

**CLASS IX- MATHEMATICS**  
**NUMBER SYSTEM**

**ASSIGNMENT -1**

**MULTIPLE CHOICE QUESTION - 1.1**

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1. If  $x = 3 + \sqrt{8}$  and  $y = 3 - \sqrt{8}$  then  $\frac{1}{x^2} + \frac{1}{y^2} =$
- (A) -34                      (B) 34                      (C)  $12\sqrt{8}$                       (D)  $-12\sqrt{8}$
2. If  $\frac{3+\sqrt{7}}{3-\sqrt{7}} = a + b\sqrt{7}$  then (a,b) =
- (A) (8, -3)                      (B) (-8, -3)                      (C) (-8, 3)                      (D) (8, 3)
3.  $\frac{\sqrt{5}-2}{\sqrt{5}+2} - \frac{\sqrt{5}+2}{\sqrt{5}-2} =$
- (A)  $8\sqrt{5}$                       (B)  $-8\sqrt{5}$                       (C)  $6\sqrt{5}$                       (D)  $-6\sqrt{5}$
4. If  $x = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$  and  $y = 1$ , the value of  $\frac{x-y}{x-3y}$  is :
- (A)  $\frac{5}{\sqrt{5}-4}$                       (B)  $\frac{5}{\sqrt{6}+4}$                       (C)  $\frac{\sqrt{6}-4}{5}$                       (D)  $\frac{\sqrt{6}+4}{5}$
5. Which one is greatest in the following :
- (A)  $\sqrt{2}$                       (B)  $\sqrt[3]{3}$                       (C)  $\sqrt[3]{4}$                       (D)  $\sqrt[3]{2}$
6. The value of  $\sqrt[3]{(32)^{-3}}$  is :
- (A)  $1/8$                       (B)  $1/16$                       (C)  $1/32$                       (D) None
7. If  $x = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$  and  $y = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$  the value of  $x^2 + xy + y^2$  is :
- (A) 99                      (B) 100                      (C) 1                      (D) 0
8. Simplify :  $\frac{2}{\sqrt{5}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{2}} - \frac{3}{\sqrt{5}+\sqrt{2}}$
- (A) 1                      (B) 0                      (C) 10                      (D) 100
9. Which of the following is smallest ?
- (A)  $\sqrt[4]{5}$                       (B)  $\sqrt[5]{4}$                       (C)  $\sqrt{4}$                       (D)  $\sqrt{3}$
10. The product of  $\sqrt{3}$  and  $\sqrt[3]{5}$  is :
- (A)  $\sqrt[3]{375}$                       (B)  $\sqrt[6]{675}$                       (C)  $\sqrt[5]{575}$                       (D)  $\sqrt[4]{475}$
11. The exponential form of  $\sqrt{\sqrt{2} \times \sqrt{2} \times \sqrt{2}}$  is :
- (A)  $2^{1/16}$                       (B)  $8^{3/4}$                       (C)  $2^{3/4}$                       (D)  $8^{1/2}$
12. The value of x, if  $5^{x-3} \cdot 3^{2x-8} = 225$ , is :
- (A) 1                      (B) 2                      (C) 3                      (D) 5

13. If  $2^{5x} \div 2^x = \sqrt[5]{2^{20}}$  then  $x =$   
 (A) 0 (B) -1 (C)  $\frac{1}{2}$  (D) 1
14.  $\sqrt[3]{(729)^{2.5}} =$   
 (A)  $\frac{1}{81}$  (B) 81 (C) 243 (D) 729
15.  $\sqrt[4]{\sqrt[3]{x^2}} =$   
 (A)  $x$  (B)  $x^{\frac{1}{2}}$  (C)  $x^{\frac{1}{3}}$  (D)  $x^{\frac{1}{6}}$

