

Day: _____

Date: _____

Chapter 02

Question No 02: 15

Solution:-

$$x_0 = 1$$

$$x_m = 11$$

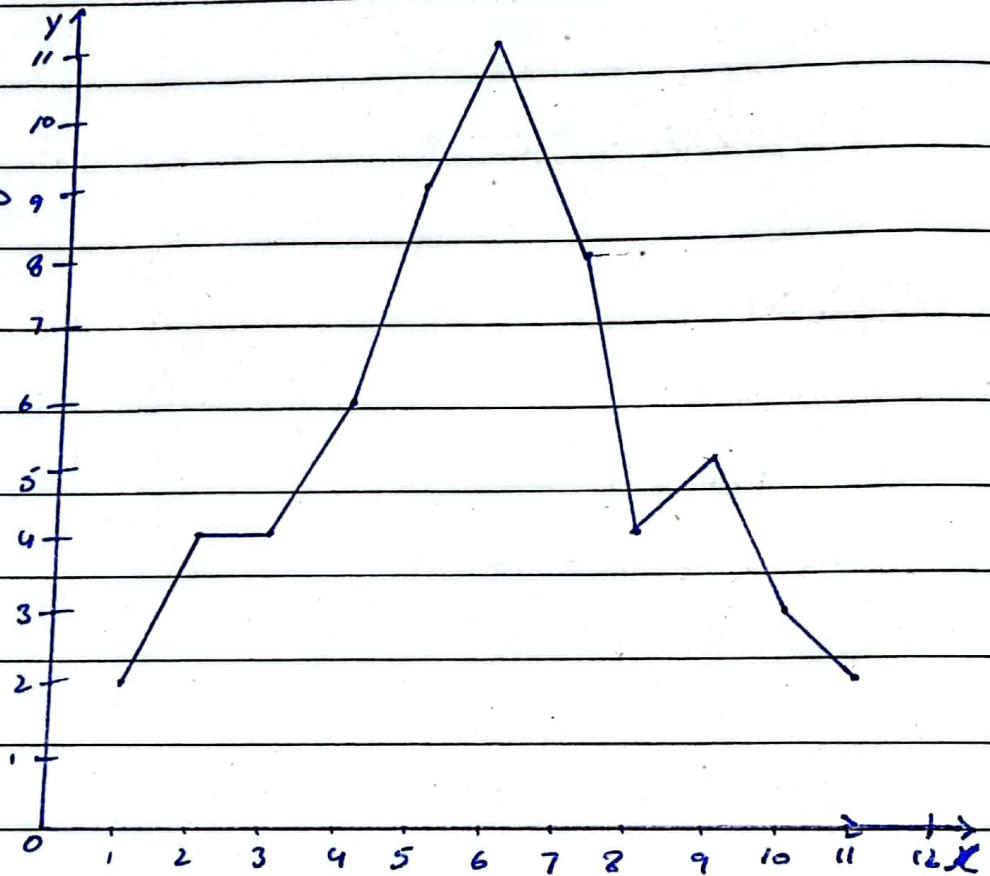
$$R = 11 - 1 = 10$$

Class	Tally	f
1		2
2		4
3		4
4		5
5	-	9
6		11
7		8
8		4
9		5
10		3
11		2
		58

Day: _____

Date: _____

Frequency distribution



Frequency Polygon

Question No : 16

i)

class

A

Tally

|||| XXX

Frequency

10

B

|||| ||||

9

C

XXXX

6

Total

25

Day: _____

Date: _____

ii)

Question No 16

~~RF~~

Class	tally	F	R.F	C.F	% R.F	Angle
A		9	0.36	9	36	129.6
B		10	0.40	19	40	144
C		6	0.24	25	24	86.4
Total		25	1.00	---	100	360

ii) Relative frequencies:-

$$A = \frac{9}{25} = 0.36$$

$$B = \frac{10}{25} = 0.40$$

$$C = \frac{6}{25} = 0.24$$

iii) Cumulative frequencies:-

$$A = 9$$

$$B = 9 + 10 = 19$$

$$C = 19 + 6 = 25$$

iv) Percentage of Relative frequencies:-

$$A = 0.36 \times 100 = 36$$

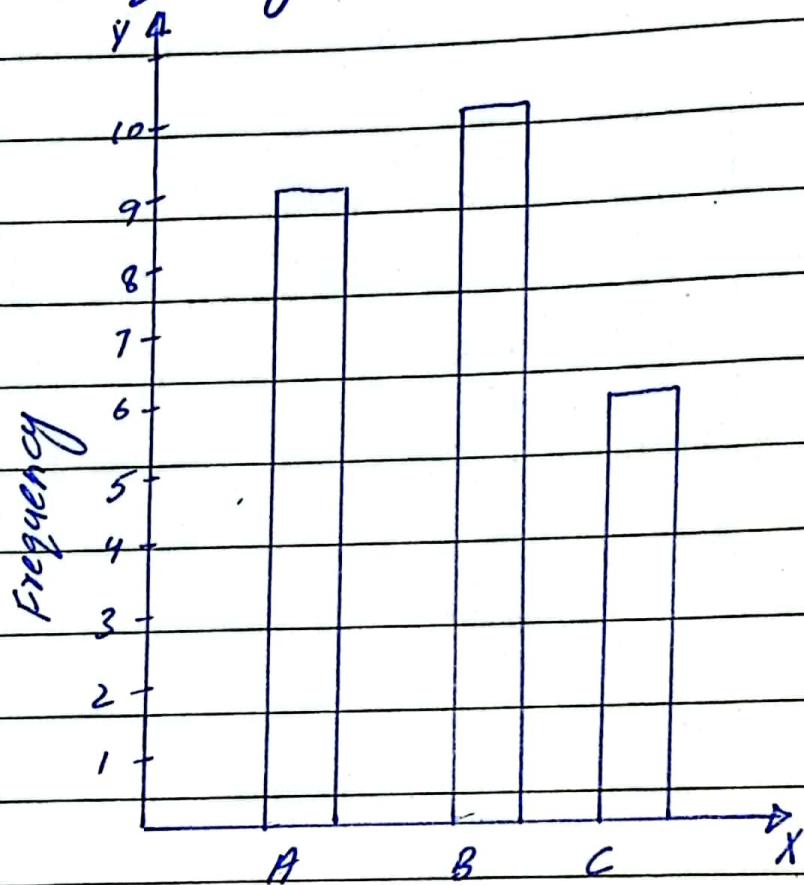
$$B = 0.40 \times 100 = 40$$

$$C = 0.24 \times 100 = 24$$

Date: _____

Day: _____

v) frequency bar graph:-



vi) pie graph:-

$$\text{Angle for } A = \frac{9}{25} \times 360 = 129.6$$

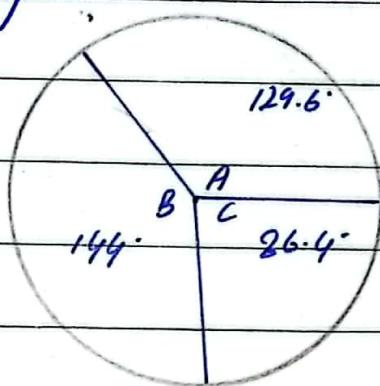
$$\text{Angle for } B = \frac{10}{25} \times 360 = 144$$

$$\text{Angle for } C = \frac{6}{25} \times 360 = 86.4$$

Day: _____

Date: _____

Pie Graph:-



Question 110 : 17

Test score	Frequency
0-4	3
4-8	8
8-12	8
12-16	20
16-20	5
20-24	4
24-28	2

Solution:-

i) largest frequency:-

$$\text{Lower class boundary} = 12 - 0.5 = 11.5$$

$$\text{Upper class boundary} = 16 + 0.5 = 16.5$$

Day: _____

Date: _____

ii) Class Interval	C.B	Mid/points
0-4	0.5 - 4.5	2
4-8	3.5 - 8.5	6
8-12	7.5 - 12.5	10
12-16	11.5 - 16.5	14
16-20	15.5 - 20.5	18
20-24	19.5 - 24.5	22
24-28	23.5 - 28.5	26

iii)

