Ex- 8'B'

1) Using the common factor method, find the HCF of:

i) 16 = 1, 2, 4, 8, 16
35 = 1, 5, 7, 35
Common factors = 1
∴ HCF = 1

ii) 25 = 1, 5, 25
20 = 1, 2, 4, 5, 10, 20
Common factors = 1, 5
∴ HCF = 5

iii) 27 = 1, 3, 9, 27
75 = 1, 3, 5, 15, 25, 75
Common factors = 1, 3
∴ HCF = 3

iv) 8 = 1, 2, 4, 8
12 = 1, 2, 3, 4, 6, 12
18 = 1, 2, 3, 6, 9, 18
Common factors = 1, 2
∴ HCF = 2

v) 24 = 1, 2, 3, 4, 6, 8, 12, 24
36 = 1, 2, 3, 4, 6, 12, 18, 36
45 = 1, 3, 5, 9, 15, 45
60 = 1, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
Common factors = 1, 3
∴ HCF = 3

2) i) The prime factors of 5 & 8 are as follows:
$P_5 = 5$
$P_8 = 2 \times 2 \times 2$
No common prime factors between 5 and 8
∴ HCF of 5 and 8 = 1

ii) The prime factors of 24 & 49 are as follows:
$P_{24} = 2 \times 2 \times 2 \times 3$
$P_{49} = 7 \times 7$
No common prime factors between 24 & 49
∴ HCF of 24 and 49 = 1

3) Using prime factor method, find the HCF of:

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2) iii) Prime factors of 40, 60 and 80 are as follows:

$P_{40} = 2 \times 2 \times 2 \times 5$

$P_{60} = 2 \times 2 \times 3 \times 5$

$P_{80} = 2 \times 2 \times 2 \times 2 \times 5$

Common prime factors = 2, 2, 5

HCF = $2 \times 2 \times 5 = 20$

iv) Prime factors of 48, 84, 88 are as follows:

$P_{48} = 2 \times 2 \times 2 \times 2 \times 3$

$P_{84} = 2 \times 2 \times 3 \times 7$

$P_{88} = 2 \times 2 \times 2 \times 11$

Common prime factors = 2, 2

HCF = $2 \times 2 = 4$

v) Prime factors of 12, 16 and 28 are as follows:

$P_{12} = 2 \times 2 \times 3$

$P_{16} = 2 \times 2 \times 2 \times 2$

$P_{28} = 2 \times 2 \times 7$

Common prime factors = 2, 2

HCF = $2 \times 2 = 4$

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Ex- 8 'B'

Q/3) Using the division method, find the HCF of the following.

i) 16, 24

ans)
```
16 | 24 ( 1
   -16
   ---
    8 ) 16 ( 2
       -16
       ---
        0
```

HCF = 8 as here the last division is 8.

ii) 18, 30

ans)
```
18 | 30 ( 1
   -18
   ---
   12 ) 18 ( 1
       -12
       ---
        6 ) 12 ( 2
           -12
           ---
            0
```

HCF = 6

Common prime factors = 2, 2

HCF = 2 × 2 = 4

3(iii) 7, 14, 24

$$7\overline{)14}(2$$
$$-\underline{14}$$
$$0$$

Since, the last division is 1.

∴ HCF of 7, 14 and 24 = 1.

$$7\overline{)24}(3$$
$$-\underline{21}$$
$$3\overline{)7}(2$$
$$-\underline{6}$$
$$1\overline{)3}(3$$
$$-\underline{3}$$
$$0$$

iv) 70, 80, 120 and 150

```
70 | 80 ( 1
   - 70
     10 | 70 ( 7
        - 70
          0

10 | 120 ( 12
   - 120
     0

10 | 150 ( 15
   - 150
     0
```

Since, the last division = 10
∴ HCF = 10

v) 32, 56 and 46

```
        1
32 | 56 (
   - 32
     24 | 32 ( 1
        - 24
          8 | 24 ( 3
            - 24
              0

        5
8 | 46 (
  - 40
    6 | 8 ( 1
      - 6
        2 | 6 ( 3
          - 6
            0
```

Since, the last divisor = 2
∴ HCF = 2

4) i) 135, 45 and 75

```
3 | 135      3 | 75      3 | 35
  3 | 45       5 | 25      3 | 45
    5            5           3 | 15
                               5
```

