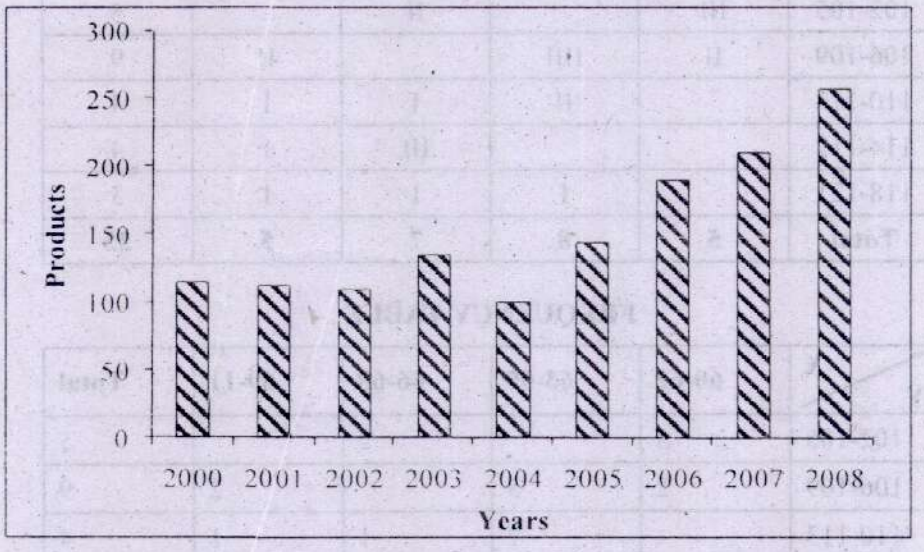
EXERCISE NO. 2

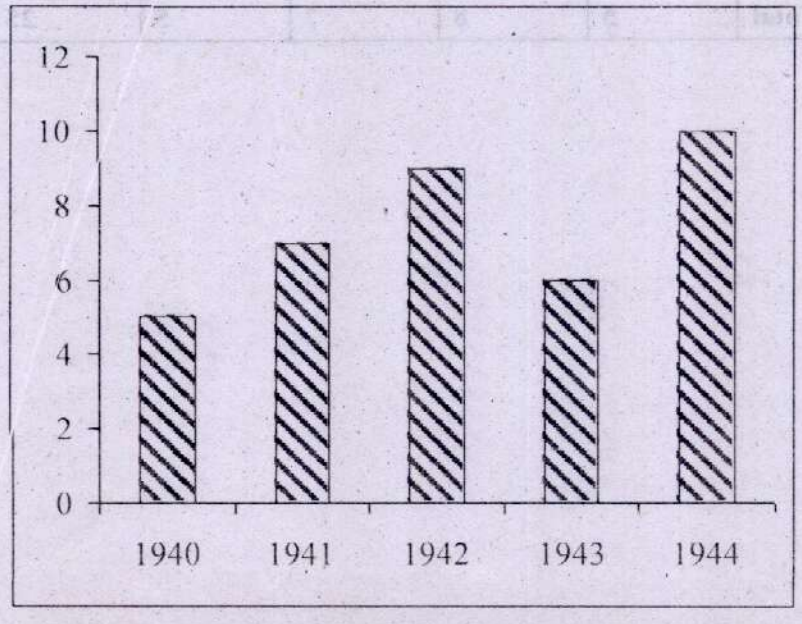
-:2.6:-

SIMPLE BAR DIAGRAM

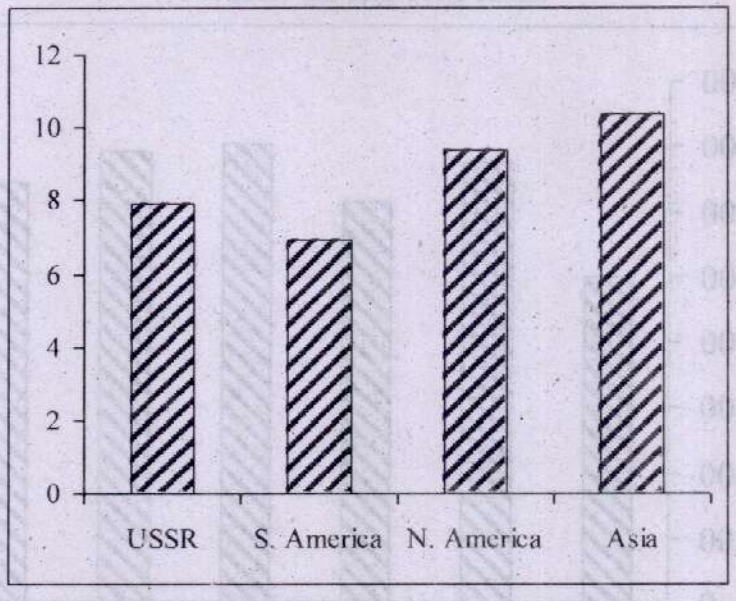


-:2.7:-

