Write pseudo code for prim's algorithm.

Prim's Algorithm

The pseudocode for prim's algorithm shows how we create 2 sets of vertices U & V-U. U contains the list of vertices that have been visited & V-U the list of vertices that haven't. One by one, we move vertices from set V-U to set U by connecting the least weight edge.

Pseudo Code

```
T=φ;
U={1};
while (U≠V)
    let (u,v) be the lowest cost edge such that u∈U & v∈V-U;
    T=TU {(u,v)}
    U=UU {v}
```

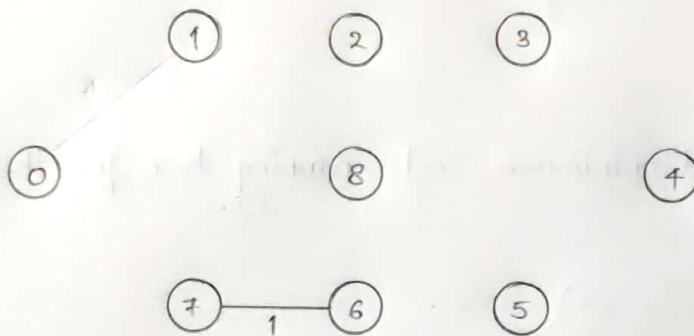Use the algorithm to find minimum cost spanning tree for the graphs given below.
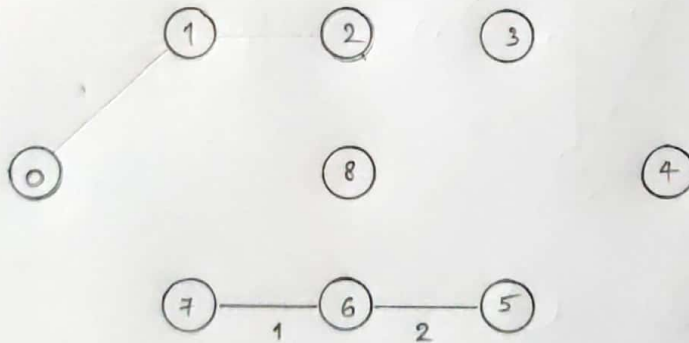
①
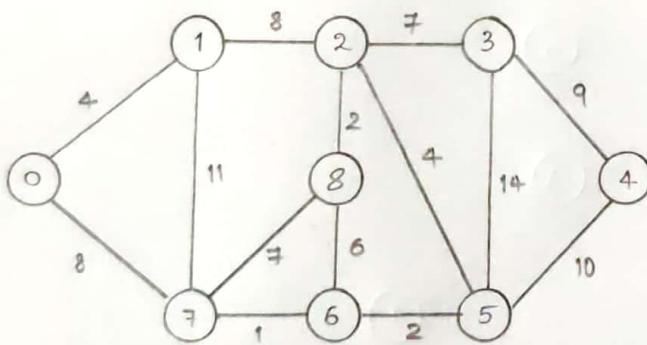
ans.

