciprocal of $\frac{2^{5} \times 3^{7} \times \left(\sqrt{7}\right)^{3/4}}{\left(\sqrt{8}\right)^{2} \times \left(\sqrt{7}\right)}$?

(a) $2^{-2} \times 3^{-7} \times 7^{5/8}$ (b) $2^{3} \times 3^{7} \times 7^{-5/8}$

(c) $2^{5} \times 3 - 7 \times 7^{-1/8}$ (d) $2^{-4} \times 3^{7} \times 7^{5/8}$

(e) None of these

6. Simplify $\left[\left(\frac{2}{17}\right)^{-6} \div \left(\frac{2}{17}\right)^{4}\right]^{-4} \times \left(\frac{2}{17}\right)^{-18}$

(a) $\left(\frac{2}{17}\right)^{-20}$ (b) $\left(\frac{17}{2}\right)^{-20}$

(c) $\left(\frac{2}{17}\right)^{-28}$ (d) $\left(\frac{17}{2}\right)^{-28}$

(e) None of these

7. Find the value of $\left[3^{-1} + 4^{-2} + 6^{-4}\right]^{-1}$

(a) 257 (b) 257

(c) 648 (d) 348

(e) None of these

8. If p and q are whole numbers such that $p^q = 529$ then find the value of $\left[(6-q)^{p-17}\right]^{-1}$

(a) 1024 (b) 2048

(c) $\frac{1}{2048}$ (d) $\frac{1}{4096}$

(e) None of these

9. If $\left(\frac{m}{n}\right)^{r-7} = \left(\frac{n}{m}\right)^{r-3}$, then find the value of r.

(a) 12 (b) 10

(c) 5 (d) 9

(e) None of these

10. By what number should $\left(\frac{1}{8}\right)^{1/2}$ be multiplied so that its product becomes

(a) $\left(\frac{7}{40}\right)^{-1/2}$ (b) $\frac{\sqrt{7}}{2\sqrt{2}}$

(c) $\frac{\sqrt{70}}{20}$ (d) $\frac{\sqrt{70}}{40}$

(e) None of these

11. If $m = 11 + 6\sqrt{2}$, then find the value of $\left(\sqrt{m} + \sqrt{2}\right)^{1/2}$

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

(c) $1 - \sqrt{2}$ (d) $-\sqrt{2}$

(e) None of these

12. If $7^{2a-b} = 70 \times 30 + 15 \times 20 + 1$ then find the value of $\left(\frac{2a}{4+b}\right)^{-212}$.

(a) -212 (b) -1

(c) 1 (d) 0

(e) None of these

13. Find the value of $\sqrt{\frac{4}{1+x^{p-q}}+\frac{4}{1+x^{q-p}}}$

(a) -2 (b) 4

(c) 1 (d) -4

(e) None of these

14. If $8^m = 262144$, then find the value of 8^{m-4}.

(a) 32 (b) 96

(c) 512 (d) 64

(e) None of these

15. Solve : $\sqrt{8+\sqrt{773+\sqrt{116+\sqrt{2+\sqrt{520+\sqrt{81}}}}}}$

(a) 2 (b) 3

(c) 7 (d) 6

(e) None of these

16. The smallest number, which when multiplied with 123768 will make the product a perfect cube, is _____

(a) 12321 (b) 36481

(c) 328329 (d) 111475

(e) None of these

17. Three numbers are in the ratio 1: 3: 2 and sum of their cubes is equal to 2. 304. Find the sum of the numbers.

(a) 2.4 (b) 3.6

(c) 2.8 (d) 4.2

(e) None of these

18. The volume of a cubical box is $456.533\ cm^3$. Find the side of the cubical box in cm.

(a) 7.7 cm (b) 8.3 cm

(c) 7.27 cm (d) 6.7 cm

(e) None of these

19. Solve: $\left[\left[17^2+(\sqrt{3})^8-\sqrt{5^2+4^3-2^3}\right]^{1/2}\right]^3$

(a) 5859 (b) 7869

(c) 6859 (d) 5682

(e) None of these

20. Find the sum of $1^3+2^3+3^3+------+12^3$

(a) 6084 (b) 4048

(c) 5082 (d) 5048

(e) None of these

21. The product of two numbers is 4332 and their quotient is $\frac{3}{4}$.

Find the sum of the numbers.