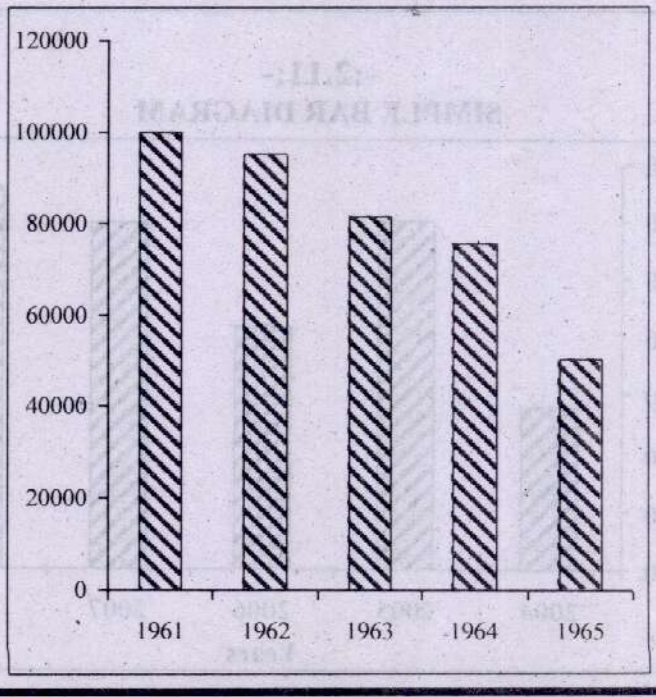
SIMPLE BAR DIAGRAM



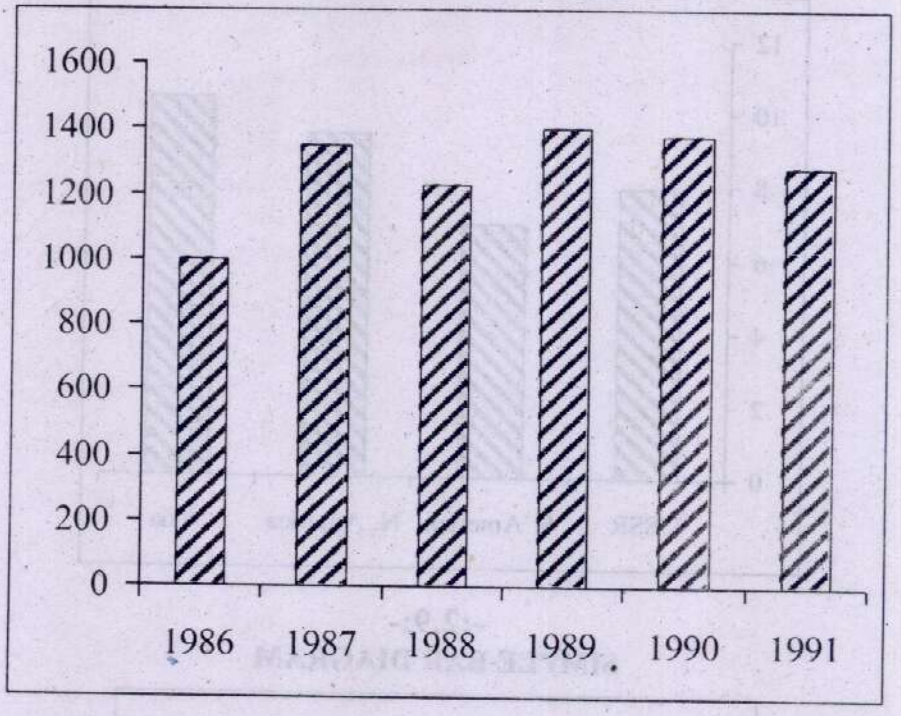
-:2.8:-
SIMPLE BAR DIAGRAM



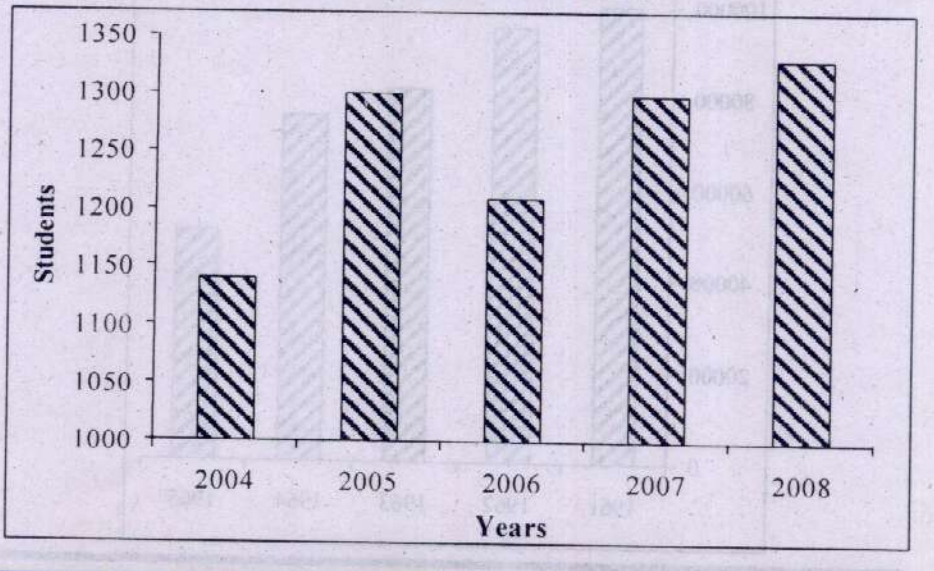
-:2.9:-
