

Course: Btech Branch: CS

Semester: 3rd Section: B Data structure

Subject Code: 301 Subject Name: ~~Programming~~ ~~Structure~~

Sub. Teacher Name: ~~Kati~~ Mr. Manoj Kumar Singh

Student Name: Kati Agarwal

Roll No: 2200820100078

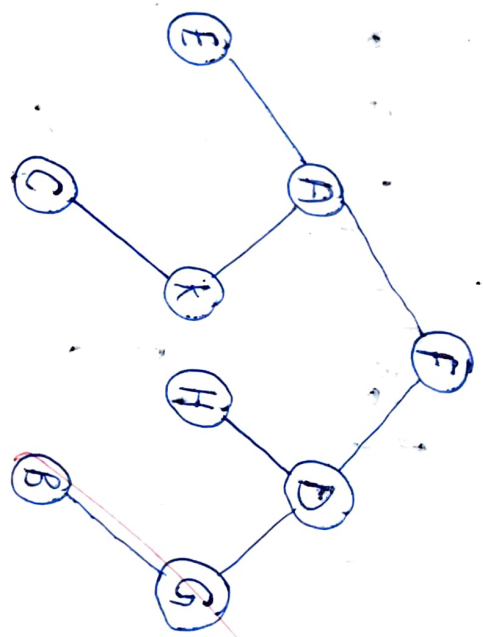
Sign. of Student: ~~Coll~~ Sign. of Invigilator: ~~Coll~~

Marks obtained: ~~20~~ Sign. of Teacher: ~~Coll~~

Section A

Inorder: EACKFHDBG

Preorder: FAEKCDAHGB



Postorder: ECKAHBGDF

ECKAHBGDF

(LRR)

~~(LRR)~~

3

Coll

3 Algorithm

Partition (int a[], int l, int u)

```

{
  int x, i, j;
  x = a[l];
  i = l + 1;
  j = u + 1;
  while (1)
  {

```

```

    do {
      j = j - 1;
    } while (a[j] > x);

```

```

    do {
      i = i + 1;
    } while (a[i] < x);

```

```

  } if (i < j)
  {

```

```

    int temp = a[i];
    a[i] = a[j];
    a[j] = temp;
  }
}

```

else
return (j);

quick-sort (int a[], int l, int u)

```

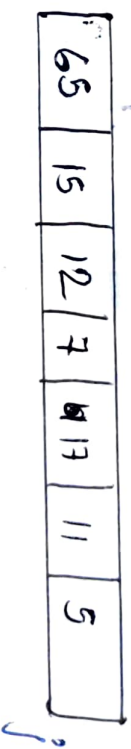
{
  int q;
  if (l < u)
  {

```

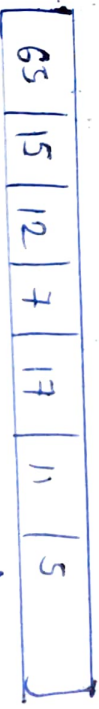
q = partition (a, l, u);

quick-sort (a, l, q);

quick-sort (a, q+1, u);



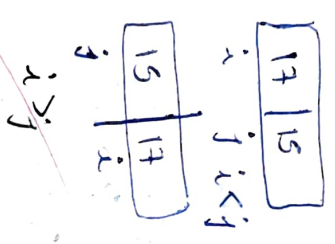
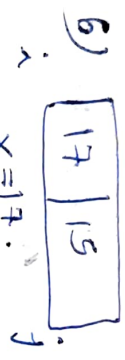
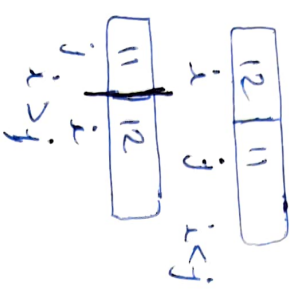
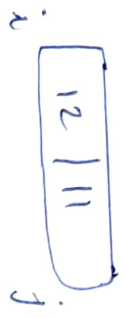
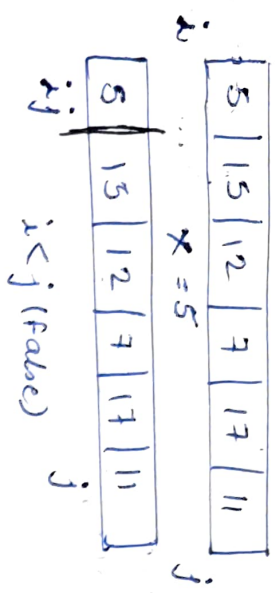
x = 65