Class width = upper limit - lower limit

$$= 4$$

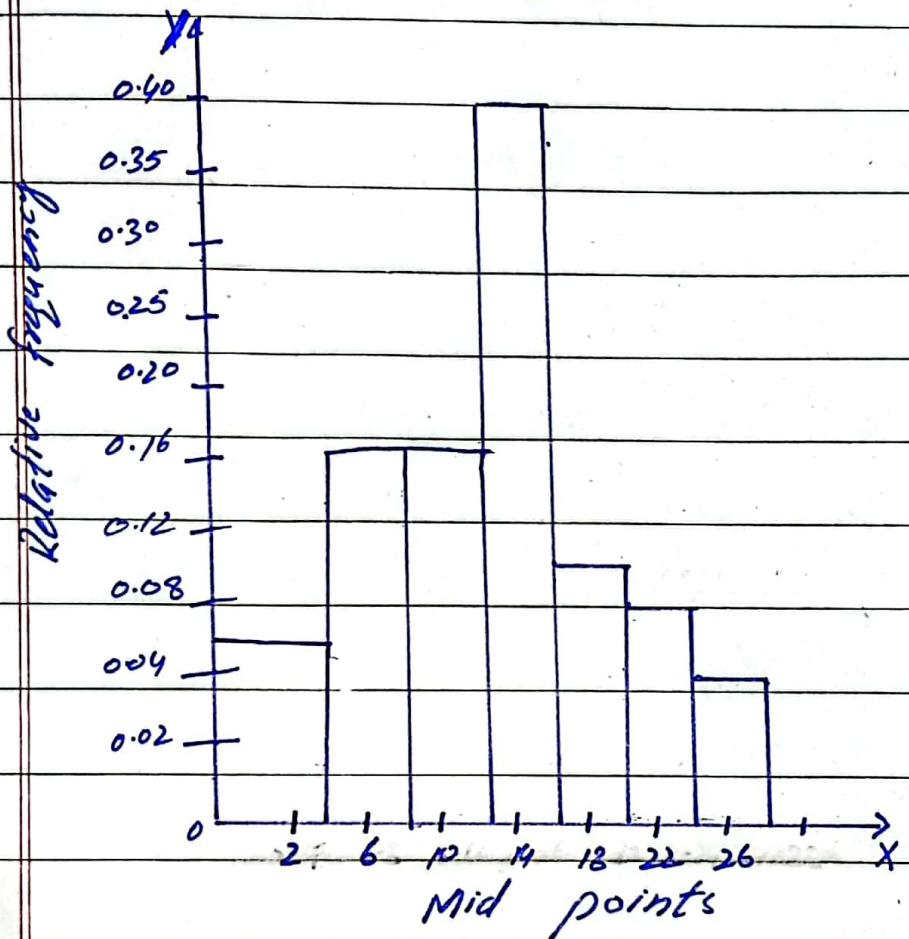
iv) G

Test score	f	R.F
0-4	3	0.06
4-8	8	0.16
8-12	8	0.16
12-16	20	0.40
16-20	5	0.10
20-24	4	0.08
24-28	2	0.04
Total	50	1.00

Day: _____

Date: _____

Relative frequency Histogram:-



Question No : 18

- Upper class boundary of the fifth class = $799 + 0.5 = 799.5$
- Lower class boundary of the eighth class = $1000 - 0.5 = 999.5$
- Mid value of seventh class

$$\begin{aligned} \text{mid value} &= \frac{900 + 999}{2} \\ &= \frac{1899}{2} \\ &= 949.5 \end{aligned}$$

Day: _____

Date: _____

iv) Class interval size

$$\text{class interval} = \text{upper limit} - \text{lower limit}$$

$$= 100$$

v) Frequency of fourth class
is 76.

Question No : 19

Solution

i) $X_a = 54, X_m = 95$

$$R = X_m - X_a$$

$$= 95 - 54$$

$$= 41$$

$$K = 1 + 3.3 \log N$$

$$= 1 + 3.3 \log 40$$

$$= 1 + 5.33$$

$$K = 6.33 \approx 7$$

$$C = \frac{R}{K}$$

$$C = \frac{41}{7}$$

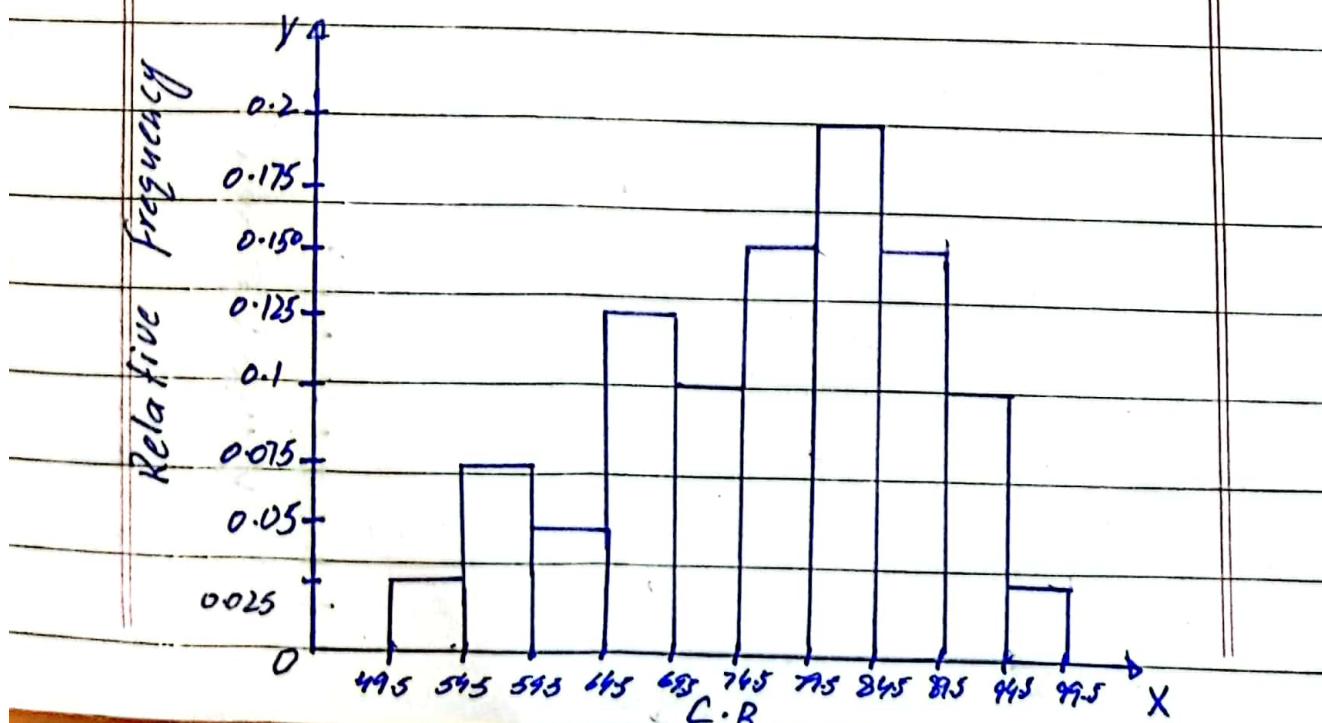
$$C = 5.85 \approx 5$$

Day: _____

Date: _____

classes	Tally	f	C.B	X	r.F	c.r.F	C.F
50-54	1	1	49.5 - 54.5	52	0.025	0.025	1
55-59		3	54.5 - 59.5	57	0.075	0.100	4
60-64		2	59.5 - 64.5	62	0.05	0.125	6
65-69		5	64.5 - 69.5	67	0.125	0.275	11
70-74		4	69.5 - 74.5	72	0.100	0.375	15
75-79		6	74.5 - 79.5	77	0.150	0.525	21
80-84		8	79.5 - 84.5	82	0.200	0.725	29
85-89		6	84.5 - 89.5	87	0.150	0.875	35
90-94		4	89.5 - 94.5	92	0.100	0.975	39
95-99	1	1	94.5 - 99.5	97	0.025	1	40
total		40			1.00		

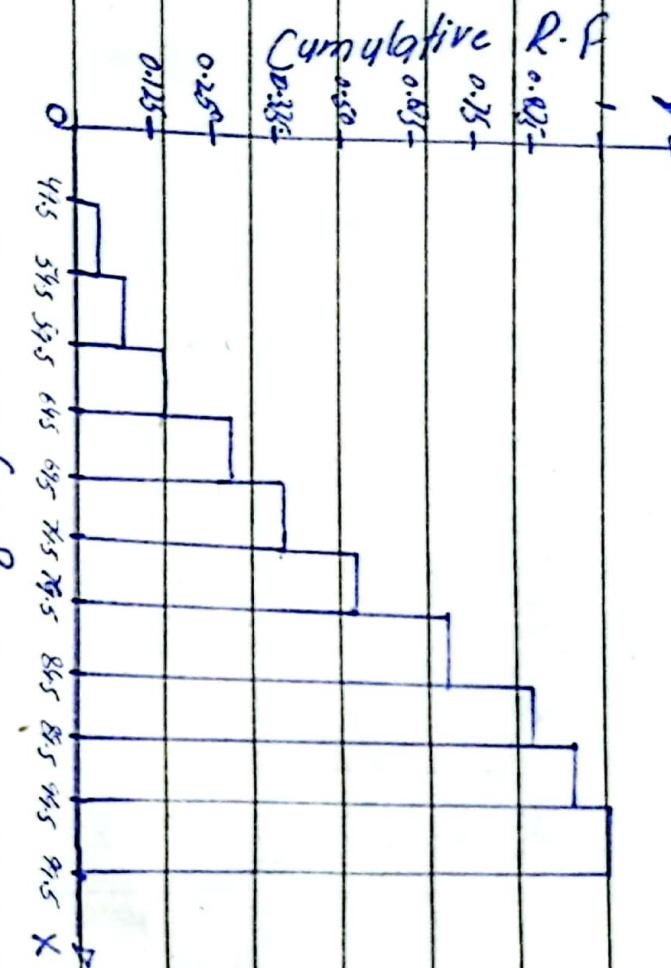
ii) Histogram Graph of relative frequency..