SIMPLE BAR DIAGRAM



-:2.10:-
SIMPLE BAR DIAGRAM

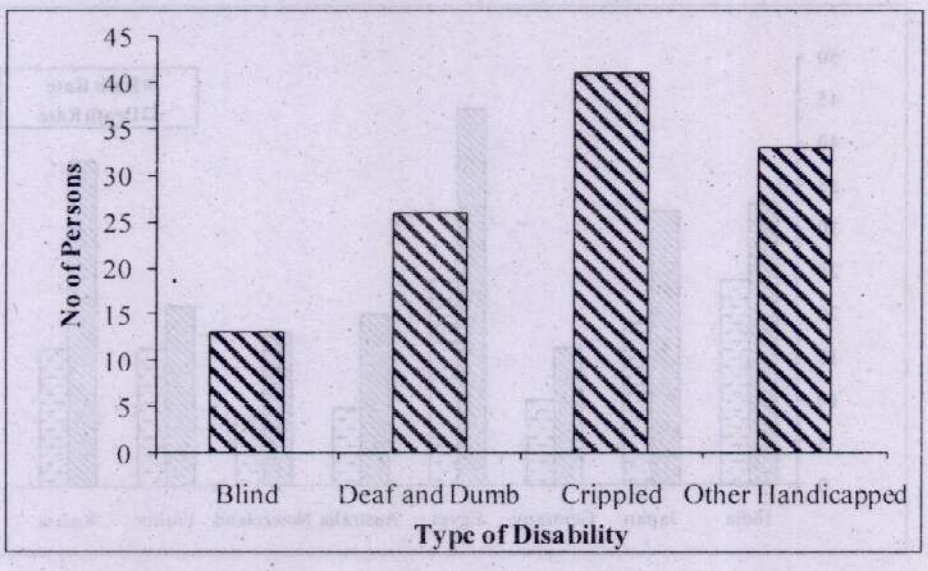


-:2.11:-
SIMPLE BAR DIAGRAM



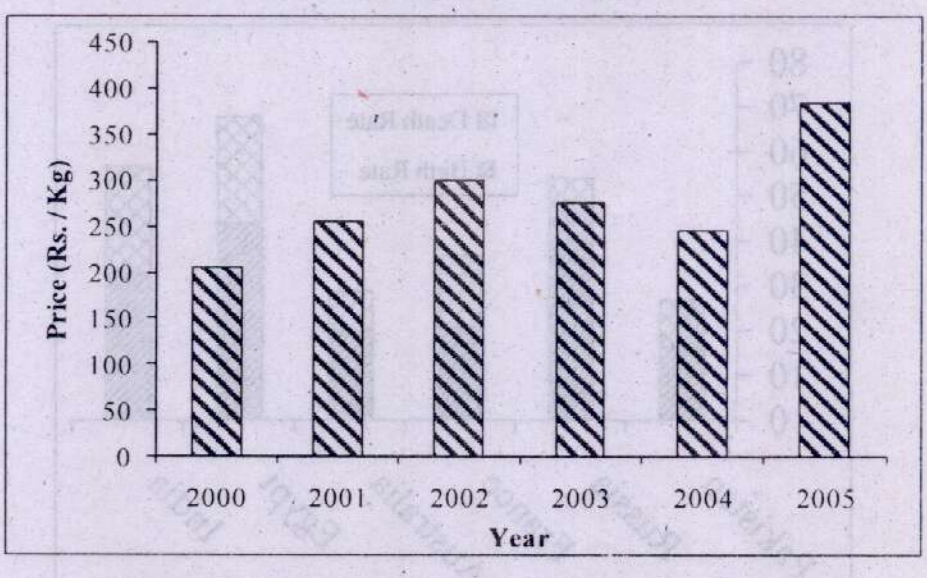
-:2.12:-

