## (2) Maheudra's

## WEEKEND SPECIAL

## MATHS

## ROOTS \& POWER

 BASED QUESTIONSCives 16 JAN $08: 00$ AM

## Words are understood by

 knowledge and meaning by experience ..!$$
\begin{aligned}
& \Rightarrow a^{m} \times a^{n}=a^{m+n}, a^{m} \Rightarrow a^{n} \Rightarrow a^{m+n} \\
& >a^{m} \div a^{n}=a^{m-n} \\
& a^{-m}=\frac{1}{a^{+m}} \\
& >\left(\mathrm{a}^{\mathrm{m}}\right)^{n}=\left(\mathrm{a}^{\mathrm{n}}\right)^{m}=\mathrm{a}^{\mathrm{mn}} \begin{aligned}
\#\left(2^{4}\right)^{4} & \Rightarrow 2^{4 \times 4} \quad \frac{1}{a^{-n}}=a^{+n} \\
& \Rightarrow 2^{16}
\end{aligned} \\
& \Rightarrow\left(\frac{a}{b}\right)^{-\frac{m}{n}}=\left(\frac{b}{a}\right)^{\frac{m}{n}} \\
& \text { \# } \begin{aligned}
2^{4} & \Rightarrow 2^{4 \times 4 \times 4 \times 4}\left(\frac{a}{b}\right)^{-m}=\left(\frac{b}{a}\right)^{+m} \\
& \Rightarrow 2^{256}
\end{aligned} \\
& a^{0}=1 \\
& \left(a^{m}\right)^{2} \Rightarrow a^{2 m} \\
& a^{m^{2}} \Rightarrow(a)^{m^{2}}
\end{aligned}
$$

$>\mathrm{a}^{-\mathrm{n}}=\frac{1}{a^{n}}>\mathrm{a}^{\mathrm{n}}=\frac{1}{\mathrm{a}^{-\mathrm{n}}}$
$(0.04)^{-1.5}=$ ?
$\Rightarrow$ If $a^{x}=k$ then $a=k^{1 / x}$
$>$ If $a^{x}=a^{y}$, then $X=Y$
$>\sqrt[n]{a}=a^{\frac{1}{n}}$
$>(\sqrt[n]{a})^{m}=a^{\frac{m}{n}}$

$$
\begin{array}{ll}
\int_{x}\left(0.2^{2}\right)^{-1.5} & \left(\frac{4}{100}\right)^{-3 / 2} \\
\left.\right|_{=(0.2)^{-3}} & \Rightarrow\left(\frac{100}{4}\right)^{+3 / 2} \\
\Rightarrow \frac{1}{(0.2)^{3}} & \Rightarrow(25)^{3 / 2} \\
\Rightarrow \frac{1 \times 1000}{0.008 \times 1000} & \Rightarrow\left(5^{2}\right)^{3 / 2} \\
\Rightarrow \frac{1000}{8} & \Rightarrow 5^{3} \\
\Rightarrow 125 &
\end{array}
$$

$$
(25)^{x+y}=1,(3)^{4 x+y}=\frac{1}{27}, x y=?
$$

A) - 2 Sol:-

$$
a^{0}=1
$$

B) -1

$$
\begin{array}{rrr}
(25)^{x+y} & =(25)^{0} & -1+y=0 \\
x+y & =0-(1) & y=+1
\end{array}
$$

C) 0
D) 1

$$
\begin{gather*}
(3)^{4 x+y}=(3)^{-3}  \tag{11}\\
4 x+y=-3 \\
3 x+(x+y)=-3 \\
3 x+0=-3 \\
x=-1
\end{gather*}
$$

$$
\# \quad a^{m}=b^{m}
$$

$$
\begin{aligned}
x y & =-1 \times 1 \\
& \Rightarrow-1 \text { Ans. }
\end{aligned}
$$

(11) $\Rightarrow-1$ Ans.
$a=b$

$$
\frac{1}{27}=\frac{1}{(3)^{3}}=3^{-3}
$$

$$
\frac{(243)^{n / 5} \times(3)^{2 n+1}}{(9)^{n} \times(3)^{n-1}}=?
$$

$$
\begin{aligned}
& a^{m} \times a^{n} \Rightarrow a^{m+n} \\
& 243=(3)^{5}
\end{aligned}
$$