Step 1:-
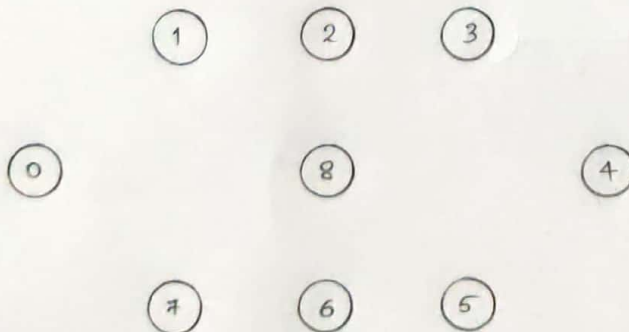
Step 2:-

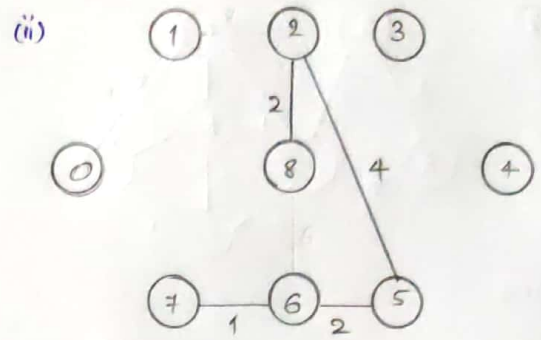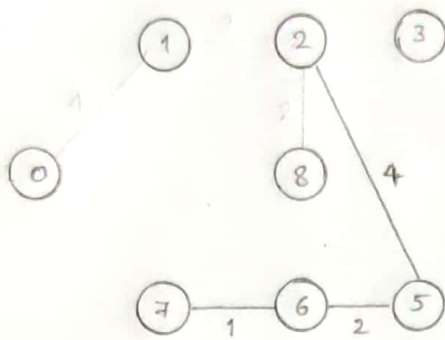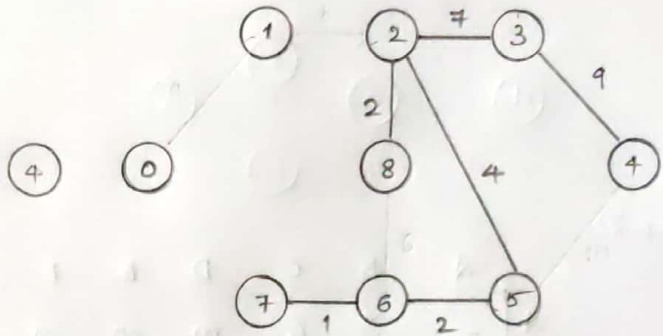|	0	1	2	3	4	5	6	7	8
0	–	4	∞	∞	∞	∞	∞	8	∞
1	4	–	8	∞	∞	∞	∞	11	∞
2	∞	8	–	7	∞	4	∞	∞	2
3	∞	∞	7	–	9	14	∞	∞	∞
4	∞	∞	∞	9	–	10	∞	∞	∞
5	∞	∞	4	14	10	–	2	∞	∞
6	∞	∞	∞	∞	∞	2	–	1	6
7	8	11	∞	∞	∞	∞	1	–	7
8	∞	∞	2	∞	∞	∞	6	7	–

Step 3:-

Step 4:-

Step 5:-

(i)

(ii)

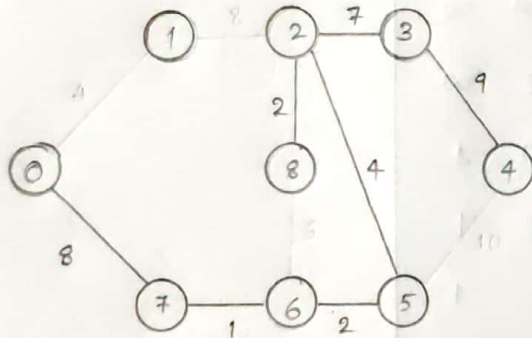(iii)

(iv)

(v)

(vi)
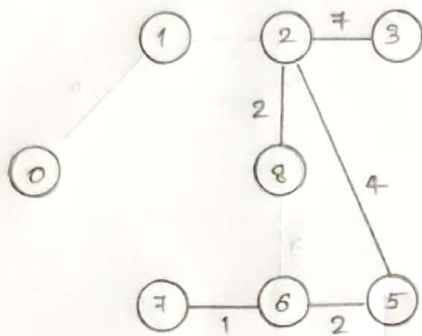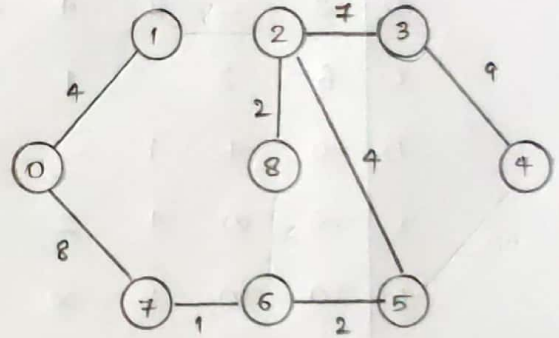
No. of verties $-1 = 9-1 = 8$ edges have been obtained. So we stop.

