Visualizing shapes Ex 19.1 Q5

Answer :

No, because every polyhedron satisfies Euler's formula, given below:
$F+V=E+2$
Here, number of faces $F = 10$
Number of edges $E = 20$
Number of vertices $V = 15$
So, by Euler's formula:
LHS : $10+15 = 25$
RHS : $20+2 = 22$,
which is not true because $25 \neq 22$
Hence, Eulers formula is not satisfied and no polyhedron may be formed.

visualizing shapes Ex 19.1 Q6

Answer :

(i)
In the given polyhedron:
Edges $E=15$
Faces $F=7$
Vertices $V=10$

(i)

Now, putting these values in Euler's formula:
LHS : $F+V$
$= 7+10$
$= 17$
LHS : $E+2$
$= 15+2$
$= 17$
LHS = RHS
Hence, the Euler's formula is satisfied.

(ii)

In the given polyhedron:

Edges E=16

Faces F=9

Vertices V=9

(ii)

Now, putting these values in Euler's formula:

RHS : F+V

$= 9+9$

$= 18$

LHS : $E + 2$

$= 16 + 2$

$= 18$

LHS = RHS

Hence, Euler's formula is satisfied.

(iii)

In the following polyhedron:

Edges E=21

Faces F=9

Vertices V=14

(iii)

Now, putting these values in Euler's formula:

LHS: F+V

$=$ 9+14

$=$ 23

RHS: E+2

=21+2

=23

This is true.

Hence, Euler's formula is satisfied.

(iv)

In the following polyhedron:

Edges E=8
Faces F=5
Vertices V=5

(iv)

Now, putting these values in Euler's formula:

LHS : F+V

$= 5+5$

$= 10$

RHS : $E+2$

$=8+2$

$=10$

LHS = RHS

Hence, Euler's formula is satisfied.

(v)

In the following polyhedron:

Edges E=16
Faces F=9
Vertices V=9

(v)

Now, putting these values in Euler's formula:
LHS : F+V
$= 9+9$
$= 18$
RHS : E + 2
=16+2
=18
LHS = RHS
Hence, Euler's formula is satisfied.

visualizing shapes Ex 19.1 Q7
Answer :

We know that the Euler's formula is: F+V = E+2
(i)
The number of vertices V is 6 and the number of edges E is 12.
Using Euler's formula:
F+6 = 12+2
F+6 = 14
F = 14-6
F = 8
So, the number of faces in this polyhedron is 8.
(ii)
Faces, F = 5
Edges, E = 9.
We have to find the number of vertices.
Putting these values in Euler's formula:
5+V = 9+2
5+V = 11
V = 11-5
V = 6
So, the number of vertices in this polyhedron is 6.
(iii)
Number of faces F = 20
Number of vertices V = 12
Using Euler's formula:

$20+12 = E+2$

$32 = E+2$

$E+2 = 32$

$E = 32-2$

$E = 30.$

So, the number of edges in this polyhedron is 30.

********** END **********