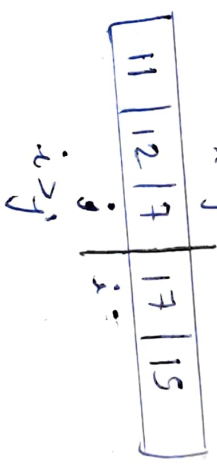
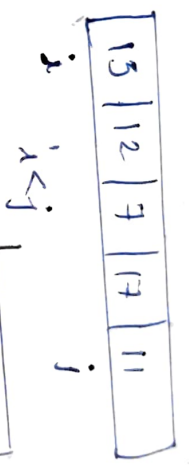
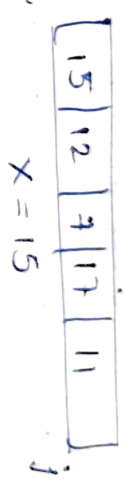
i < j



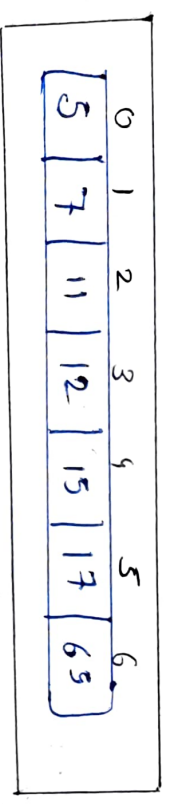
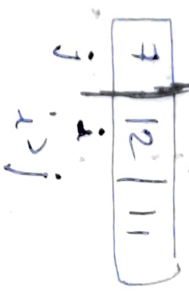
2)



3)

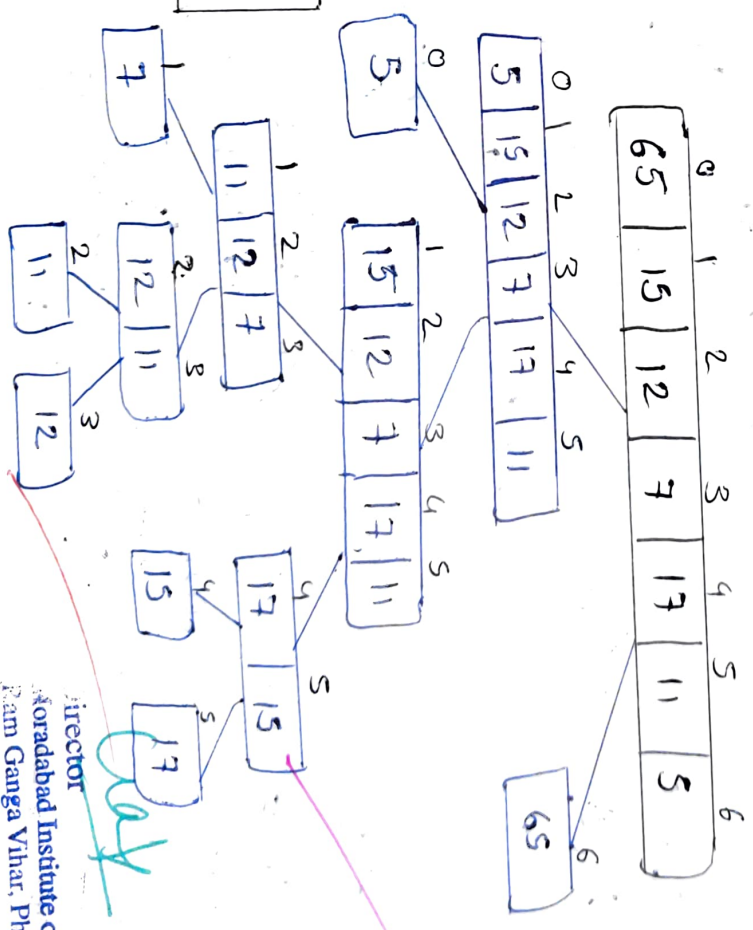


4)