SIMPLE BAR DIAGRAM



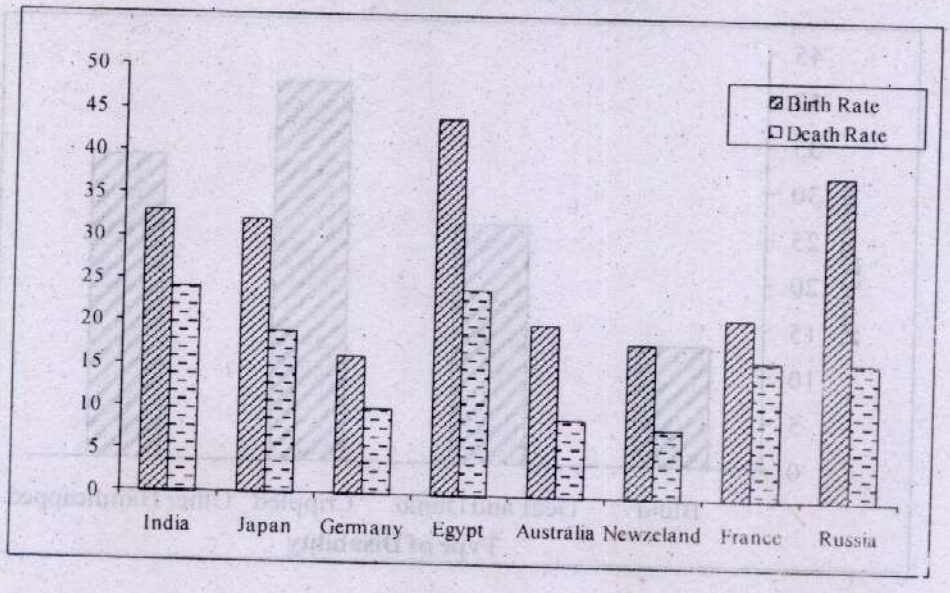
-:2.13:-

SIMPLE BAR DIAGRAM



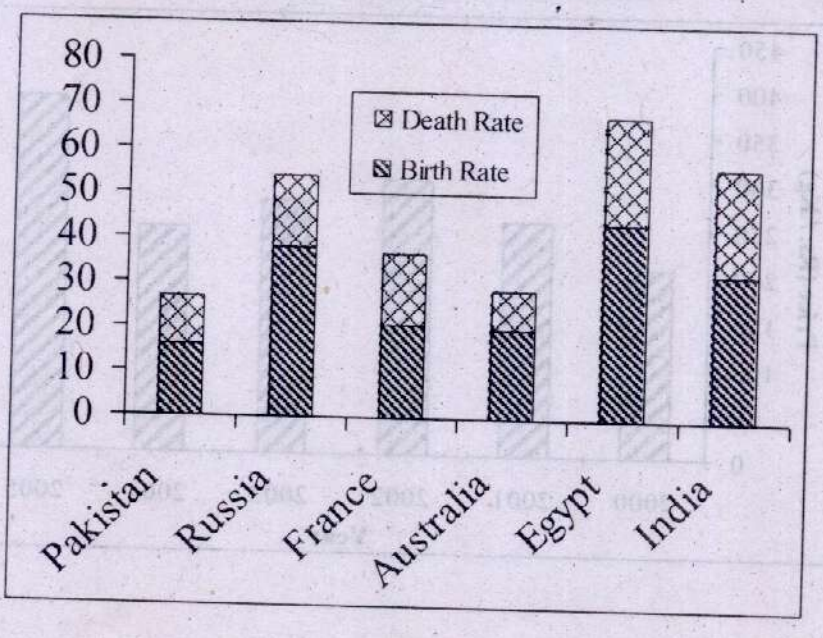
-:2.14:-

MULTIPLE DIAGRAM

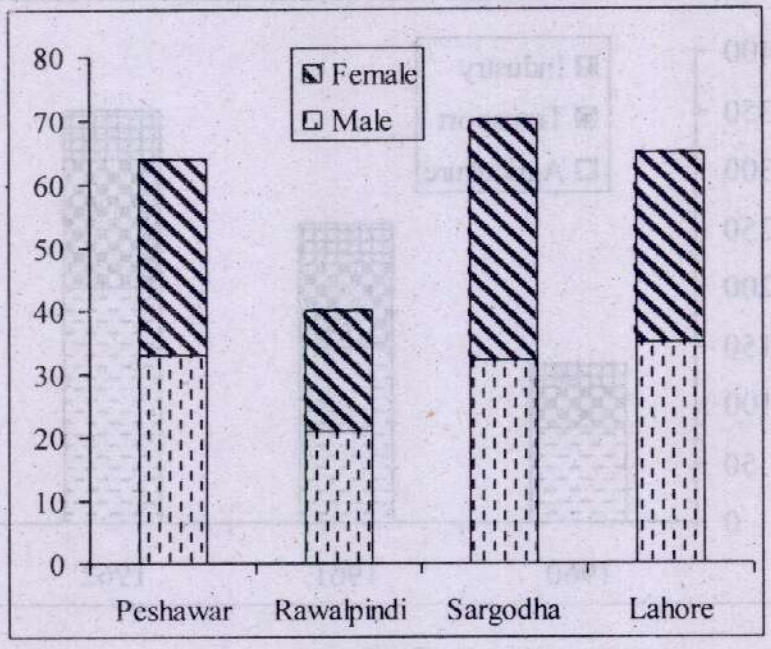