### SUBJECTIVE QUESTION - 3.2

1. Arrange the following surds in ascending order of magnitude :  
 (i)  $4\sqrt{10}, 3\sqrt{6}, \sqrt{3}$  (ii)  $3\sqrt{4}, 4\sqrt{5}, \sqrt{3}$
2. Which is greater :  
 $\sqrt{17} - \sqrt{12}$  or  $\sqrt{11} - \sqrt{6}$ .
3. Simplify :  $\frac{8}{\sqrt{15} + 1 - \sqrt{5} - \sqrt{3}}$ .
4. If  $p$  and  $q$  are rational number and  $p - \sqrt{q} = \frac{4 + \sqrt{2}}{3 + \sqrt{2}}$  find  $p$  and  $q$ .
5. Find the simplest R.F. of :  
 (i)  $\sqrt[3]{32}$  (ii)  $\sqrt[3]{36}$  (iii)  $2^{3/5}$
6. Rationalise the denominator :  
 (i)  $\frac{3}{\sqrt{5}}$  (ii)  $\frac{\sqrt{2} + \sqrt{5}}{\sqrt{3}}$
7. Rationalise the denominator and simplify :  
 (i)  $\frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$  (ii)  $\frac{1 + \sqrt{2}}{3 + 2\sqrt{2}}$  (iii)  $\frac{4\sqrt{3} + 5\sqrt{2}}{\sqrt{48} + \sqrt{18}}$
8. Simplify :  
 (i)  $\frac{\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}} + \frac{\sqrt{5} - \sqrt{3}}{\sqrt{5} + \sqrt{3}}$  (ii)  $\frac{7 + 3\sqrt{5}}{3 + \sqrt{5}} - \frac{7 - 3\sqrt{5}}{3 - \sqrt{5}}$
9. Find the value of  $a$  and  $b$   
 (i)  $\frac{\sqrt{11} - \sqrt{7}}{\sqrt{11} + \sqrt{7}} = a - b\sqrt{77}$  (ii)  $\frac{5 + \sqrt{6}}{5 - \sqrt{6}} = a + b\sqrt{6}$
10. If  $x = \frac{\sqrt{3} + 1}{2}$  find the value of  $4x^3 + 2x^2 - 8x + 7$ .
11. If  $x = \frac{5 - \sqrt{21}}{2}$  show that  $\left(x^3 + \frac{1}{x^3}\right) - 5\left(x^2 + \frac{1}{x^2}\right) + \left(x + \frac{1}{x}\right) = 0$ .

12. Show that  $a = x + 1/x$ , where  $x = \frac{\sqrt{a+2} + \sqrt{a-2}}{\sqrt{a+2} - \sqrt{a-2}}$ .
13. Prove that:  $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2} = 5$ .
14. If  $x = \frac{\sqrt{5} + \sqrt{2}}{\sqrt{5} - \sqrt{2}}$  and  $y = \frac{\sqrt{5} - \sqrt{2}}{\sqrt{5} + \sqrt{2}}$  find the value of  $3x^2 + 4xy - 3y^2$ .
15. Evaluate:  
$$\frac{\sqrt{\sqrt{5}+2} + \sqrt{\sqrt{5}-2}}{\sqrt{\sqrt{5}+1}} - \sqrt{3-2\sqrt{2}}$$
16. If  $x = 3$ ,  $b = 4$  then find the values of:  
(i)  $a^b + b^a$                                   (ii)  $a^a + b^b$                                   (iii)  $a^b - b^a$
17. Simplify:  
 $(\sqrt{x})^{2/3} \sqrt{y^4} \div \sqrt{xy^{-1/2}}$ .
18. Simplify:  
(i)  $[16^{-1/5}]^{5/2}$                                   (ii)  $[0.001]^{1/3}$
19. If  $\frac{9^n \times 3^2 \times [3^{-n/2}]^2 - (27)^n}{3^{3m} \times 2^3} = \frac{1}{27}$ , then prove that  $m - n = 1$ .
20. Find the value of  $x$ , if  $5^{x-3(2x-3)} = 625$ .