**CLASS-VIII SUBJECT- MATHS**

**TERM-2 SYLLABUS**

**Chapter-12**

### **Chapter 12 Exponents and Powers**

## **Exercise 12.1 Page No: 197**

**1. Evaluate:**

**(i) 3-2(ii) (-4)-2(iii) (1/2)-5**

**Solution:**

(i) 3-2= (1/3)2



= 1/9

(ii) **(-4)-2= (1/-4)2**



= 1/16

(iii) **(1/2)-5 = (2/1)5**



= 25

= 32

**2.  Simplify and express the result in power notation with positive exponent:**

**(i) (-4)4÷(-4)8**

**(ii) (1/23)2**

**(iii) -(3)4×(5/3)4**

**(iv) (3-7÷3-10)×3-5**

**(v) 2-3×(-7)-3**

**Solution:**

(i)


= (-4)5/(-4)8



= (-4)5-8

= 1/(-4)3

(ii) **(1/23)2**

= 12/(23)2



= 1/23×2 = 1/26



(iii) **-(3)4×(5/3)4**




= (-1)4×34×(54/34 )



= 3(4-4)×54



= 30×54 = 54



(iv)****

=   (3-7/3-10)× 3-5

= 3-7 – (-10)× 3-5



= 3(-7+10)×3-5

= 33×3-5

= 3(3+-5)



= 3-2

=1/32



(v) 2-3×(-7)– 3

= (2×-7)-3

(Because am×bm = (ab)m)

= 1/(2×-7)3



= 1/(-14)3

**3. Find the value of :**

**(i) (30+4-1)×22**

**(ii) (2-1×4-1)÷2– 2**

**(iii) (1/2)-2+(1/3)-2+(1/4)-2**

**(iv) (3-1+4-1+5-1)0**

**(v) {(-2/3)-2}2**

**Solution:**

(i)(30+4– 1)×22 = (1+(1/4))×22



= ((4+1)/4 )×22

= (5/4)×22

= (5/22)×22

= 5×2(2-2)



= 5×20

= 5×1 = 5



(ii)(2-1×4-1)÷2-2

= [(1/2)×(1/4)] ÷(1/4)



= (1/2×1/22 )÷ 1/4

= 1/23÷1/4

= (1/8)×(4)

= 1/2

(iii) **(1/2)-2+(1/3)-2+(1/4)-2**

= (2-1)-2+(3-1)-2+(4-1)-2



= 2(-1×-2)+3(-1×-2)+4(-1×-2)



= 22+32+42

= 4+9+16

=29

(iv) (3-1+4-1+5-1)0

= 1



(v) **{(-2/3)-2}2 = (-2/3)-2×2**



= (-2/3)-4

= (-3/2)4



= 81/16

**4. Evaluate**

**(i) (8-1×53)/2-4**

**(ii) (5-1×2-2)×6-1**

**Solution:**

(i) (8-1×53)/2-4




=



= 2×125 = 250

**(ii)** **(5-1×2-2)×6-1**




= (1/10)×1/6

= 1/60

**5. Find the value of m for which 5m÷ 5-3 = 55**

**Solution:**

5m ÷ 5-3 = 55

5(m-(-3) ) = 55



5m+3 =55

Comparing exponents both sides, we get

m+3 = 5

m = 5-3

m = 2

**6. Evaluate**

**(i)**

****

**(ii)**

****

**Solution:**

**(i)**




= 3-4

= -1

**(ii)**




=



=


 =



=  512/125

**7. Simplify.**

**(i)**

****

**(ii)**

****

Solution:

**(i)**









=
 =


**(ii)**









=




=



=
 =


= 1×1×3125


= 3125

## **Exercise 12.2 Page No: 200**

**1. Express the following numbers in standard form.**

**(i) 0.0000000000085**

**(ii) 0.00000000000942**

**(iii) 6020000000000000**

**(iv) 0.00000000837**

**(v) 31860000000**

**Solution:**

(i) 0.0000000000085 = 0.0000000000085×(1012/1012) = 8.5 ×10-12

(ii) 0.00000000000942 = 0.00000000000942×(1012/1012) = 9.42×10-12

(iii) 6020000000000000 = 6020000000000000×(1015/1015) = 6.02×1015

(iv) 0.00000000837 = 0.00000000837×(109/109) = 8.37×10-9

(v) 31860000000 = 31860000000×(1010/1010) = 3.186×1010

**2.Express the following numbers in usual form.**

**(i) 3.02×10-6**

**(ii) 4.5×104**

**(iii)3×10-8**

**(iv)1.0001×109**

**(v) 5.8×1012**

**(vi)3.61492×106**

 **Solution:**

(i) 3.02**×**10-6 = 3.02/106 = 0 .00000302

(ii) 4.5**×**104 = 4.5**×**10000 = 45000

(iii) 3**×**10-8 = 3/108 = 0.00000003

(iv) 1.0001**×**109 = 1000100000

(v) 5.8**×**1012 = 5.8**×**1000000000000 = 5800000000000

(vi) 3.61492**×**106= 3.61492**×**1000000 = 3614920

**3. Express the number appearing in the following statements in standard form.**

**(i) 1 micron is equal to 1/1000000 m.
(ii) Charge of an electron is 0.000, 000, 000, 000, 000, 000, 16 coulomb.
(iii) Size of bacteria is 0.0000005 m
(iv)  Size of a plant cell is 0.00001275 m
(v) Thickness of a thick paper is 0.07 mm**

**Solution :**

(i) 1 micron = 1/1000000

= 1/106

= 1×10-6

(ii) Charge of an electron is 0.00000000000000000016 coulombs.

= 0.00000000000000000016**×**1019/1019

= 1.6**×**10-19coulomb

(iii) Size of bacteria = 0.0000005

=  5/10000000 = 5/107 = 5×10-7 m

(iv) Size of a plant cell is 0.00001275 m

= 0.00001275×105/105

= 1.275×10-5m

(v) Thickness of a thick paper = 0.07 mm

0.07 mm = 7/100 mm = 7/102 = 7×10-2 mm

**4. In a stack there are 5 books each of thickness 20 mm and 5 paper sheets each of thickness 0.016 mm. What is the total thickness of the stack?**

Solution:

Thickness of one book = 20 mm

Thickness of 5 books = 20×5 = 100 mm

Thickness of one paper = 0.016 mm

Thickness of 5 papers = 0.016×5 = 0.08 mm

Total thickness of a stack = 100+0.08 = 100.08 mm

= 100.08×102/102 mm

mm