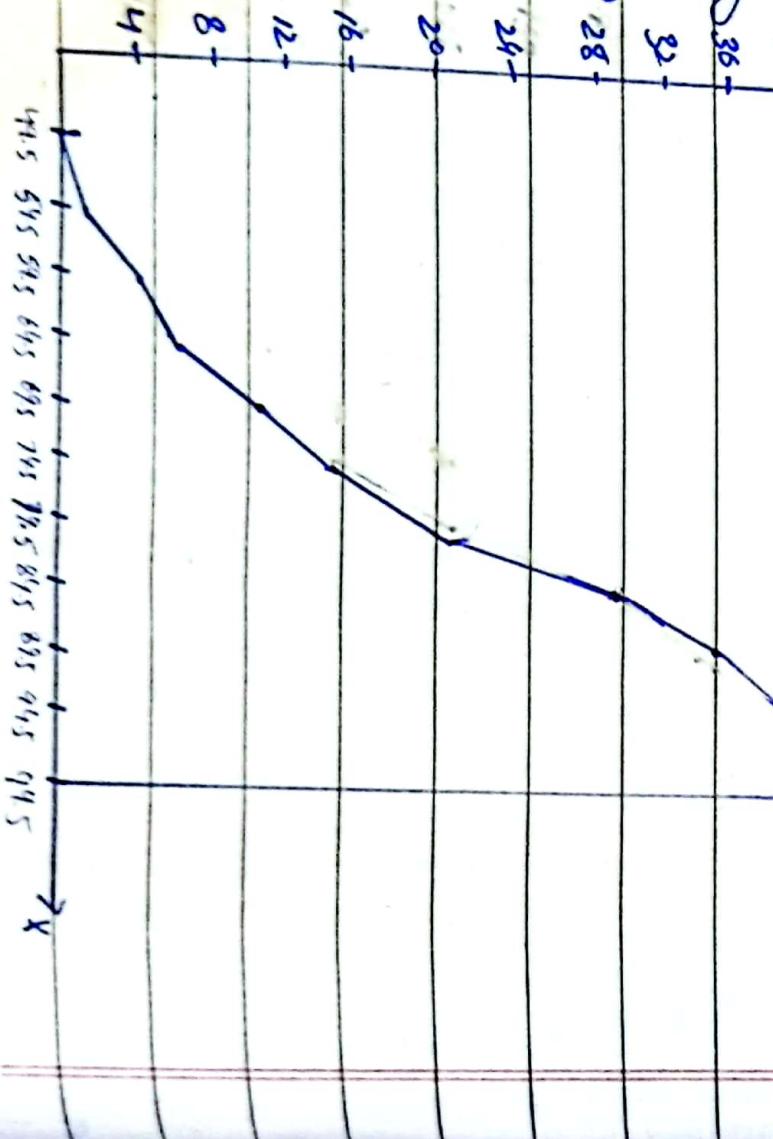
Date:

Date:

iii. Histogram of cumulative relative frequency:-



iv. Cumulative frequency polygon:-



7 Stem Log2

5 6 4 6 9

6 8 8 2 3 6 8 7

7 8 2 3 5 6 3 9 7 3 9

8 0 3 9 4 3 9 5 2 6 8 3 0 3 8

9 5 3 0 4 1

Question No 20

i-

$$X_0 = 140, X_m = 200$$

$$R = X_m - X_0$$

$$= 200 - 140 = 60$$

$$h \text{ or } C = 5$$

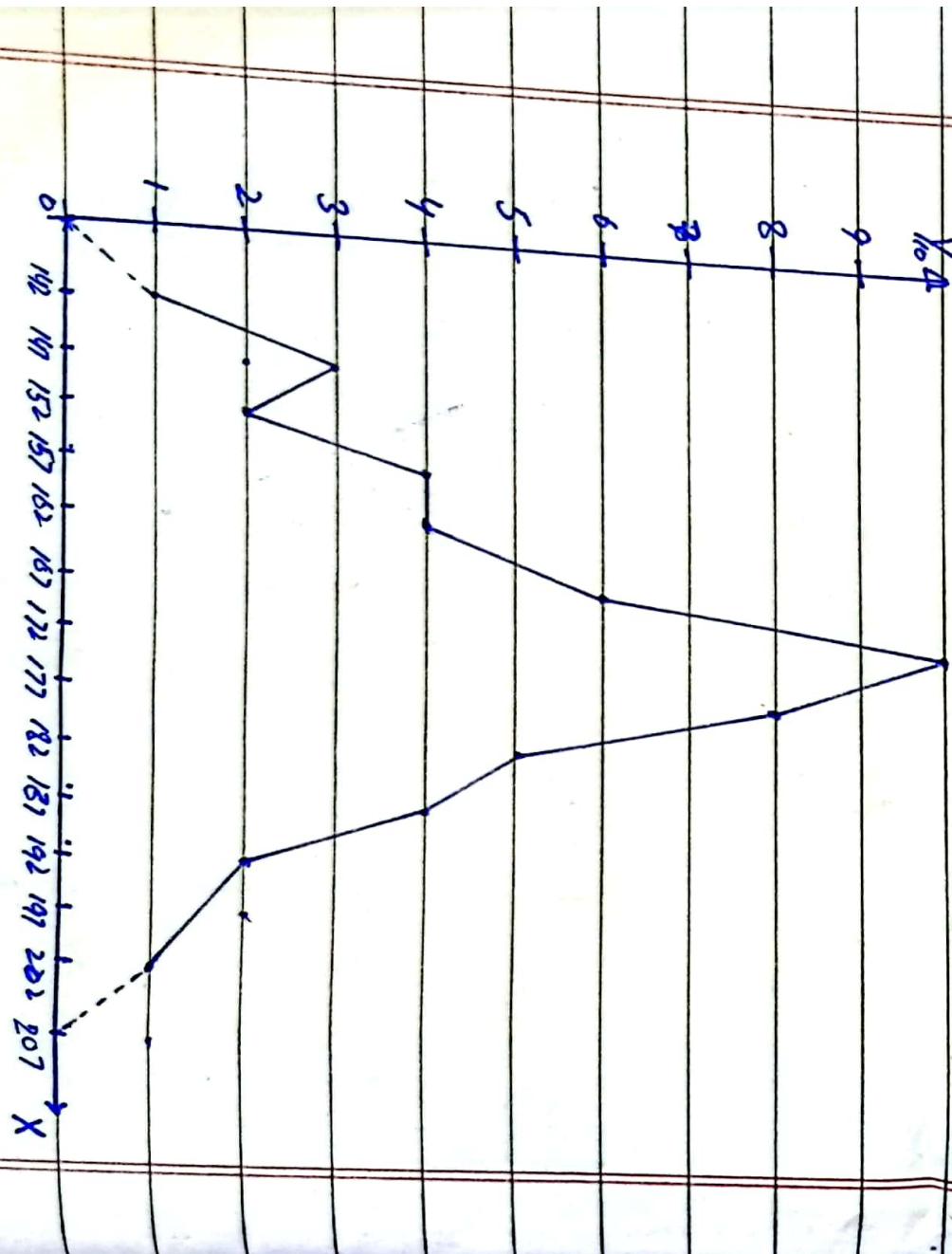
Classes	Tally f	X	C.B
140 - 144	1	142	129.5 - 144.5
145 - 149	11	147	144.5 - 149.5
150 - 154	2	152	149.5 - 154.5
155 - 159	4	157	154.5 - 159.5
160 - 164	1111	162	159.5 - 164.5
165 - 169	1111	167	164.5 - 169.5

Date:

Day:

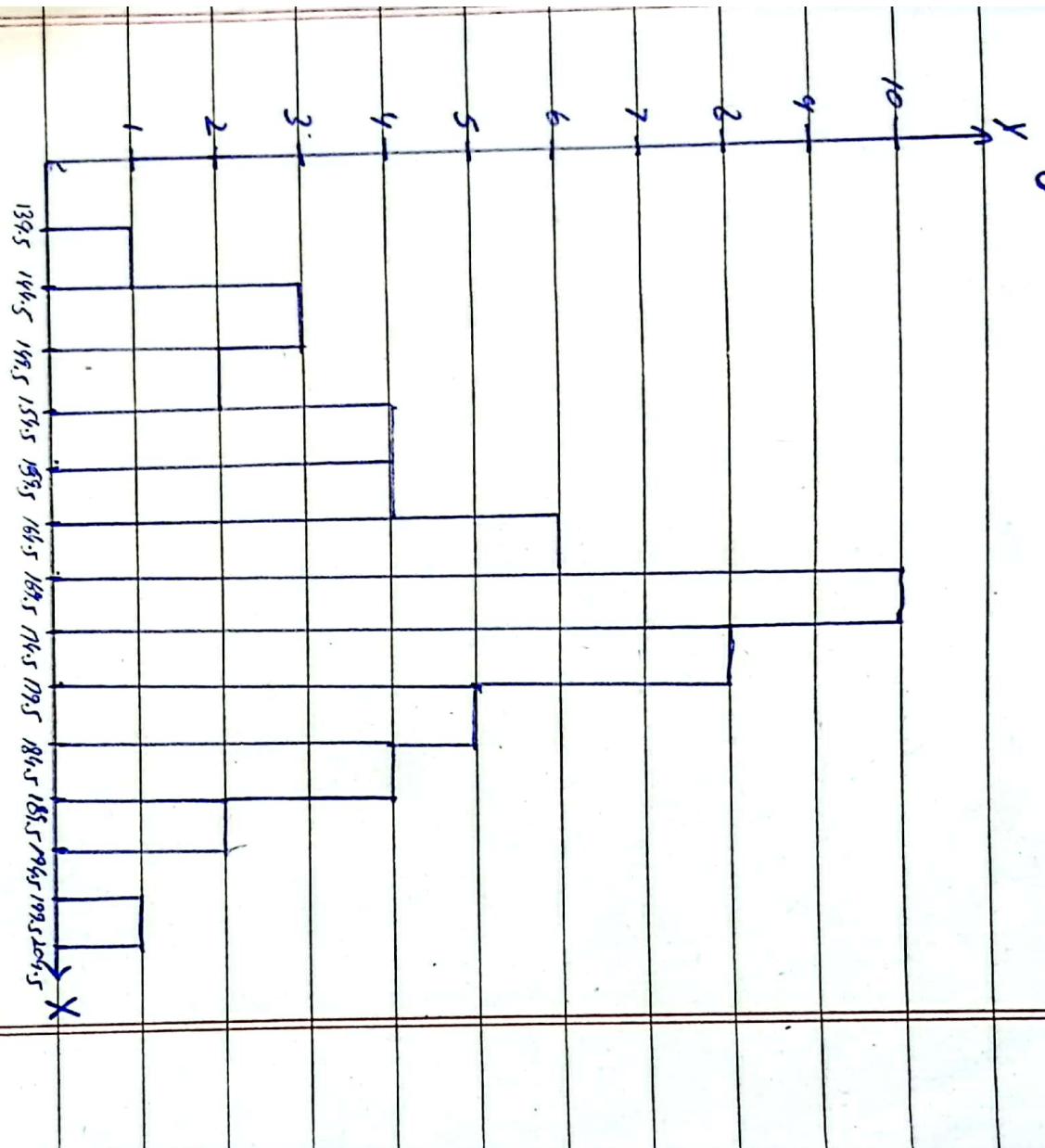
170 - 174		10	172	169.5 - 174.5
175 - 179		8	177	174.5 - 179.5
180 - 184		5	182	179.5 - 184.5
185 - 189		4	187	184.5 - 189.5
190 - 194		2	192	189.5 - 194.5
195 - 199		0	197	194.5 - 199.5
200 - 204	1	1	202	199.5 - 204.5
		50		

iii. Frequency polygons:-



Histogram Graph:-

Date: _____



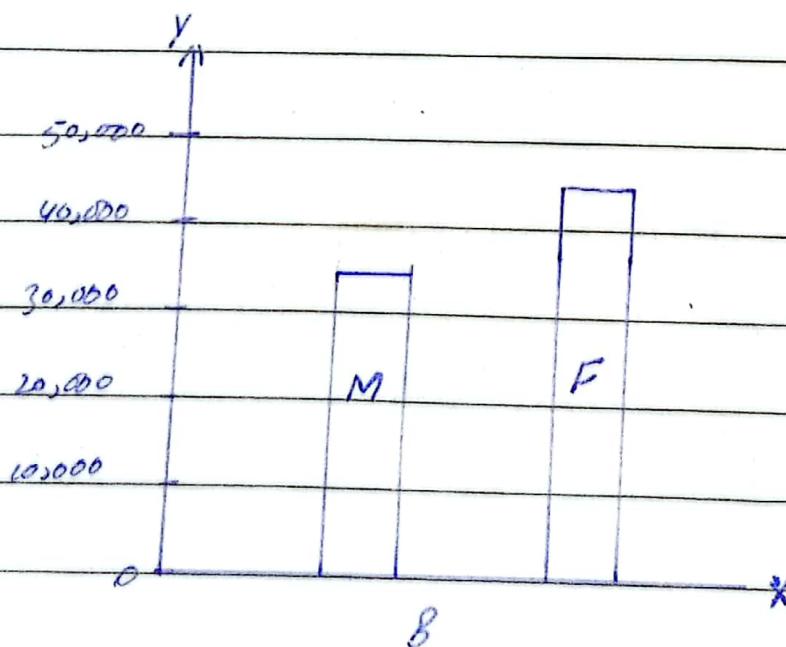
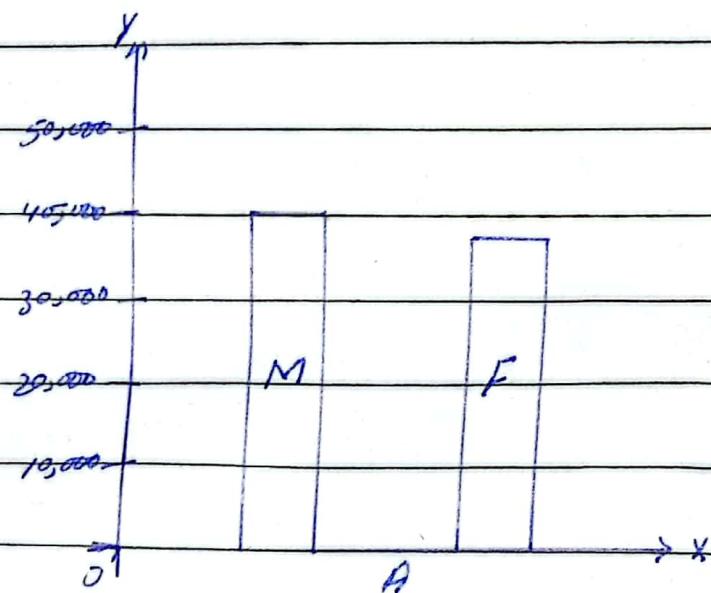
Stem	Leaf	f
14	7 8 5 0	4
15	6 3 1 6 3 8	6
16	6 8 1 6 5 2 2 4 7 9	10
17	3 5 8 6 6 0 2 2 2 7 1 9 1 3 3 4 8 9	18
18	5 1 2 7 1 0 8 4 3	9
19	1 3	2
20	0	1
		50

Day: _____

Date: _____

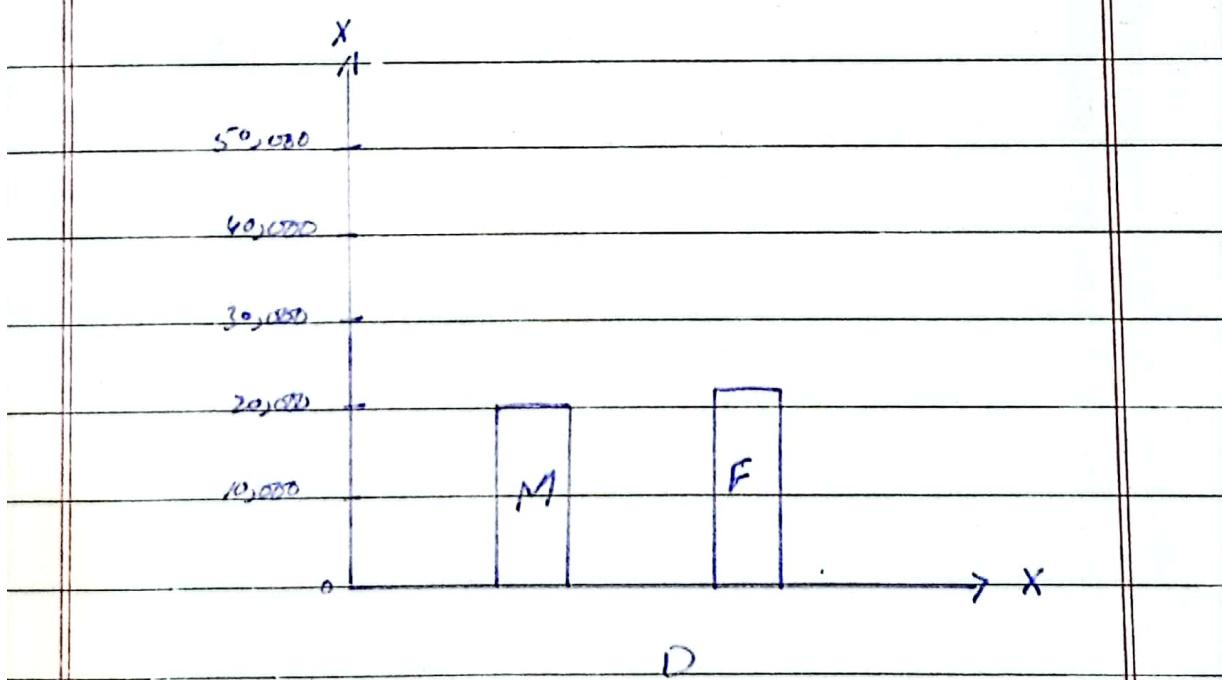
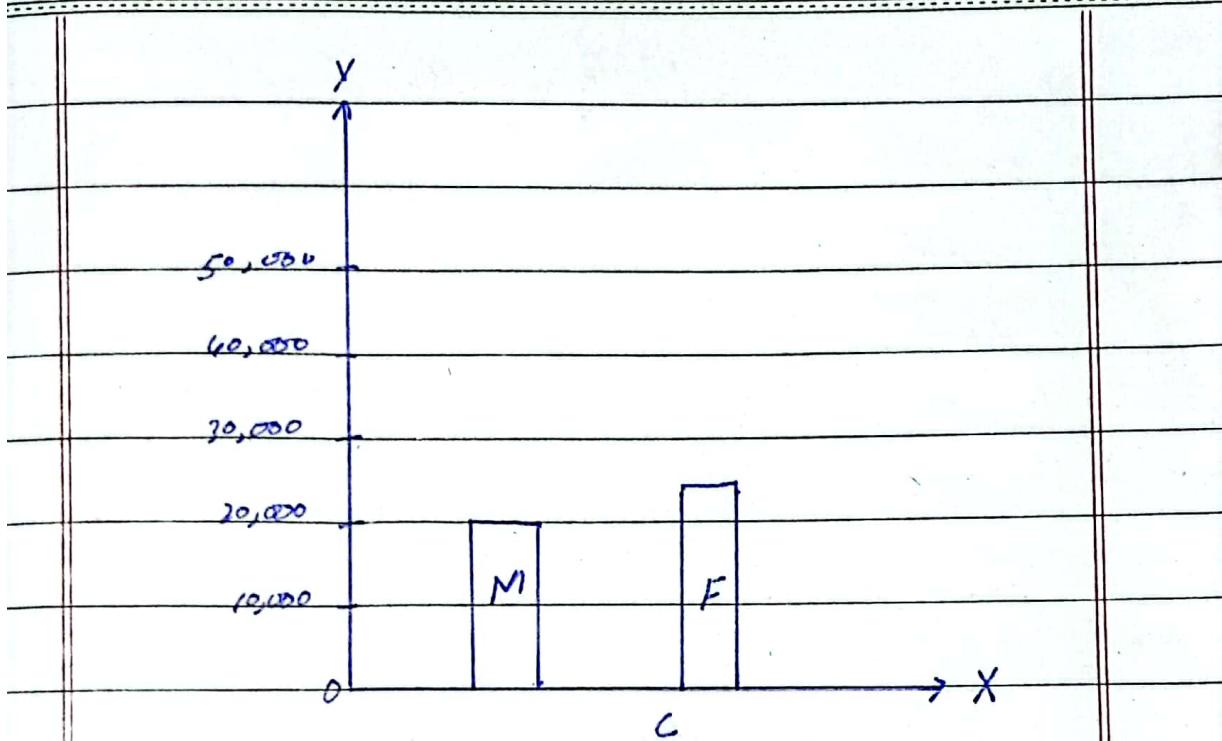
Question 21 (b)