Minimum weight $= 4+8+2+4+1+2+7+9$

$= 37$

②

ans:
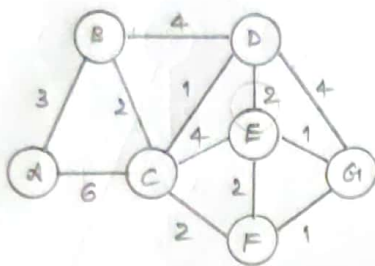
Step 1:-
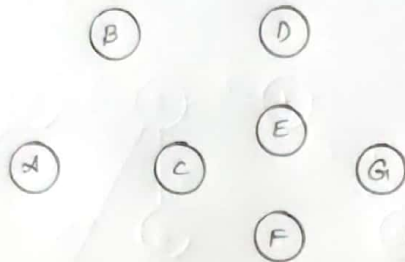
Step 2:-

$$
\begin{array}{c|ccccccc}
 & A & B & C & D & E & F & G \\
\hline
A & - & 3 & 6 & \infty & \infty & \infty & \infty \\
B & 3 & - & 2 & 4 & \infty & \infty & \infty \\
C & 6 & 2 & - & 1 & 4 & 2 & \infty \\
D & \infty & 4 & 1 & - & 2 & \infty & 4 \\
E & \infty & \infty & 4 & 2 & - & 2 & 1 \\
F & \infty & \infty & 2 & \infty & 2 & - & 1 \\
G & \infty & \infty & \infty & 4 & 1 & 1 & - \\
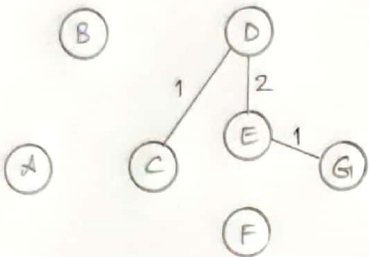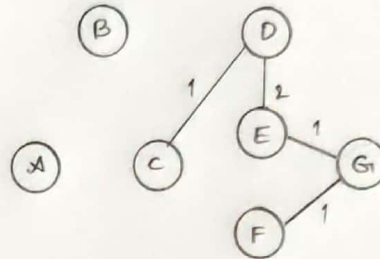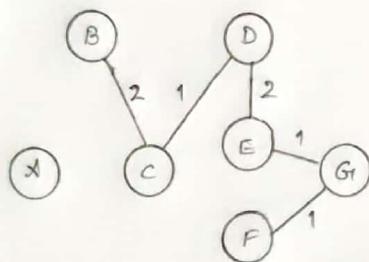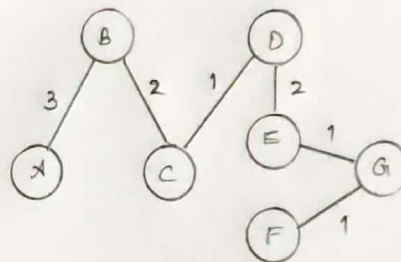\end{array}
$$

Step 3:-
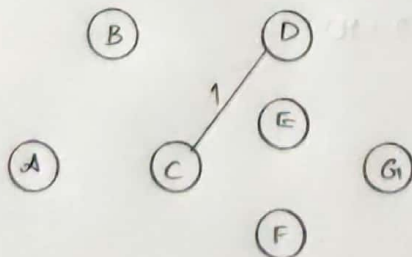
Step 4:-
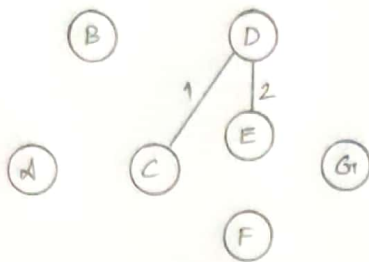
Step 5:- (i)

(ii)

(iii)

(iv)

No. of vertices $-1 = 7-1 = 6$ edges have been obtained. So we stop.

Minimum weight $= 3+2+1+2+1+1$

$$= \underline{\underline{10}}$$