-:2.15:-

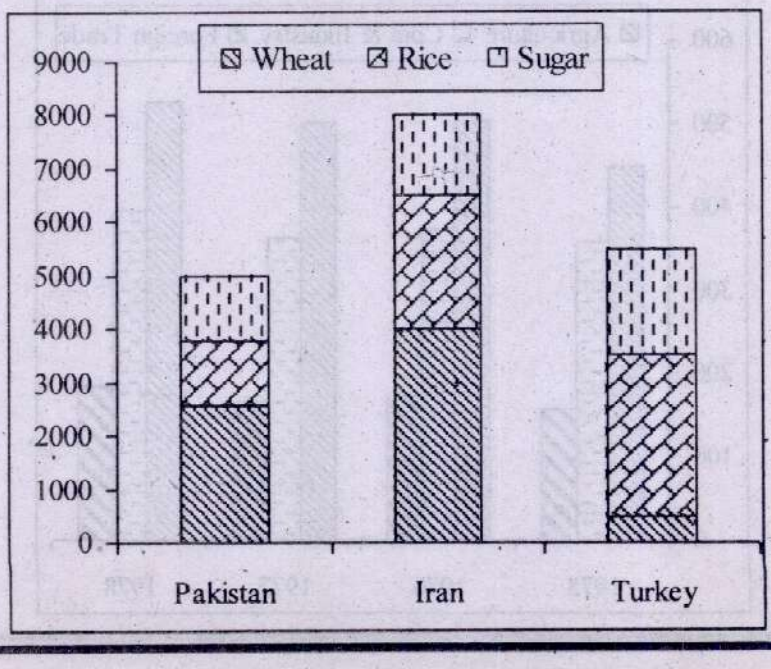
SIMPLE DIVIDED BAR DIAGRAM



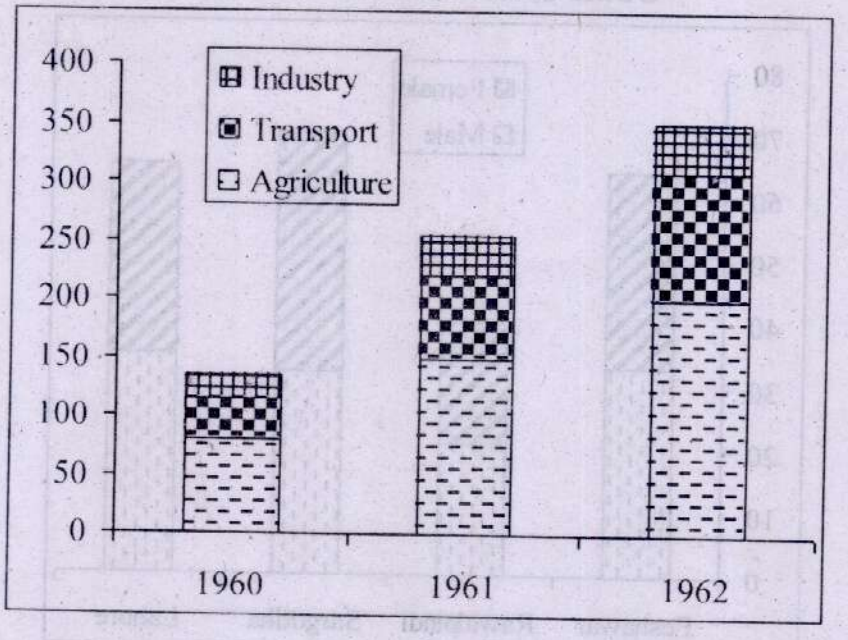
-:2.16:-
COMPONENT BAR DIAGRAM