Answers

3



ray

Section -B

Keys: 12, 18, 13, 2, 3, 23, 5, 15
 $h(k) = k \bmod 10$, $n=10$

i) $k=12$

$$h(12) = 12 \cdot 10 = 2$$

$$h(12, 0) = (2+0) \cdot 10 = 2$$

$$\therefore h(k, i) = (h(k) + i) \cdot n$$

ii)

$k=18$

$$h(18) = 18 \cdot 10 = 8$$

$$h(18, 0) = (8+0) \cdot 10 = 8$$

iii) $k=13$

$$h(13) = 13 \cdot 10 = 3$$

$$h(13, 0) = (3+0) \cdot 10 = 3$$

iv) $k=2$

$$h(2) = 2 \cdot 10 = 2$$

$$h(2, 0) = (2+0) \cdot 10 = 2 \text{ (clashing)}$$

$$h(2, 1) = (2+1) \cdot 10 = 3 \text{ (clashing)}$$

$$h(2, 2) = (2+2) \cdot 10 = 4$$

v) $k=3$

$$h(3) = 3 \cdot 10 = 3$$

$$h(3, 0) = (3+0) \cdot 10 = 3 \text{ (clashing)}$$

$$h(3, 1) = (3+1) \cdot 10 = 4 \text{ (clashing)}$$

$$h(3, 2) = (3+2) \cdot 10 = 5$$

vi) $k=23$

$$h(23) = 23 \cdot 10 = 3$$

$$h(23, 0) = (3+0) \cdot 10 = 3 \text{ (clashing)}$$

$$h(23, 1) = (3+1) \cdot 10 = 4 \text{ (clashing)}$$

$$h(23, 2) = (3+2) \cdot 10 = 5 \text{ (clashing)}$$

$$h(23, 3) = (3+3) \cdot 10 = 6$$

WVF

vii) $k = 5$

$h(5) = 5 \cdot 10 = 5$

$h(5,0) = (5+0) \cdot 10 = 5$ (clashing)

$h(5,1) = (5+1) \cdot 10 = 6$ (clashing)

$h(5,2) = (5+2) \cdot 10 = 7$

viii) $k = 15$

$h(15) = 15 \cdot 10 = 5$

$h(15,0) = (15+0) \cdot 10 = 5$ (clashing)

$h(15,1) = (15+1) \cdot 10 = 6$ (clashing)

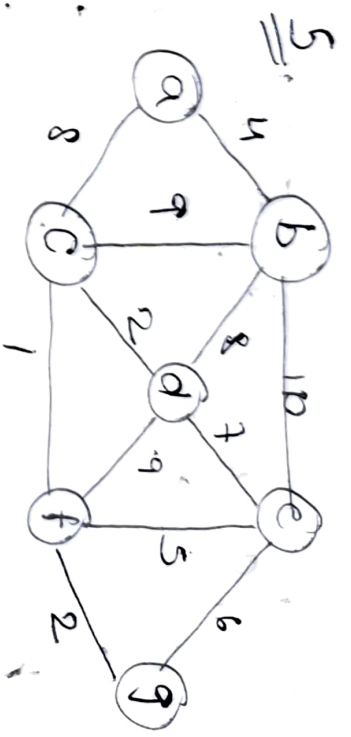
$h(15,2) = (15+2) \cdot 10 = 7$ (clashing)

$h(15,3) = (15+3) \cdot 10 = 8$ (clashing)

