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## **Unit Test Series 01 (2023-24)**

**SUBJECT: MATHEMATICS** 

**CLASS: IX** 

MAX. MARKS: 40 **DURATION: 90 min** 

Syllabus: CH - 1 Number System .CH - 2 Polynomials

#### **General Instruction:**

- 1. This Ouestion Paper has 5 Sections A-E.
- **2. Section A** has 5 MCQs carrying 1 mark each.
- **3. Section B** has 3 questions carrying 02 marks each.
- **4. Section C** has 5 questions carrying 03 marks each.
- **5. Section D** has 1 questions carrying 04 marks each.
- **6. Section E** has 2 questions carrying 05 marks each.

Draw neat figures wherever required. Take  $\pi = 22/7$  wherever required if not stated

SECTION - A Questions 1 to 5 carry 1 mark each

1.  $\sqrt[4]{\sqrt[3]{2^2}}$  is equal to

(a) 
$$2^{-\frac{1}{6}}$$

(b) 
$$2^{-6}$$
 (c)  $2^{\frac{1}{6}}$ 

(c) 
$$2^{\frac{1}{6}}$$

(d) 
$$2^6$$

**2.** On rationalizing the denominator of  $\frac{1}{\sqrt{a}-\sqrt{2}}$ , we get

(a) 
$$\frac{\sqrt{4}+\sqrt{3}}{\sqrt{4}-\sqrt{3}}$$
 (b)  $\sqrt{4}+\sqrt{3}$  (c)  $\frac{\sqrt{4}+\sqrt{3}}{\sqrt{4}-\sqrt{3}}$  (d)  $\sqrt{4}-\sqrt{3}$ 

(b) 
$$\sqrt{4} + \sqrt{3}$$

(c) 
$$\frac{\sqrt{4}+\sqrt{3}}{\sqrt{4}-\sqrt{3}}$$

$$(d)\sqrt{4}-\sqrt{3}$$

3. The coefficient of the leading term in  $3x - 12x^2 + 9x^7 - x^5$ 

$$(b) -12$$

$$(d) -1$$

**4**. The zeros of  $x^2 - 7x + 12$  are :

(a) 
$$3,5$$

$$(b) -1, 2$$

$$(d) -2, 5$$

**5**. which of the following is true?

- (a) Every whole number is a natural number
- (b) every integer is a rational number
- (c)every rational number is an integer
- (d) every integer is a whole number

SECTION - B Questions 6 to 8 carry 2 mark each.

**6**. Write the given irrational numbers in ascending order  $\sqrt{2}$ ,  $\sqrt[3]{3}$ ,  $\sqrt{7}$ 

7. Simplify  $\sqrt{7+2\sqrt{10}}$ 

Or

Represent  $\sqrt{2}$  and  $\sqrt{3}$  on the same number line .

**8**. Factorise:  $\frac{25}{4} x^2 - \frac{y^2}{9} - \frac{5}{2} x + \frac{y}{3}$ .

SECTION – C Questions 9 to 13 carry 3 mark each.

- **9**. If  $x = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} \sqrt{2}}$ , then find the value of  $x^2$ .
- 10. Express the following in the form of p/q where p and q are integers and  $q \neq 0$

$$0.\overline{4} + 0.\overline{18}$$

11. if 
$$x = \frac{2+\sqrt{3}}{2-\sqrt{3}}$$
,  $y = \frac{2-\sqrt{3}}{2+\sqrt{3}}$ , find the value of  $x^2 - y^2$ .

Or

Find a and b if

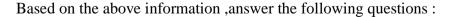
$$\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = a + 7\sqrt{5}b.$$

- **12.** If  $p(y) = y^2 4y + 4$ , then find the value of p(2) + p(-2) + p(1)
- 13. Find the value of

$$\frac{4}{(216)^{-\frac{2}{3}}} + \frac{1}{(256)^{-\frac{3}{4}}} + \frac{2}{(243)^{-\frac{1}{5}}}$$

# SECTION – D Questions 14 carry 4 mark each.

**14.**Dhruv a student of Class IX visited a book shop of his school for purchasing the math lab kit Mr.Rao , Who is running the bookshop in school told Dhruv that math lab kit consists of a lab manual and a notebook and the total cost lab kit is  $x^2 + 6x + 9$ . He also told Dhruv that total price of kit includes individual price of manual and notebook .



- a) what is the degree of the given polynomial?
- b) Find out the possible individual price for lab manual and notebook in terms of x .
- c) Find the zeroes of the polynomial  $p(x) = x^2 + 6x + 9$ . Also verify if (x-2) is a factor of p(x).





### SECTION – E Questions 15 to 16 carry 5 mark each

**15.** Find  $x^2 + y^2 - xy$  where  $x = \frac{1}{2 + \sqrt{3}}$ ,  $y = \frac{1}{2 - \sqrt{3}}$ .

Or

show that 
$$\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2} = 5$$

- **16**. (i) Factorize:  $4x^2 + 9y^2 + 16z^2 + 12xy + 24yz + 16xz$  by using proper identity.
  - (ii) Factorize:  $27p^3 \frac{1}{216} \frac{9}{2}p^3 + \frac{1}{4}p$  by using proper identity.
  - (iii)Factorize: $4913x^3 8y^3$  by property

End\_

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