135 = 3 × 3 × 3 × 5
45 = 3 × 3 × 5
75 = 3 × 5 × 5

Common factors = 3, 5
∴ HCF = 3 × 5 = 15

ii)

2	48	2	36	2	96
2	24	2	18	2	48
2	12	3	9	2	24
2	6		3	2	12
	3			2	6
					3

$48 = 2 \times 2 \times 2 \times 2 \times 3$

$36 = 2 \times 2 \times 3 \times 3$

$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$

Common factors = 2, 2, 3

$\therefore$ HCF $= 2 \times 2 \times 3 = 12$

iii)

2	66	3	33	2	132
3	33		11	2	66
	11			3	33
					11

$66 = 2 \times 3 \times 11$

$33 = 3 \times 11$

$132 = 2 \times 2 \times 3 \times 11$

Common factors = 3, 11

$\therefore$ HCF $= 3 \times 11 = 33$

iv)

2	24	2	36	2	60	2	132
2	12	2	18	2	30	2	66
2	6	3	9	3	15	3	33
	3		3		5		11

$24 = 2 \times 2 \times 2 \times 3$

$36 = 2 \times 2 \times 3 \times 3$

$60 = 2 \times 2 \times 3 \times 5$

$132 = 2 \times 2 \times 3 \times 11$

Common factors = 2, 2, 3

$\therefore$ HCF $= 2 \times 2 \times 3 = 12$

v)

2	30	2	60	2	90	3	105
3	15	2	30	3	45	5	35
	5	3	15	3	15		7
			5		5		

$30 = 2 \times 3 \times 5$

$60 = 2 \times 2 \times 3 \times 5$

$90 = 2 \times 3 \times 3 \times 5$

$105 = 3 \times 5 \times 7$

Common factors = 3, 5

$\therefore$ HCF $= 3 \times 5 = 15$

5) Ans) The greatest no. that divides each of 180, 225 and 315 completely is the HCF of 180, 225 and 315

First, we will find the HCF of 180 and 225

$$180 \overline{)225}\ (1$$
$$-180$$
$$45 \overline{)180}\ (4$$
$$-180$$
$$0$$

= 45

Now, we will find the HCF of 45 and 315.

HCF of 45 and 315
= 45
∴ Required HCF = 45

$$\begin{array}{r} 45\overline{)315}(7 \\ -315 \\ \hline \times \end{array}$$

8 and First decrease the [illegible] remainder 3 fr

6) ans The HCF of two no.s is coprime if their HCF is 1.
HCF of 45 and 56 = 1

```
45 | 56 (1
  -45
  ---
   11 | 45 (4
      -44
      ---
       1 | 11 (11
           -11
           ---
            0
```

From above it is proved that HCF of 45 and 56 is 1 so, it is coprime.

ans 7) The factors of 15, 16, 21 and 28 :-
15 = 1, 3, 5, 15
16 = 1, 2, 4, 8, 16
21 = 1, 3, 7, 21
28 = 1, 2, 4, 7, 14, 28

The pairs are = 15-16, 15-21, 15-28, 16-21, 16-28, 21-28
HCF of 15 and 16 = 1
As, common factors of 15 and 16 is only 1.

HCF of 15 and 21 = 3
As, the common factors of 15 and 21 are 1 and 3.

HCF of 15 and 28 = 1
As, the common factors of 15 and 28 is only 1.

HCF of 16 and 21 = 1
As, the common factors of 16 and 21 is only 1.

HCF of 16 and 28 = 4
As, the common factors of 16 and 28 are 1, 2 and 4.

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8. HCF of 21 and 28 = 7

As, the common factors of 21 and 28 are 1, 7.

The pair of coprime no. are = 15-16, 16-21, 15-28

8 ans) First decrease the leaving remainder 3 from numbers 93, 111, 129 to find the required no.

93 − 3 = 90

111 − 3 = 108

129 − 3 = 126

In each case, the HCF of 90, 108 and 126 will be the greatest number that will divide 93, 111 and 129 leaving remainder 3.

Using the division method the HCF of 90, 108 and 126 is given below.

```
90 | 108 (1
   - 90
   ----
    18 | 90 (5
       - 90
       ----
         0
```

Now we will find the HCF of 18 and 126.

```
18 | 126 (7
   - 126
   -----
     0
```

So, HCF = 18