$h(15,4) = (15+4) \cdot 10 = 9$

0	
1	
2	12
3	13
4	2
5	3
6	23
7	5
8	18
9	15

41



Adjacency list

a	b, e
b	a, c, d, e
c	a, b, d, f
d	b, c, e, f
e	b, d, f, g
f	c, d, e, g
g	e, f

Q =

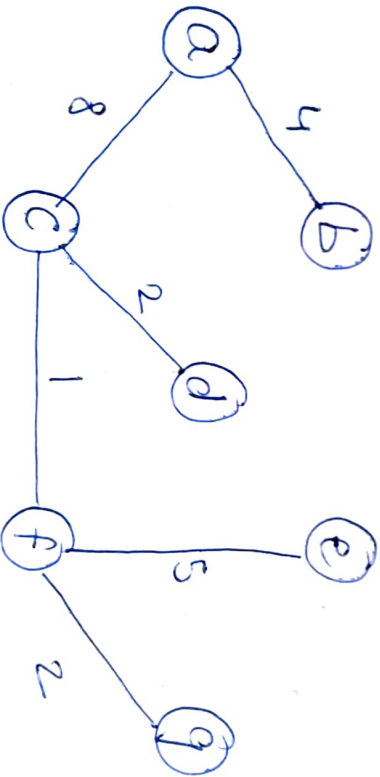
a	b	c	d	e	f	g
---	---	---	---	---	---	---

Ans

Key

	a	b	c	d	e	f	g
a	0	4	8	∞	∞	∞	∞
b		0	4	8	10	∞	∞
c			0	4	10	1	∞
d				0	4	1	2
e					0	5	2
f						0	1
g							0

π	a	b	c	d	e	f	g
a	NR	a	a				
b		NR	a	b	b		
c			NR	a	b	c	
d				NR	c	c	
e					NR	c	
f						NR	
g							NR

