

**O. P. JINDAL SCHOOL, SAVITRI NAGAR**  
**Half Yearly Examination (2019 – 2020)**

**Class: VIII**

**MM: 80**

**Subject: Mathematics**

**Time: 3 Hrs.**

Name: \_\_\_\_\_

Class / Section: \_\_\_\_\_

Roll No.: \_\_\_\_\_

**Fifteen Minutes Extra will be for reading the Question Paper.**

**General Instructions:**

- (i) All the questions are compulsory.
- (ii) The question paper consists of 40 questions divided into four sections A, B, C & D. Section A comprises of 20 questions of 1 mark each, Section B comprises of 6 questions of 2 marks each, Section C comprises of 8 questions of 3 marks each and Section D comprises of 6 questions of 4 marks each.
- (iii) There is no overall choice. However, internal choice has been provided in 6 questions of 1 mark each, 2 questions of 2 marks, 3 questions of 3 marks and 2 questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.
- (iv) Use of calculator is not permitted.

**SECTION -A**

- 1. How many rational numbers exists between 2 and 3?  
 i) 1                      ii) 0                      iii) Infinitely many                      iv) 9
- 2. Find the multiplicative inverse of :  $-1 \times \frac{-3}{5}$

**OR**

Find the additive inverse of :  $\frac{-5}{12} \times \frac{-3}{5}$

- 3. Which number is not equivalent to  $\frac{-15}{21}$  ?  
 i)  $\frac{-45}{63}$                       ii)  $\frac{-75}{105}$                       iii)  $\frac{5}{7}$                       iv)  $\frac{-10}{14}$
- 4. The degree of the polynomial  $3x^2 y^3 + 5 x^2 z^4 - 7x y^4$  is:  
 i) 4                      ii) 5                      iii) 6                      iv) None of these
- 5. The product of  $\frac{3}{5} x^2 y^3 z^4$  and  $-\left(\frac{2}{9} x^3 y^2 z\right)$  is :  
 i)  $\frac{2}{15} x^5 y^5 z^5$                       ii)  $-\frac{2}{15} x^5 y^5 z^5$                       iii)  $-\frac{2}{15} x^6 y^6 z^4$                       iv)  $-\frac{2}{15} x^6 y^5 z^4$

**OR**

Which of the following is not a polynomial :

- i) 50                      ii)  $\frac{x}{2} + 3$                       iii)  $3x^2 - 6x + 4y^2$                       iv)  $2x + \frac{3}{5x}$
- 6. Add  $2a+3b$  and  $a+4b$ .
- 7. Divide  $9a^2 b - 24ab^2 - 18a^3 b^2$  by  $3ab$
- 8. Write 0.0000000078 in scientific notation.
- 9. Write  $3.4 \times 10^7$  in standard form.

10. The reciprocal of  $\left(\frac{2}{3}\right)^{-2}$  is

- i)  $\frac{9}{4}$       ii)  $\frac{-4}{9}$       iii)  $\frac{-9}{4}$       iv)  $\frac{4}{9}$

11. Without actual squaring, find the value of  $101^2 - 100^2$

- i) 201      ii) 1      iii) 200      iv) 199

**OR**

The smallest number to be added to 510 to make it a perfect cube number is

- i) 19      ii) 66      iii) 2      iv) 5

12. The possible units digit in the square of 47 is \_\_\_\_\_.

**OR**

Without adding, find the sum:

$$1 + 3 + 5 + 7 + 9 + 11 + 13 + 15$$

13. The number of digits in the square root of 88209 (without any calculation) is

- i) 3      ii) 4      iii) 5      iv) 2

14. The value of  $\sqrt[3]{-216 \times 125}$  is :

- i) -30      ii) 30      iii) -60      iv) 60

15. Which of the following number is divisible by 4 –

- i) 6587392458      ii) 8794004513      iii) 5412082314      iv) 874685924

16. If

$$\begin{array}{r} 2 \text{ A B} \\ + \text{ A B 1} \\ \hline \end{array}$$

$$\text{B 1 8}$$

Then the value of A and B are respectively -

- i) 4 & 7      ii) 7 & 4      iii) 5 & 7      iv) 7 & 5

17. Complete the following series :

$$6, 20, 62, 126, \underline{\quad}, \underline{\quad}$$

18. Factorise :

$$5p(a - 5b) + 7q(a - 5b)$$

**OR**

Complete the factorisation :

$$-3ax + 6ay = -3a ( \underline{\quad} )$$

19. Which of the following is complete factorisation of  $4x^2 - 25$  :

- i)  $(4x+5)(4x-5)$       ii)  $(2x-5)(2x-5)$       iii)  $(2x+5)(2x-5)$       iv)  $4(x+5)(x-5)$