i) Simple bar Chart:-



Day: _____

Date: _____



Day: _____

Date: _____

X

Multiple Bar Graph

50,000

40,000

30,000

20,000

10,000

M

F

M

F

M

F

M

F

A

B

C

D

X

Sub-divided bar graph

Y

20,000

10,000

50,000

40,000

30,000

20,000

10,000

F

F

M

M

F

F

M

M

O

A

B

C

D

X

Day: _____

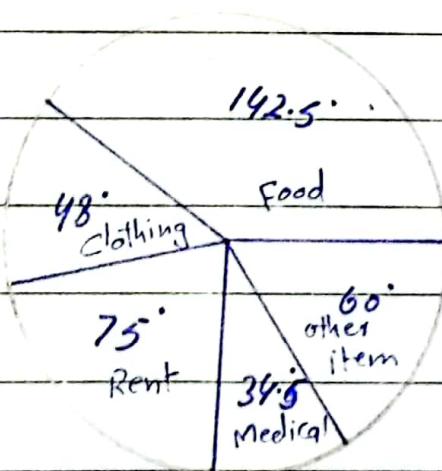
Date: _____

Question No : 22

(B)

i)

Item	Expenditure	Angle	% Expenditure
Food	190	142.5°	39.58%
Clothing	64	48°	13.33%
Rent	100	75°	20.8%
Medical	46	34.5°	9.58%
Other item	80	60°	16.66%
Total	480	360°	100%



ii) Percentage expenditure

$$\text{Food} \Rightarrow \frac{190}{480} \times 100 = 39.58\%$$

$$\text{Clothing} \Rightarrow \frac{64}{480} \times 100 = 13.33\%$$

$$\text{Rent} \Rightarrow \frac{100}{480} \times 100 = 20.8\%$$

$$\text{Medical} \Rightarrow \frac{46}{480} \times 100 = 9.58\%$$

$$\text{other items} \Rightarrow \frac{80}{480} \times 100 = 16.66\%$$

Day: _____

Date: _____

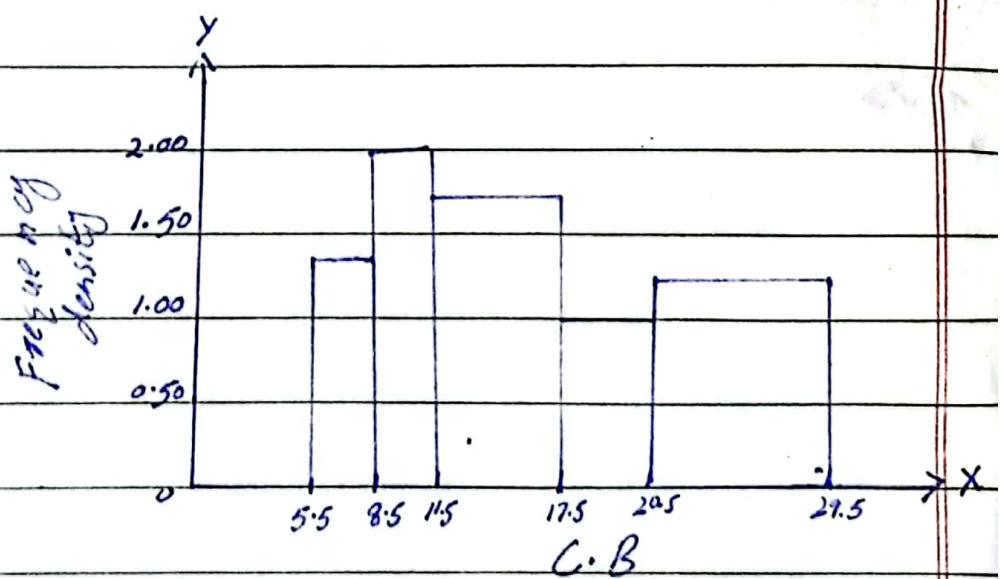
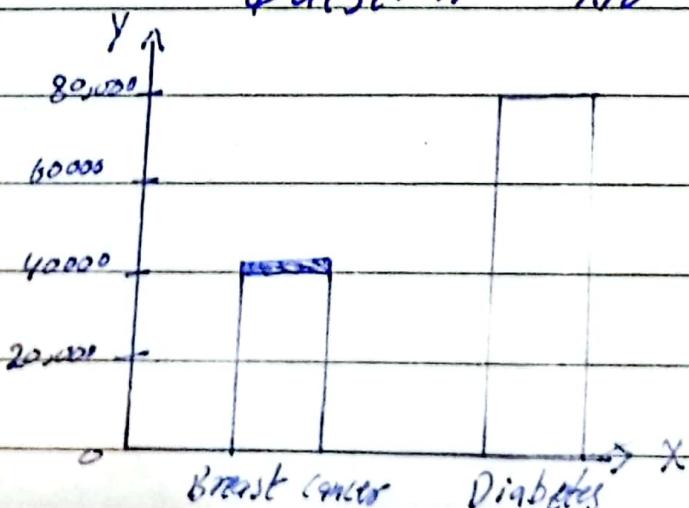
Question No 23

(C)

i)

Weight(Kg)	f	C.B	frequency density
6-8	4	5.5 - 8.5	$\frac{4}{3} \approx 1.33$
9-11	6	8.5 - 11.5	$\frac{6}{3} \approx 2.00$
12-17	10	11.5 - 17.5	$\frac{10}{6} \approx 1.67$
18-20	3	17.5 - 20.5	$\frac{3}{3} \approx 1.00$
21-29	12	20.5 - 29.5	$\frac{12}{9} \approx 1.33$

