**EXERCISE: 3.3**

1.Simplify

(i)

**SOLUTION**

ROUGH

|  |  |
| --- | --- |
| 3 | 81 |
| 3 | 27 |
| 3 | 9 |
| 3 | 3 |
|  | 1 |

(ii)

**SOLUTION**

ROUGH

|  |  |
| --- | --- |
| 2 | 256 |
| 2 | 128 |
| 2 | 64 |
| 2 | 32 |
| 2 | 16 |
| 2 | 8 |
| 2 | 4 |
| 2 | 2 |
|  | 1 |

(iii)

**SOLUTION**

ROUGH

|  |  |
| --- | --- |
| 2 | 128 |
| 2 | 64 |
| 2 | 32 |
| 2 | 16 |
| 2 | 8 |
| 2 | 4 |
| 2 | 2 |
|  | 1 |

(iv)

**SOLUTION**

ROUGH

|  |  |
| --- | --- |
| 2 | 7776 |
| 2 | 3888 |
| 2 | 1944 |
| 2 | 972 |
| 2 | 486 |
| 3 | 243 |
| 3 | 81 |
| 3 | 27 |
| 3 | 9 |
| 3 | 3 |
|  | 1 |

(v)

**SOLUTION**

ROUGH

|  |  |
| --- | --- |
| 5 | 125 |
| 5 | 25 |
| 5 | 5 |
|  | 1 |

ROUGH

|  |  |
| --- | --- |
| 2 | 32 |
| 2 | 16 |
| 2 | 8 |
| 2 | 4 |
| 2 | 2 |
|  | 1 |

vi)

**SOLUTION**

ROUGH

|  |  |
| --- | --- |
| 3 | 21 |
| 7 | 7 |
|  | 1 |

ROUGH

|  |  |
| --- | --- |
| 2 | 28 |
| 2 | 14 |
| 7 | 7 |
|  | 1 |

ROUGH

|  |  |
| --- | --- |
| 11 | 121 |
| 11 | 11 |
|  | 1 |

(vii)

**SOLUTION**

ROUGH

|  |  |
| --- | --- |
| 2 | 216 |
| 2 | 108 |
| 2 | 54 |
| 3 | 27 |
| 3 | 9 |
| 3 | 3 |
|  | 1 |

ROUGH

|  |  |
| --- | --- |
| 5 | 125 |
| 5 | 25 |
| 5 | 5 |
|  | 1 |

(viii)

**SOLUTION**

**Q3. Simplify**

SOLUTION

|  |  |
| --- | --- |
| 2 | 128 |
| 2 | 64 |
| 2 | 32 |
| 2 | 16 |
| 2 | 8 |
| 2 | 4 |
| 2 | 2 |
|  | 1 |

SOLUTION

SOLUTION

SOLUTION

|  |  |
| --- | --- |
| 2 | 250 |
| 5 | 125 |
| 5 | 25 |
| 5 | 5 |
|  | 1 |

|  |  |
| --- | --- |
| 2 | 490 |
| 5 | 245 |
| 7 | 49 |
| 7 | 7 |
|  | 1 |

|  |  |
| --- | --- |
| 2 | 10 |
| 5 | 5 |
|  | 1 |

SOLUTION

|  |  |
| --- | --- |
| 5 | 245 |
| 7 | 49 |
| 7 | 7 |
|  | 1 |

|  |  |
| --- | --- |
| 5 | 625 |
| 5 | 125 |
| 5 | 25 |
| 5 | 5 |
|  | 1 |

|  |  |
| --- | --- |
| 3 | 45 |
| 3 | 15 |
| 5 | 5 |
|  | 1 |

SOLUTION

|  |  |
| --- | --- |
| 11 | 11 |
|  | 1 |

|  |  |
| --- | --- |
| 2 | 396 |
| 2 | 198 |
| 3 | 99 |
| 3 | 33 |
| 11 | 11 |
|  | 1 |

SOLUTION

SOLUTION

|  |  |
| --- | --- |
| 2 | 18 |
| 3 | 9 |
| 3 | 3 |
|  | 1 |

|  |  |
| --- | --- |
| 2 | 32 |
| 2 | 16 |
| 2 | 8 |
| 2 | 4 |
| 2 | 2 |
|  | 1 |

|  |  |
| --- | --- |
| 2 | 50 |
| 5 | 25 |
| 5 | 5 |
|  | 1 |

SOLUTION

SOLUTION

SOLUTION

SOLUTION

**Q4: Simplify**

**SOLUTION**

|  |  |
| --- | --- |
| **2** | **32** |
| **2** | **16** |
| **2** | **8** |
| **2** | **4** |
| **2** | **2** |
|  | **1** |

|  |  |
| --- | --- |
| **2** | **8** |
| **2** | **4** |
| **2** | **2** |
|  | **1** |

**SOLUTION**

|  |  |
| --- | --- |
| **3** | **243** |
| **3** | **81** |
| **3** | **27** |
| **3** | **9** |
| **3** | **3** |
|  | **1** |

|  |  |
| --- | --- |
| **3** | **27** |
| **3** | **9** |
| **3** | **3** |
|  | **1** |

**SOLUTION**

|  |  |
| --- | --- |
| **2** | **18** |
| **3** | **9** |
| **3** | **3** |
|  | **1** |

|  |  |
| --- | --- |
| **2** | **32** |
| **2** | **16** |
| **2** | **8** |
| **2** | **4** |
| **2** | **2** |
|  | **1** |

|  |  |
| --- | --- |
| **2** | **50** |
| **5** | **25** |
| **5** | **5** |
|  | **1** |

**SOLUTION**

|  |  |
| --- | --- |
| 17 | 289 |
| 17 | 17 |
|  | 1 |

**SOLUTION**

**SOLUTION**

|  |  |
| --- | --- |
| 3 | 27 |
| 3 | 9 |
| 3 | 3 |
|  | 1 |