**OR**

Which of the following is complete factorisation of:  $8a^3b + 4a^2b^3$

- i)  $8a^3b^3$       ii)  $4a^2b(2a+b^2)$       iii)  $4ab(2a^2+ab^2)$       iv)  $8a^3b \cdot 4a^2b^3$

20. Factorise :

$$10x^2yz + 15xy^2z + 25xyz^2$$

**SECTION - B**

21. Find four rational numbers between  $\frac{-2}{3}$  and  $\frac{-1}{2}$ .
22. Find the value of m if  $(\frac{2}{3})^{2m-1} \div (\frac{2}{3})^{-4} = (\frac{2}{3})^5$ .
23. Find the square root of 9216 by the method of prime factorization.

**OR**

Find the smallest number by which 256 must be multiplied to make it a perfect cube number.

24. Subtract  $3x^3 - 7x^2 - 10x - 5$  from  $8x^3 - 6x^2 + 11x + 9$

**OR**

Using a suitable identity, evaluate  $(1003)^2$ .

25. Factorise :

$$x^2 + 21x + 108$$

26. Complete the magic square:

2		4
	5	
6		8

**SECTION - C**

27.  $10\frac{1}{2}$  tonnes of sand are to be shared among four builders. One of them receives  $\frac{4}{7}$  of the total and the remaining sand is shared equally by three builders. How much sand does each of the builders receive?
28. Evaluate:

$$\left\{\left(\frac{2}{3}\right)^3\right\}^{-2} \times \left(\frac{3}{2}\right)^2 \div \left\{\left(\frac{2}{3}\right)^{-1}\right\}^3$$

29. Find the smallest number by which 675 must be divided so that the quotient is a perfect cube number.

**OR**

2025 rose plants are planted in a garden in such a manner that there are as many plants in a row as there are rows in the garden. How many rows are there in the garden?

30. Find the greatest number of 6-digits which is a perfect square number.
31. Divide  $6x^3 + x^2 - 19x + 6$  by  $2x - 3$ .

**OR**

Simplify:

$$(x + 2)(x^2 - 6x + 8) - (2x - 3)(2x^2 - x - 1)$$

32. Evaluate using identities only-

$$\frac{5.27 \times 5.27 - 0.27 \times 0.27}{5.27 + 0.27}$$

33. Factorise :

- (a)  $4x^2 + 20x + 25$
- (b)  $48x^2 - 243y^2$

34. Factorise :  $a^2 + 16b^2 + 8ab - 9c^2$

OR

Factorise :  $14x^3 - 57x^2y - 27xy^2$

**SECTION - D**

35. Find the least number which must be subtracted from 3250 so as to make it a perfect square number. Find the perfect square number so obtained.

36. Find the least number which must be added to 6412 so as to make it a perfect square number. Find the perfect square number so obtained.

OR

Find the least square number which is exactly divisible by 3, 4, 5, 6 and 8.

37. The sum of the digits of a 2-digit number is 12. The number is 6 times the units digit. Find the number.

38. Evaluate using Identities –

i)  $(a-b)(a+b) + (b-c)(b+c) + (c-a)(c+a)$

ii)  $(3a + 2b)^2 - (3a - 2b)^2$

OR

Evaluate using identities only-

i)  $(97)^2$

ii)  $65 \times 55$

39. Find the product :

i)  $(x - y)(x^2 + xy + y^2)$

ii)  $(6b - 7c)^2$

40. Factorise:

i)  $100x^2y^2 - 36$

ii)  $x^2 + ab - ax - bx$

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