(a) 136 (b) 133

(c) 143 (d) 149

(e) None of these

22. Find the sum of $1+3+5+7+9+------+101$

(a) 2601 (b) 2401

(c) 2501 (d) 2701

(e) None of these

23. The cube of a number is 324 times the number. Find the cube of $\frac{4}{9}$ of the number

(a) 216 (b) 512

(c) 343 (d) 729

(e) None of these

24. If $p^{q^r} = 2^{64}$, then find the maximum possible value of p + q + r where p, q and r are natural numbers.

(a) 9 (b) 10

(c) 12 (d) 67

(e) None of these

25. Find the possible values of x, when $\sqrt{x} + \frac{8}{\sqrt{x}} = 32$

(a) 3 and 29 (b) 841 and 9

(c) 6 and 58 (d) 18 and 1682

(e) None of these

26. By what number should $(-15)^{-1}$ 1 be divided so that the quotient may be $\left(\frac{5}{9}\right)^{-1}$,

(a) $\frac{1}{9}$ (b) $\frac{-1}{27}$

(c) $\frac{1}{27}$ (d) $\frac{-1}{9}$

(e) None of these

27. Which among the following is not a perfect square?

(a) 104329 (b) 7921

(c) 10201 (d) 7579

(e) None of these

28. Which among the following is not a perfect cube?

(a) 21952 (b) 3365

(c) 4096 (d) 1331

(e) None of these

29. By observing the given pattern, find the value of missing number.

$(II)^2 = 121$

$(101)^2 = 10201$

$(1001)^2 = 1002001$

$(100001)^2 =$ _____

(a) 100002000001 (b) 100020001

(c) 1000200001 (d) 10000020001

(e) None of these

30. Solve: $\frac{(279)^2 - (278)^2}{557}$

(a) 758 (b) 279

(c) 278 (d) 1

(e) None of these

31. Which of the following is not a Pythagorean triplets?

(a) (8, 15, 17) (b) (20, 99, 101)

(c) (5, 36, 41) (d) (12, 35, 37)

(e) None of these

32. Simplify: $\frac{274 \times 274 + 2 \times 274 \times 126 + 126 \times 126}{1600}$

(a) 400 (b) 200

(c) 100 (d) 300

(e) None of these

33. If p + q + r = 0 then find the value of $\frac{(3^p)^4}{n^{-4q} \cdot t^{-4r}}$ where m = 2n = 8t.

(a) 16^{p-2r} (b) $\frac{1}{16^{(q+3r)}}$

(c) $\frac{1}{16^{2q+3p}}$ (d) Both (a) and (b)

(e) None of these

34. If $3^m = (81)^n = (729)^r = 243$ then find the value of $\left(\frac{3m}{4} + n\right)^3 - (4n + 6r)^3$

(a) 1125 (b) 875

(c) -875 (d) -1125

(e) None of these

35. $\sqrt[3]{1 + 3 + 5 + 7 + ... + 685} =$ _____

(a) 9 (b) 27

(c) 49 (d) 7

(e) None of these

36. If $\sqrt[3]{a} + \frac{64}{\sqrt[3]{a}} = 20$, then the value of a can be

(a) 4 and 32 (b) 8 and 4

(c) 16 and 8 (d) 4 and 16

(e) None of these

37. In a five digit number 1p68q, $p = q^2$ and $p \neq q$. If the given number is a perfect cube, then find the difference between the sum of its digits and the cube root of the number.

(a) 0 (b) 1

(c) 2 (d) 9

(e) None of these

38. Find the number of four digit cubes which end with a non-zero perfect square digit.

(a) 2 (b) 4

(c) 6 (d) 7

(e) None of these

39. Simplify: $\frac{\sqrt[3]{(0.008)^2} + \left(\sqrt[3]{0.000216}\right)^2 - \sqrt[3]{0.001728}}{(0.02)^3 + \sqrt{0.0081}}$

(a) 0.0009 (b) $\frac{2500}{11251}$

(c) $\frac{2700}{11251}$ (d) 0.0008

(e) None of these

40. If m and n are whole numbers such that $m^n = 262144$ (where m > n) and n is a natural number less than 4, then the value of $\sqrt[n]{m}$ can be _____

(a) 4 (b) 8

(c) 4 and $16\sqrt{2}$ (d) 16 and $8\sqrt{2}$

(e) None of these

ANSWER - KEY				
1. (b)	**2.** (b)	**3.** (a)	**4.** (a)	**5.** (a)
6. (c)	**7.** (a)	**8.** (d)	**9.** (c)	**10.** (c)
11. (b)	**12.** (c)	**13.** (a)	**14.** (d)	**15.** (d)
16. (c)	**17.** (a)	**18.** (a)	**19.** (c)	**20.** (a)
21. (b)	**22.** (a)	**23.** (b)	**24.** (d)	**25.** (b)
26. (b)	**27.** (d)	**28.** (b)	**29.** (a)	**30.** (d)
31. (c)	**32.** (c)	**33.** (d)	**34.** (c)	**35.** (c)
36. (d)	**37.** (a)	**38.** (b)	**39.** (b)	**40.** (c)