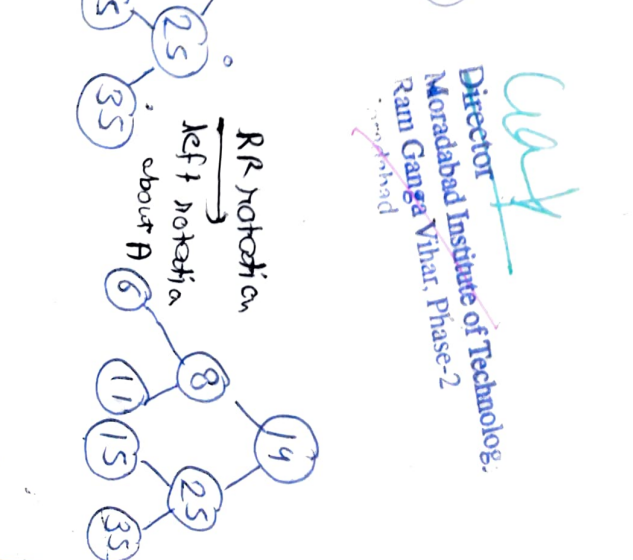
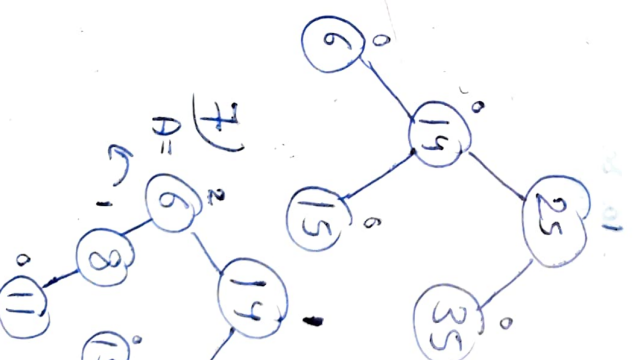
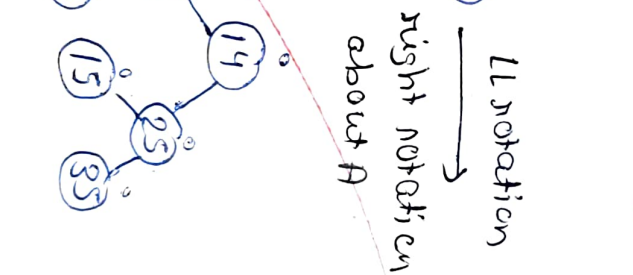
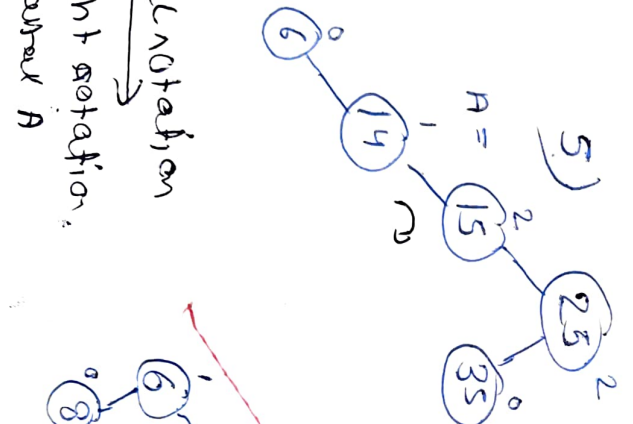
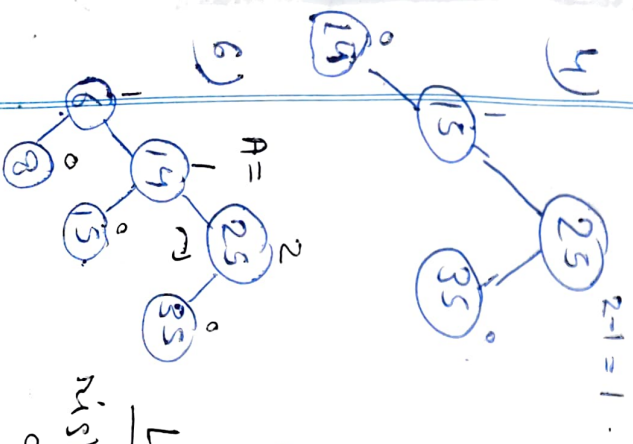
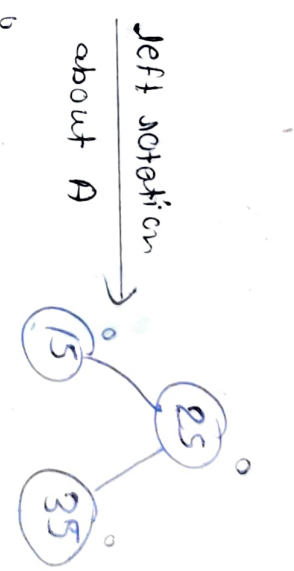
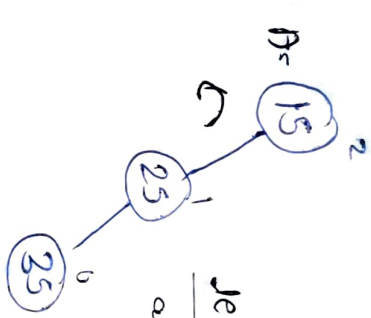
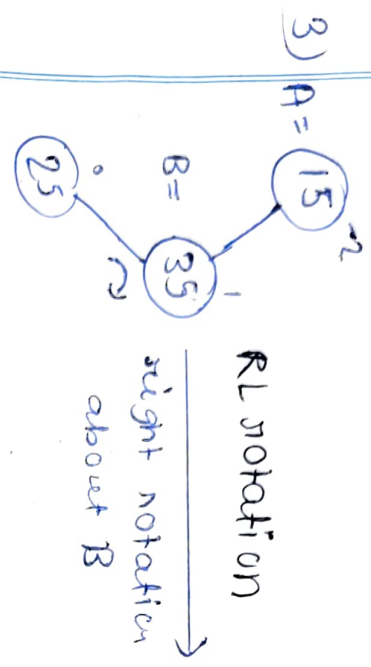
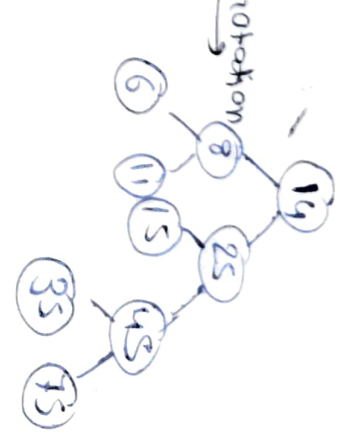
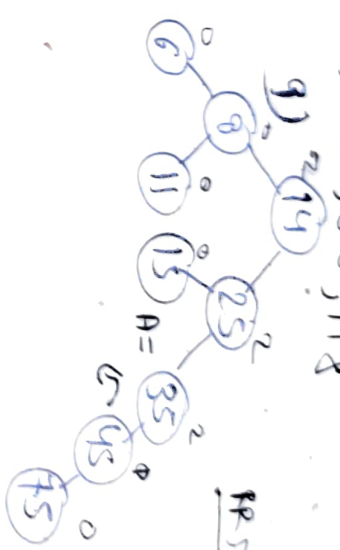
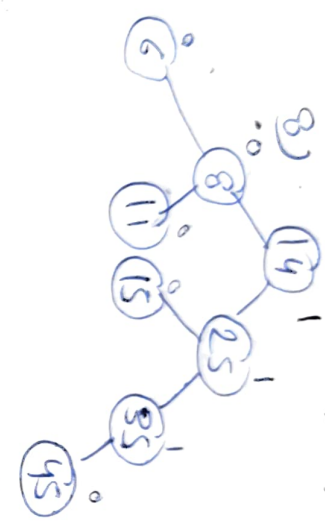
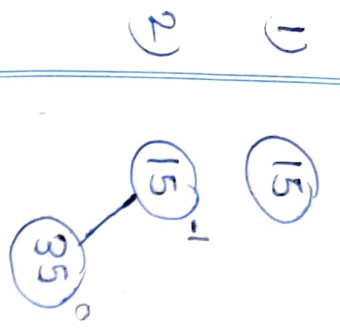