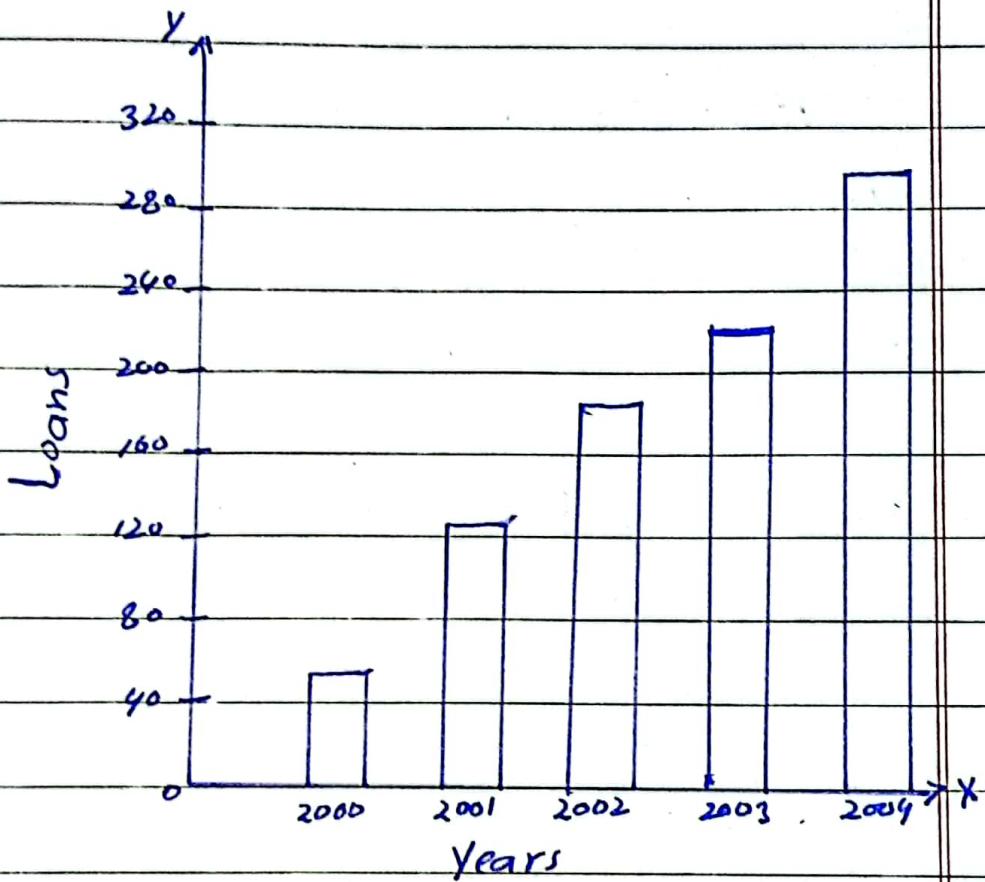
ii-

Question No 24

Day: _____

Date: _____

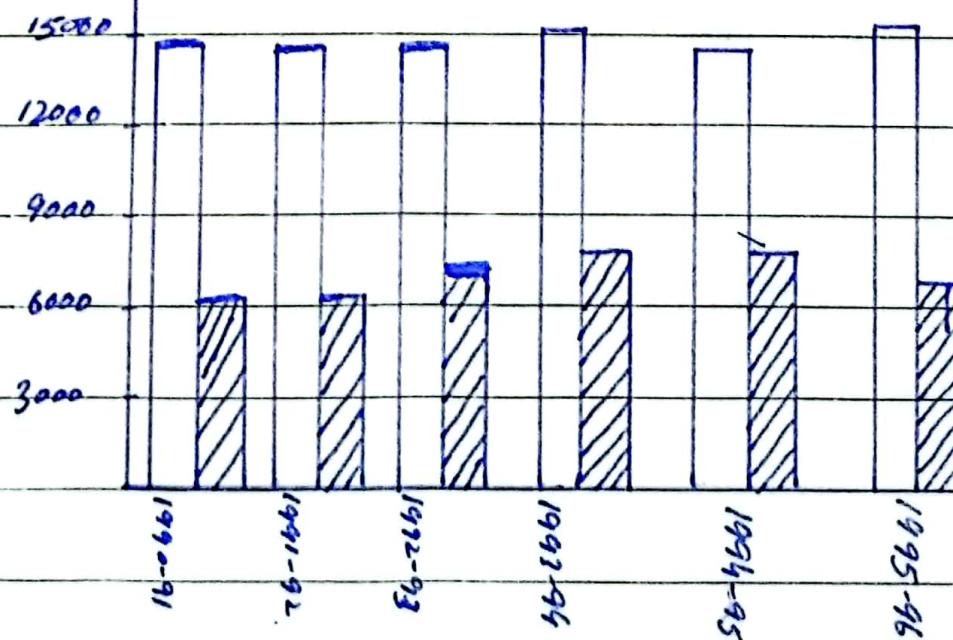
Question No 25



Question No 26

(B)

□ Area □ Production



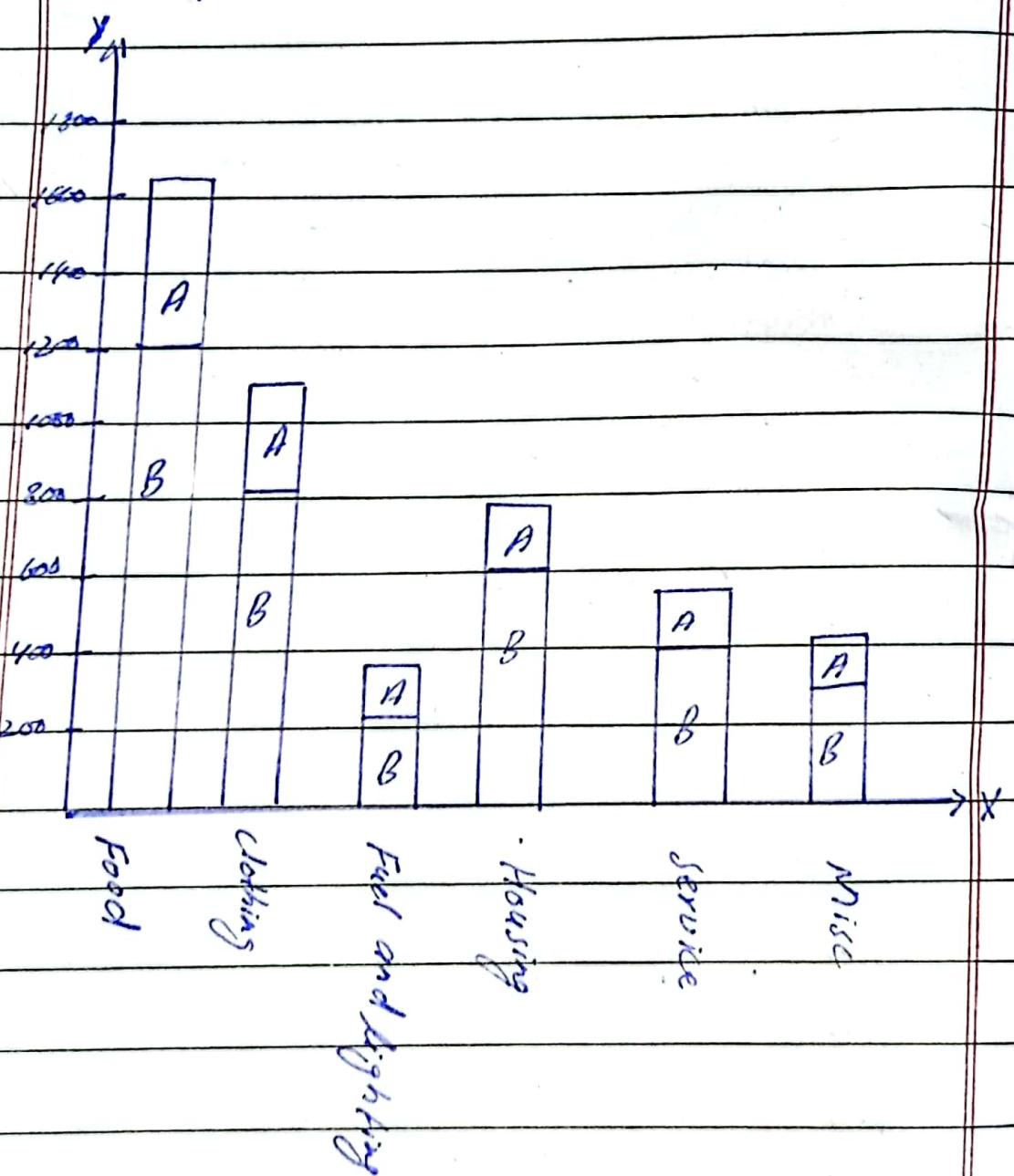
Day: _____

Date: _____

Question No 27

(B)

Component Bar diagram:-



Day: _____

Date: _____

Question No 28

Solution:-

$$X_0 = 3.0, X_m = 6.4$$

$$R = X_m - X_0$$

$$= 6.4 - 3.0$$

$$= 3.4$$

$$K = 1 + 3.3 \log N$$

$$K = 1 + 3.3 \log 25$$

$$K = 1 + 4.65$$

$$K = 5.65 \approx 6$$

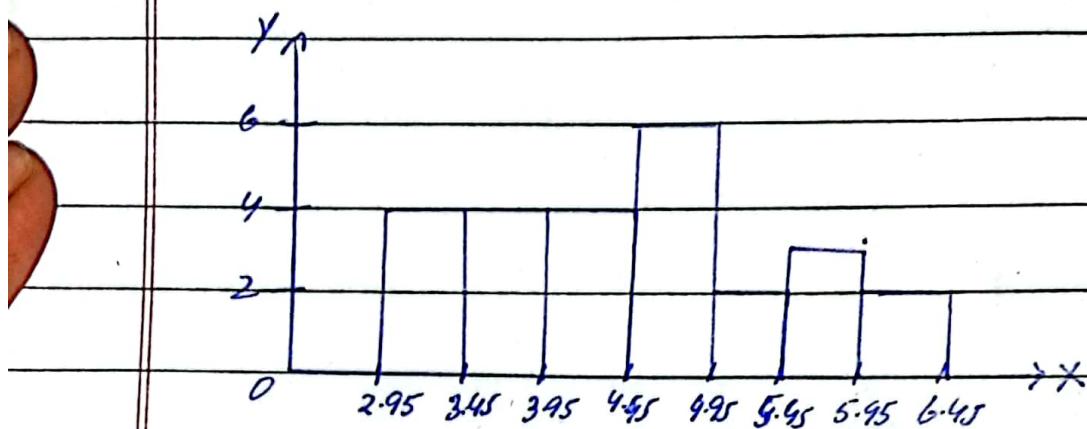
$$C = \frac{R}{K} = \frac{3.4}{6} = 0.56 \approx 0.5$$

classes	Tally	f	c.f	C.B
3.0 - 3.4		4	4	2.95 - 3.45
3.5 - 3.9		4	8	3.45 - 3.95
4.0 - 4.4		4	12	3.95 - 4.45
4.5 - 4.9		6	18	4.45 - 4.95
5.0 - 5.4		2	20	4.95 - 5.45
5.5 - 5.9		3	23	5.45 - 5.95
6.0 - 6.4		2	25	5.95 - 6.45
total		25		