A) 3 Sol:- $\frac{\left(3^{5}\right)^{n / 5} \times 3^{2 n} \times 3^{1}}{\left(3^{2}\right)^{n} \times 3^{n} \div 3^{1}}$

$$
3^{2 n+1}=3^{2 n} \times 3^{1}
$$

C) 9
D) 12

$$
\frac{3^{n} \times 3^{2 h} \times 3^{1}}{3^{20 n} \times 6^{h} \times \frac{1}{3}}=\frac{3}{\frac{1}{3}} \Rightarrow 3 \times 3 .
$$

$$
\frac{3 \times(27)^{n+1}+9 \times(3)^{3 n-1}}{8 \times(3)^{3 n}-5 \times(27)^{n}}=?
$$

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

A) $(3)^{3 n}$ Sol:-

$$
\Rightarrow \frac{3^{4}+3}{8-5}
$$

B) $3^{4} \Rightarrow \frac{3 \times 3^{3 n+3}+(3)^{2} \times(3)^{3 n-1}}{8 \times 3^{3 n}-5 \times\left(3^{3}\right)^{n}} \Rightarrow \frac{3^{4}+3}{3} \Rightarrow \frac{81+3}{3}$
C) $27 \quad 8 \times 3^{3 n}-5 \times\left(3^{3}\right)^{n} \quad \Rightarrow 23^{3}+1$
D) $28 \Rightarrow \frac{3 \times 3^{3 / n} \times 3^{3}+3^{2} \times 2^{2 / n} \times \frac{1}{3}}{8 \times 3^{2 / n}-5 \times 3^{2 / n}} \quad \Rightarrow 27+1$
$\Rightarrow 28$

$$
\frac{(9)^{n} \times(3)^{2} \times\left(3^{-n / 2}\right)^{-2}-(27)^{n}}{(3)^{3 m} \times(2)^{3}}=\frac{1}{27}, m m=?
$$

A) 1 Sol:-
B) $-2 \Rightarrow \frac{3^{2 n} \times 3^{2} \times 3^{n}-3^{3 n}}{3^{3 n n} \times 8}=3^{-3}$
C) -1

$$
\begin{aligned}
& \left(3^{-n / 2}\right)^{-2} \Rightarrow 3^{n} \\
& \frac{1}{27}=\frac{1}{3^{3}} \text { or } 3^{-3}
\end{aligned}
$$

D) 2

$$
\Rightarrow \begin{array}{l|l}
\frac{3^{3 n} \times 3^{2}-3^{3 n}}{3^{3 m} \times 8}=3^{-3} & \left\lvert\, \begin{array}{lll}
\frac{(3)^{3 n}}{(3)^{3 m}}=3^{-3} \quad 27 & 3^{3} \\
3^{2}-1 & \Rightarrow 9-1
\end{array}\right. \\
\begin{array}{ll}
\frac{3^{3 n}\left(3^{2}-1\right)}{3^{3 m} \times 8}=3^{-3} & \begin{array}{l}
(3)^{3 n-3 m}=(3)^{-3} \quad m-n=+1 \\
3 n-3 m=-3
\end{array} \\
n-m=-1
\end{array}
\end{array}
$$

$$
\left[2^{m^{2}} \div\left(2^{m}\right)^{2}\right]^{\frac{1}{m}}=B, \quad m=?
$$

A) 3 Sol:-
B) 6

$$
\begin{aligned}
\left(2^{m^{2}} \div 2^{2 m}\right)^{\frac{1}{m}} & =2^{3} \\
1 & =2^{3}
\end{aligned}
$$

C) -3
D) -6
E) NOT

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

$$
2^{m h(m-2) \times \frac{1}{m h}}=2^{3}
$$

$$
2^{(m-2)}=2^{3}
$$

$$
m-2=3, \quad m=5
$$

$$
\sqrt[n]{\frac{(9)^{n+\frac{1}{4}} \times \sqrt{3 \times 3^{-n}}}{3 \times \sqrt{3^{-n}}}}=?
$$

A) 3
H.W.
B) $3^{2}$
C) $3^{3}$
D) $\sqrt[n]{3}$

$$
4^{3} \times 8^{-1} \div 32^{-1} \div \frac{1}{8^{-3}}=2^{x}
$$

$$
\frac{1}{2}+\frac{1}{5}+\frac{1}{8}+\frac{1}{11}+\frac{1}{20}+\frac{1}{41}+\frac{1}{110}+\frac{1}{1640}=?
$$