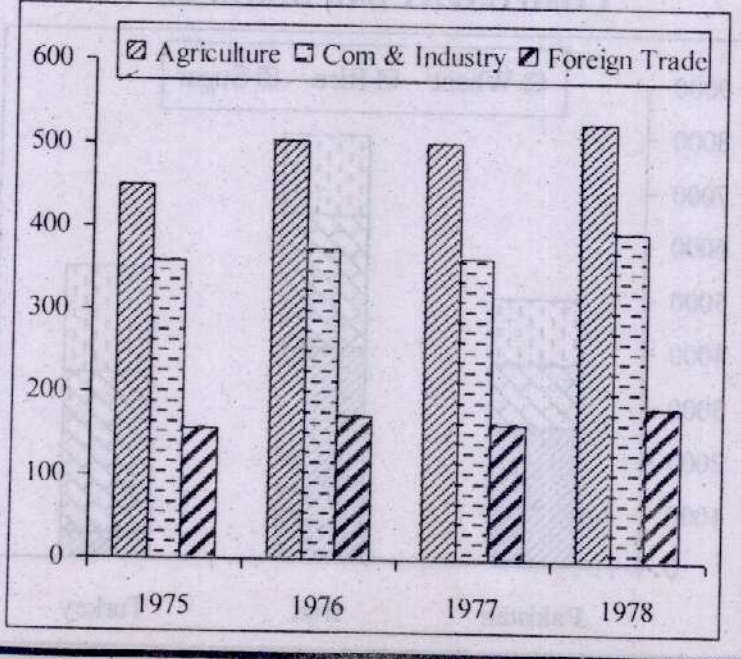
-:2.17:-
COMPONENT BAR DIAGRAM



-:2.18:-
SUB DIVIDED BAR DIAGRAM

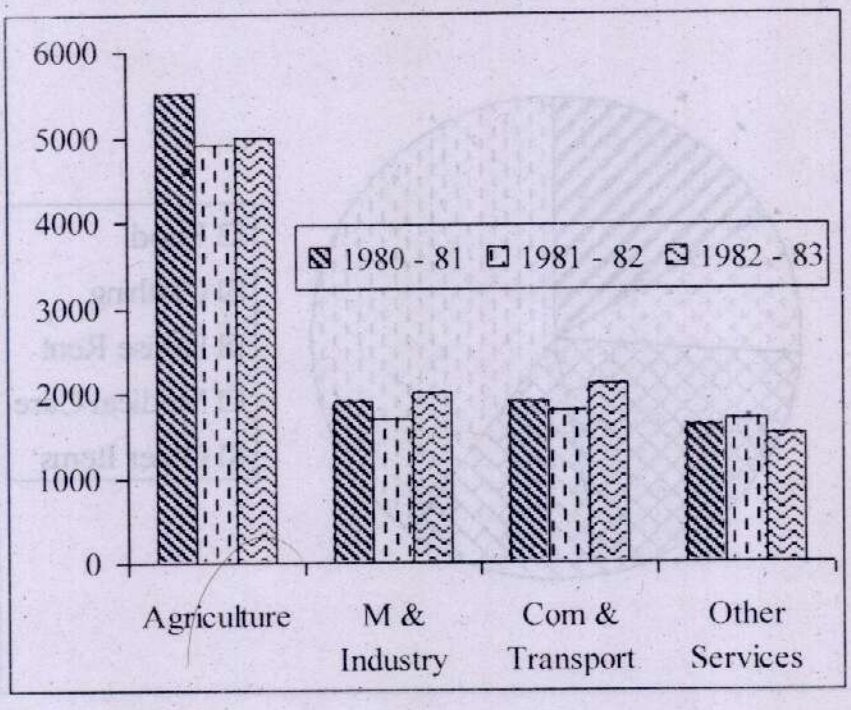


-:2.19:-
MULTIPLE BAR DIAGRAM