Day: _____

Date: _____

Histogram Graph:-



Stem and Leaf display

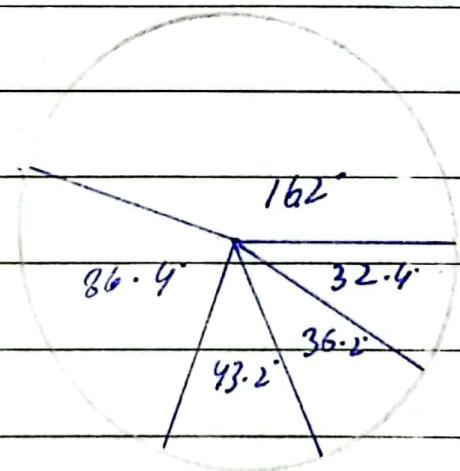
classes	stem	leaf	sorted leaf	f
3.0-3.4	3	3 0 3 2	0 2 3 3	4
3.5-3.9	3	8 6 6 8	6 7 8 8	4
4.0-4.4	4	2 4 2 4	2 2 4 4	4
4.5-4.9	4	7 8 6 7 9 9	6 7 7 8 9 9	6
5.0-5.4	5	4 3	3 4	2
5.5-5.9	5	6 9 8	6 8 9	3
6.0-6.4	6	0 4	0 4	2
		total	→	25

Day: _____

Date: _____

Question No 29.

Costs	% age	Angle
Air fares	45%	$0.45 \times 360^\circ = 162^\circ$
Lodging	24%	86.4°
Meals	12%	43.2
Car rentals	10%	36.2
Others	09%	32.4
total	100	360.0



Day: _____

Date: _____

Question No : 31

stem	leaf	sorted leaf	f	c.f	c.r.f
5	3 3	3 3	2	2	10
6	4 5 9	4 5 9	3	5	25
7	4 6 6 7 5	4 5 6 6 7	5	10	50
8	5 0 4 1 5 8 0	0 0 1 4 5 5 8	7	17	25
9	2 2 5	2 2 5	3	20	100
		total	20	=	--

QUESTION NO : 32

classes	Tally	f	Relative frequency	Less than C.F
10-19	1	1	0.05	1
20-29		4	0.20	5
30-39		6	0.45	14
40-49		4	0.20	18
50-59		2	0.10	20
total		20	1.00	

Day: _____

Date: _____

Less than 30,000 proportion =

$$= \frac{5}{20} = \frac{1}{4}$$

Question No : 33

Solution:

i- $X_0 = 39 ; X_m = 98$

$$R = X_m - X_0$$

$$R = 98 - 39$$

$$R = 59$$

$$K = 1 + 3.3 \log N$$

$$K = 1 + 3.3 \log 50$$

$$K \approx 0.6$$

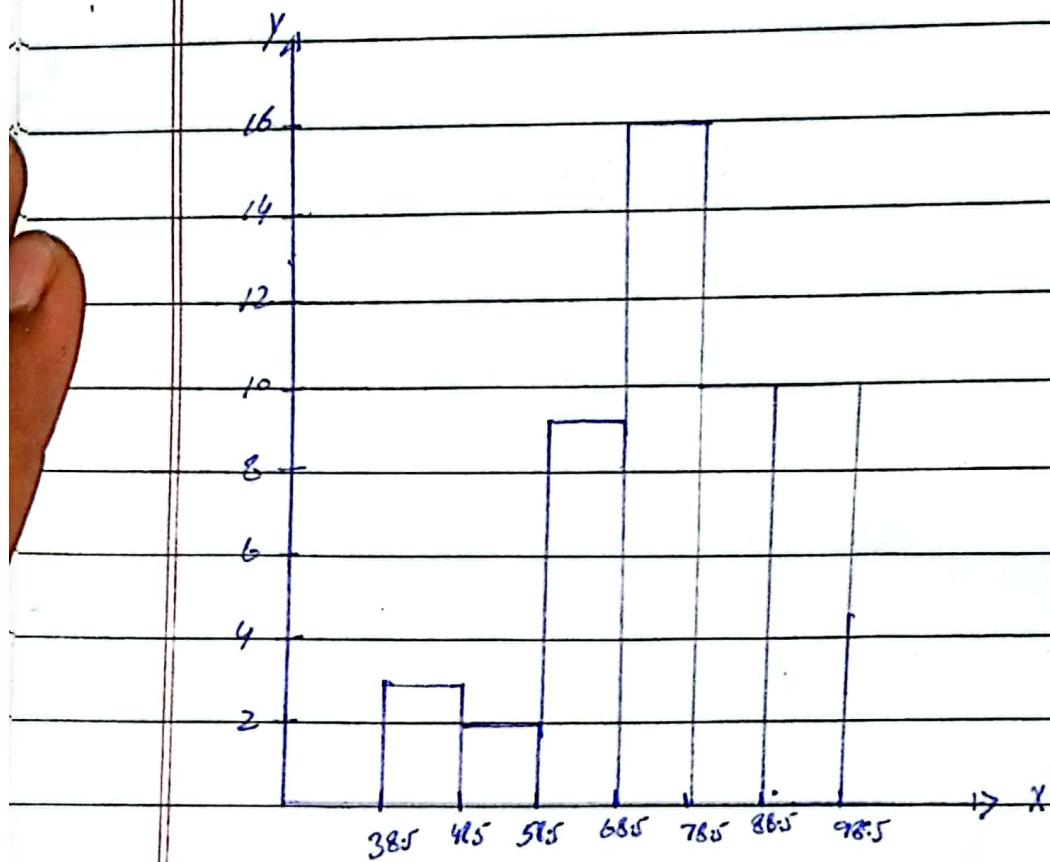
$$C = \frac{R}{K} = \frac{59}{6} \approx 10$$

Classes	Tally	f	C.F	C.B	X	R.F
39-48		3	3	38.5-48.5	44	0.06
49-58		2	5	48.5-58.5	54	0.04
59-68		9	14	58.5-68.5	64	0.18
69-78		16	30	68.5-78.5	74	0.32
79-88		10	40	78.5-88.5	84	0.20
89-98		10	50	88.5-98.5	94	0.20
		50				1.00

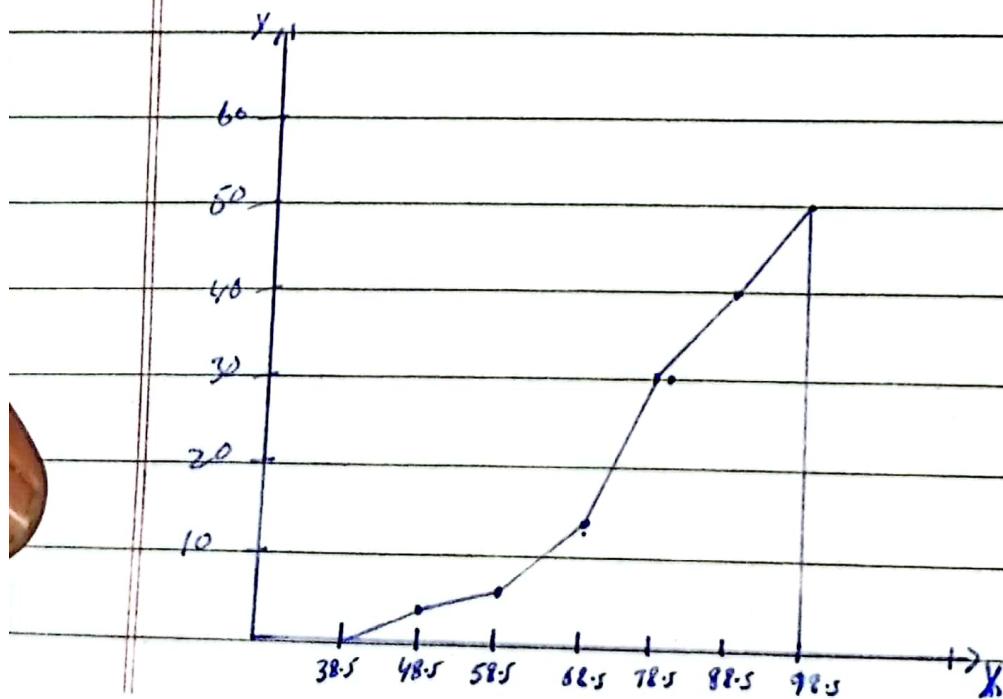
Day: _____

Date: _____

iii- Histogram Graph:-



iv- Cumulative frequency polygon



Day: _____

Date: _____

V-	stem	leaf	sorted leaf	F
	3	9	9	1
	4	7 4	7 4	2
	5	0 5 9 9	0 5 9 9	4
	6	3 4 4 5 8 8 9	3 4 4 5 8 8 9	6
	7	0 0 2 2 3 3	0 0 2 2 3 3 4	15
		4 5 5 7 7 8 8 8	5 5 7 7 8 8 8 8	18
	8	0 0 2 2 3 5	0 0 2 2 3 5	13
		6 6 6 6 8 9	6 6 6 6 8 9	
	9	0 0 1 2 4 5 5 7 8	0 0 1 2 4 5 5 7 8	9
		total - 7		50