4

Minimum Spanning tree by Prim's Algorithm

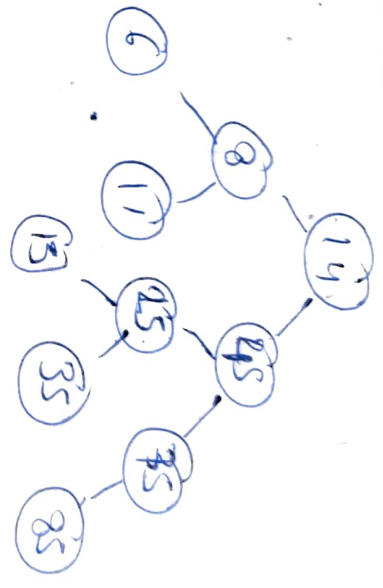
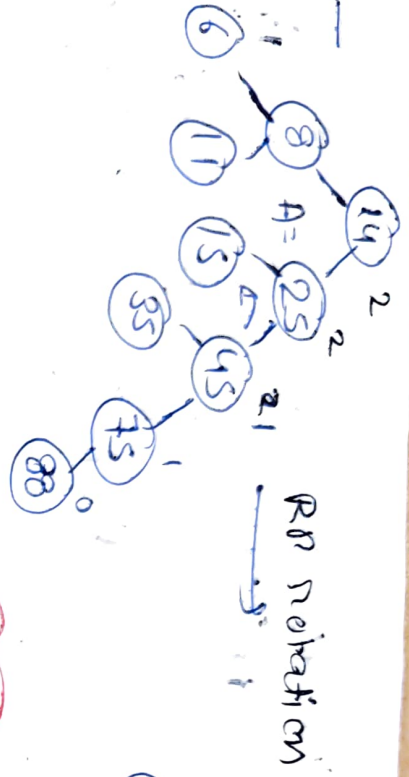
Waf

15, 35, 25, 14, 6, 8, 11, 45, 75, 88, 118



Director
 Moradabad Institute of Technology
 Ram Ganga Vihar, Phase-2
 Moradabad

10



N

Handwritten signature

Director
 Moradabad Institute of Technology
 Yam Ganga Vihar, Phase-2