-:2.20:-

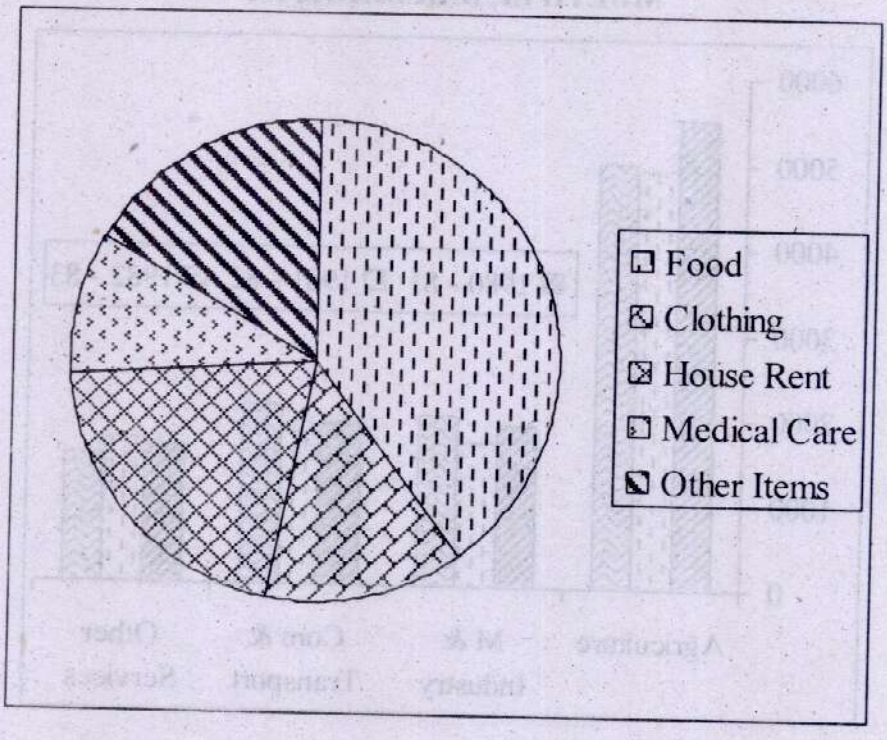
MULTIPLE BAR DIAGRAM



-:2.21:-

Items	Expenditure (Rs.)	Angles of Sector (Degrees)	Cum. Angles
Food	95	142.5	142.5
Clothing	32	48.0	190.5