Question No 35

(a)

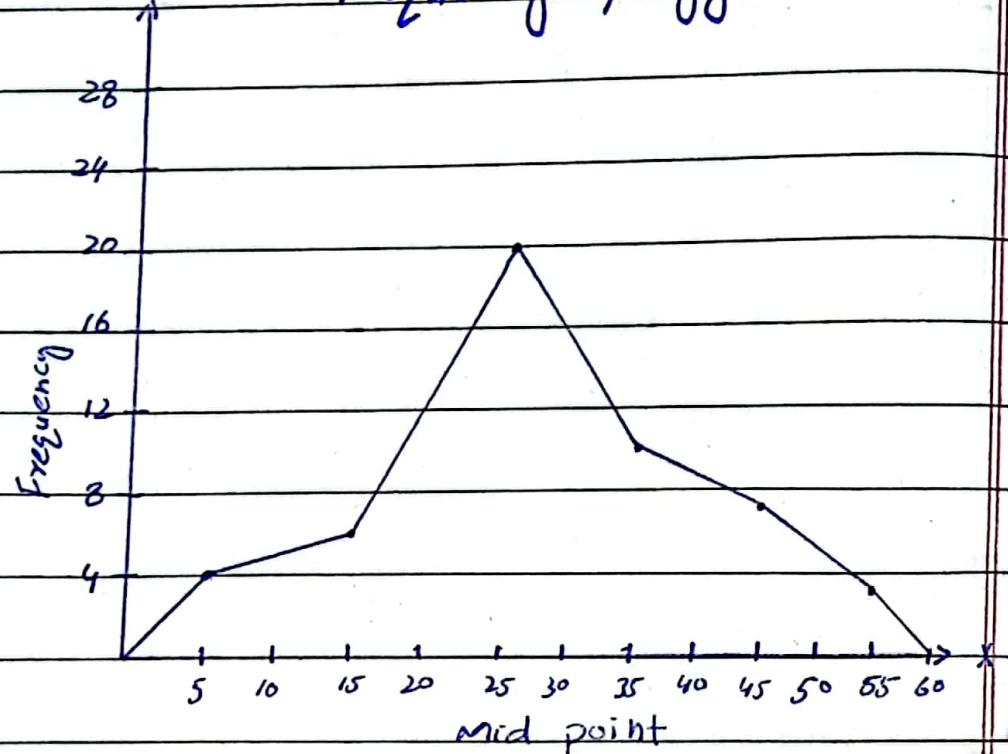
Marks	C.B	C.F	GF	X
1-10	0.5-10.5	4 50	4 5	
11-20	10.5-20.5	6 46	6 15	
21-30	20.5-30.5	7 40	20 25	
31-40	30.5-40.5	9 20	10 35	
41-50	40.5-50.5	10	7 45	
51-60	50.5-60.5	3 3	3 55	

Day: _____

Date: _____

ii-

Frequency polygon



(B)

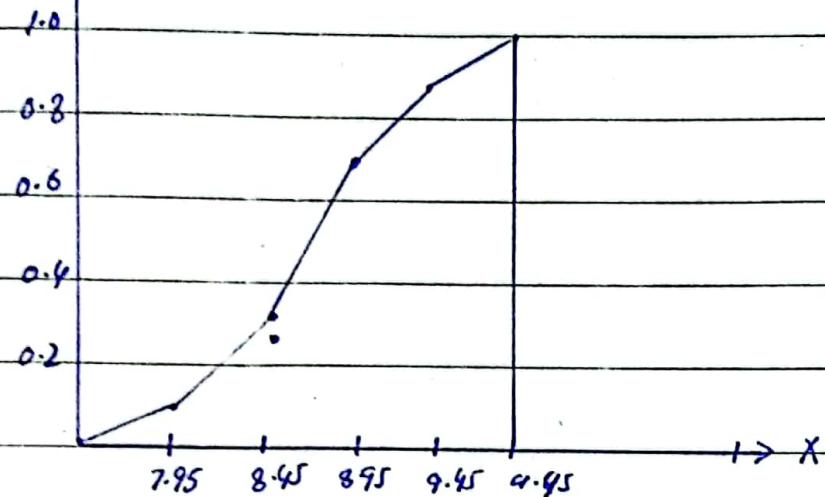
Relative frequency Orgiv:-

classes	C.B	F	C.F	R.F	C.R.F
7.5-7.9	7.45-7.95	4	4	0.08	0.08
8.0-8.4	7.95-8.45	12	16	0.24	0.32
8.5-8.9	8.45-8.95	18	34	0.36	0.68
9.0-9.4	8.95-9.45	9	43	0.12	0.86
9.5-9.9	9.45-9.95	7	50	0.14	1.00
total		50	1.00		

Day: _____

Date: _____

Relative frequency Orgiv:-



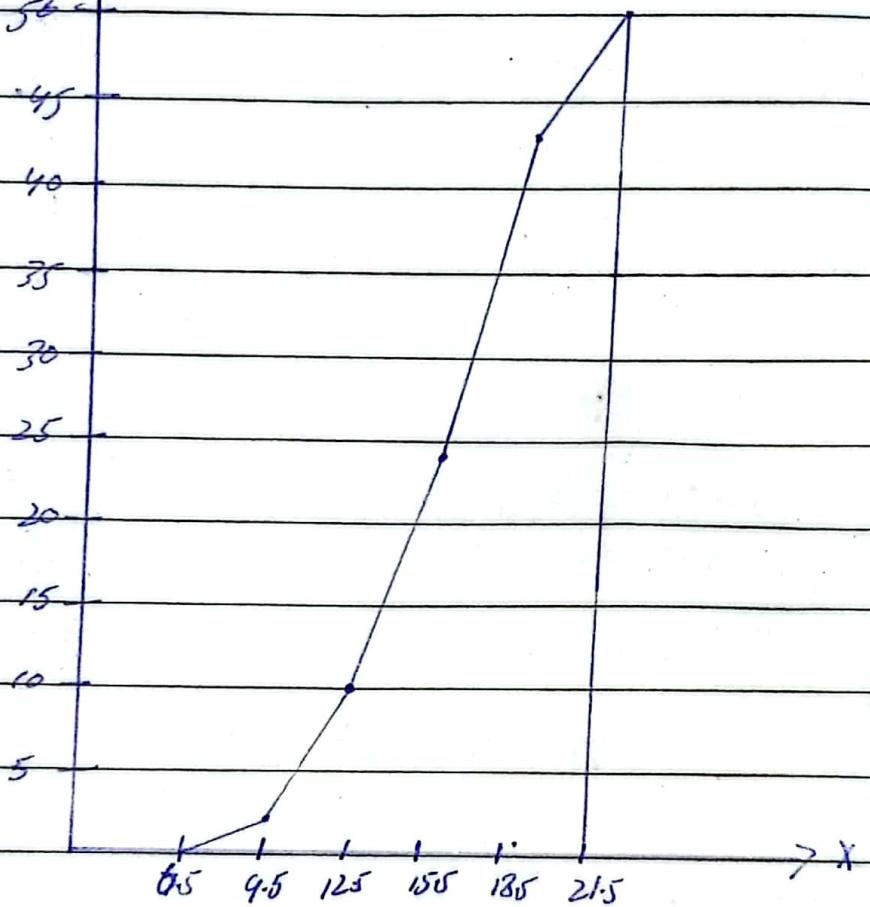
Question No 36

Weight	C.B	F	C.F	R.F	Class Marks
7-9	6.5 - 9.5	2	2	0.04	$\frac{7+9}{2} = 8$
10-12	9.5 - 12.5	8	10	0.16	$\frac{10+12}{2} = 11$
13-15	12.5 - 15.5	14	24	0.28	$\frac{13+15}{2} = 14$
16-18	15.5 - 18.5	19	43	0.38	$\frac{16+18}{2} = 17$
19-21	18.5 - 21.5	7	50	0.14	$\frac{19+21}{2} = 20$
total	- -	50		1.00	

Day: _____

Date: _____

Cumulative frequency polygon



Question No : 37

Simple frequency distribution
chart

But in de-cumulative frequency
the cumulative frequency
is reverse.

Day: _____

Date: _____

Question 38

Simple histogram graph in which the number of children on x-axis and number of women on y-axis.

Question 39

Solved on book

Next all questions are simple and similar to different parts of previous questions.