TOTAL QUESTIONS-10, ***TIME – 10 MINUTES,*** ***MARKS –10***

MATH

1. The greatest of $\sqrt{2}, \sqrt[6]{3}, \sqrt[3]{4}, \sqrt[4]{5}$ is ,

   (A) $\sqrt{2}$ (B) $\sqrt[6]{3}$ (C) $\sqrt[3]{4}$ (D) $\sqrt[4]{5}$

2. The variance of the data 2, 4, 6, 8, 10 is

   (A) 6 (B) 7 (C) 8 (D) 9

3. If (b +c) , (c+a) , (a+b) are in A.P. then

   (A) b = a + c (B) $a = \frac{b+c}{2}$ (C) $c = \frac{a+b}{2}$ (D) $b = \frac{a+c}{2}$

4. Let $x = (633)^{24} - (277)^{38} + (266)^{54}$. What is the units digit of x?

   (A) 7 (B) 6 (C) 8 (D) 4

5. If $a^2 + b^2 + c^2 + 96 = 8(a + b - 2c)$, then $\sqrt{(ab - bc + ca)}$ is equal to :

   (A) 6 (B) $2\sqrt{3}$ (C) $2\sqrt{2}$ (D) 4

6. If the radius of the base of a cone is doubled, and the volume of the new cone is three times the volume of the original cone, then what will be the ratio of the height of the original cone to that of the new cone?

   (A) 1 : 3 (B) 4 : 3 (C) 9 : 4 (D) 2 : 9

7. Find the standard deviation it variance is 1.69

   (A) 1.3 (B) 1.7 (C) 1.4 (D) 1.9

8. Formula written as quartile deviation divided by sum of third and first quartile is used to calculate

   (A) co-efficient of quartile deviation (B) coefficient of quartiles

   (C) coefficient of inter quartiles (D) coefficient of central tendency

9. The value of x for which the roots α, β of the equation $x^2 - 6x + k = 0$ satisfy the equation $3\alpha + 2\beta = 20$

   (A) 8 (B) –8 (C) 16 (D) –16

10. Two dice are thrown. Find the probability that getting a sum 4.

    (A) $\frac{1}{9}$ (B) $\frac{1}{6}$ (C) $\frac{1}{12}$ (D) $\frac{1}{3}$

Answers Keys

1	C	6	B
2	C	7	A
3	D	8	A
4	C	9	D
5	D	10	C

Explanation

1. C; Given,
   Taking LCM of denominators of power 2, 6, 3, 4 is 12

   $\Rightarrow \sqrt{2} = 2^{\frac{1}{2}} = 2^{\frac{1}{3} \times \frac{12}{12}} = 2^{\frac{6}{12}}$

   $\Rightarrow \sqrt[6]{3} = 3^{\frac{1}{6}} = 3^{\frac{1}{6} \times \frac{12}{12}} = 3^{\frac{2}{12}}$

   $\Rightarrow \sqrt[4]{5} = 5^{\frac{1}{4}} = 5^{\frac{1}{4} \times \frac{12}{12}} = 5^{\frac{3}{12}}$

   $64^{\left(\frac{1}{2}\right)}, 9^{\left(\frac{1}{12}\right)}, 256^{\left(\frac{1}{12}\right)}, 125^{\left(\frac{1}{12}\right)}$

   $\therefore \sqrt[3]{4}$ is greatest

2. C;

   Mean, $\bar{x} = \frac{2+4+6+8+10}{5} = \frac{30}{5} = 6$

   $\therefore Variance = \frac{1}{n}\sum (x_i - \bar{x})^2$

   $= \frac{1}{5}\left\{(2-6)^2 + (4-6)^2 + (6-6)^2 + (8-6)^2 + (10-6)^2\right\}$

   $= \frac{1}{5}\{16 + 4 + 0 + 4 + 16\} = \frac{1}{5} \times 40 = 8$

3. D;
   The given expression
   $(b+c), (c+a), (a+b)$ are in A.P
   Then,

$\Rightarrow (c+a)=[(b+c)+(a+b)]/2$

$\Rightarrow 2c+2a=2b+c+a$

$\Rightarrow c+a=2b$

$\therefore b=(a+c)/2$

4. C;

$\Rightarrow x=(633)^{24}-(277)^{38}+(266)^{54}$

$\Rightarrow x=3^{24}-7^{38}+6^{54}$

$\Rightarrow x=3^4-7^2+6^2$

$\Rightarrow x=1-9+6$

$\Rightarrow x=7-9$

Or $x=17-9$

$\Rightarrow x=8$

5. D;

$a^2+b^2+c^2+96=8(a+b-2c)$

Or we can write this

$a^2+b^2+c^2+96=2(4a+4b-8c)$

Now, we can say coefficient of a, b and c are also the value of a, b and c respectively.

a = 4, b = 4 and c = -8

Now, put a, b and c value in $\sqrt{(ab-bc+ca)}$

$\Rightarrow \sqrt{[4\times4-4\times(-8)+(-8)\times4]}$

$\Rightarrow \sqrt{[16+32-32]}$

$\Rightarrow \sqrt{16}$

$\Rightarrow 4$

6. B;

Let the radius of the cone be r cm and height of the cone be h_1 cm, then

Volume of cone = $(1/3)\times\pi r^2h_1=(\pi r^2h_1)/3$

If the radius of the base of the cone is doubled, and let the height of the new cone be h_2

Volume of new cone = $(1/3)\times\pi\times(2r)^2\times h_2=4(\pi r^2h_2)/3$

According to the question

$\Rightarrow [(\pi r^2h_1)/3]/[4(\pi r^2h_2)/3]=1/3$

$\Rightarrow h_1/h_2=4/3$

Required ratio $h_1:h_2=4:3$

7. A;

S.D. = $\sqrt{Variance}$

S.D. = $\sqrt{1.69}=1.3$

8. A; Co-efficient of quartile deviation

9. D; $x^2-6x+k=0$

$\alpha+\beta=6 \quad ....(1)$

$\alpha\beta=k$

$3\alpha+2\beta=20....(2)$

On solving equation (1) and (2)

$\alpha=8 \quad \beta=-2$

$k=\alpha\beta=8\times(-2)=-16$

10. C; $E=\{(1,3),(3,1),(2,2)\}$

$P(E)=\frac{3}{36}=\frac{1}{12}$

ALL THE POWER IS WITHIN YOU; YOU CAN DO ANYTHING AND EVERYTHING BELIEVE IN THAT; DON'T BELIEVE THAT YOU ARE WEAK. STAND UP AND EXPRESS THE DIVINITY WITHIN YOU"

****