House Rent	50	75.0	265.5
Medical Care	23	34.5	300.0
Other Items	40	60.0	360.0
Total	**240**	**260**	**----**

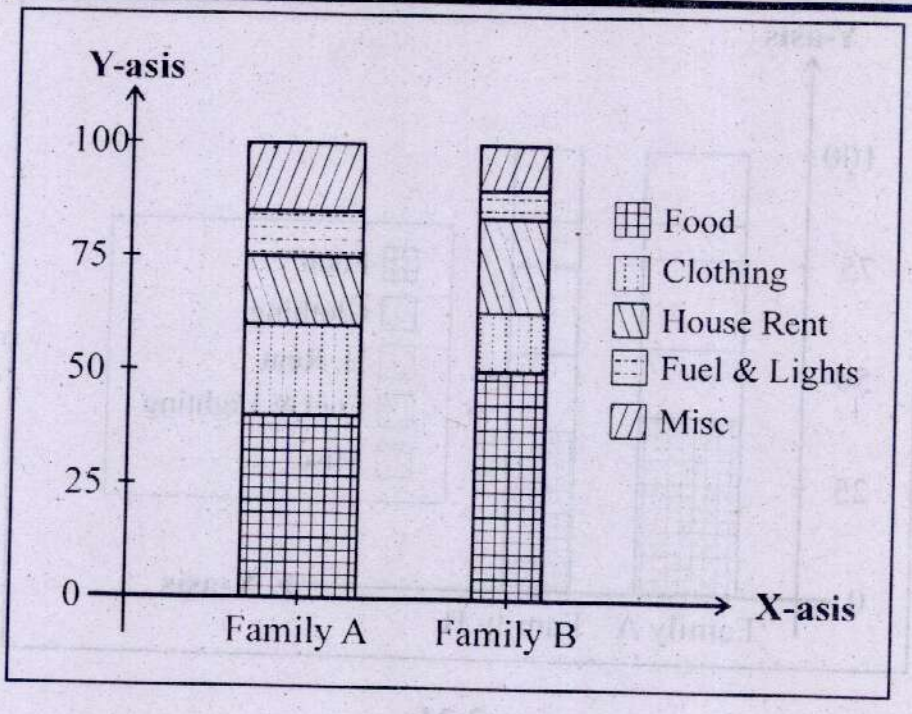
PIE DIAGRAM



-:2.22:-

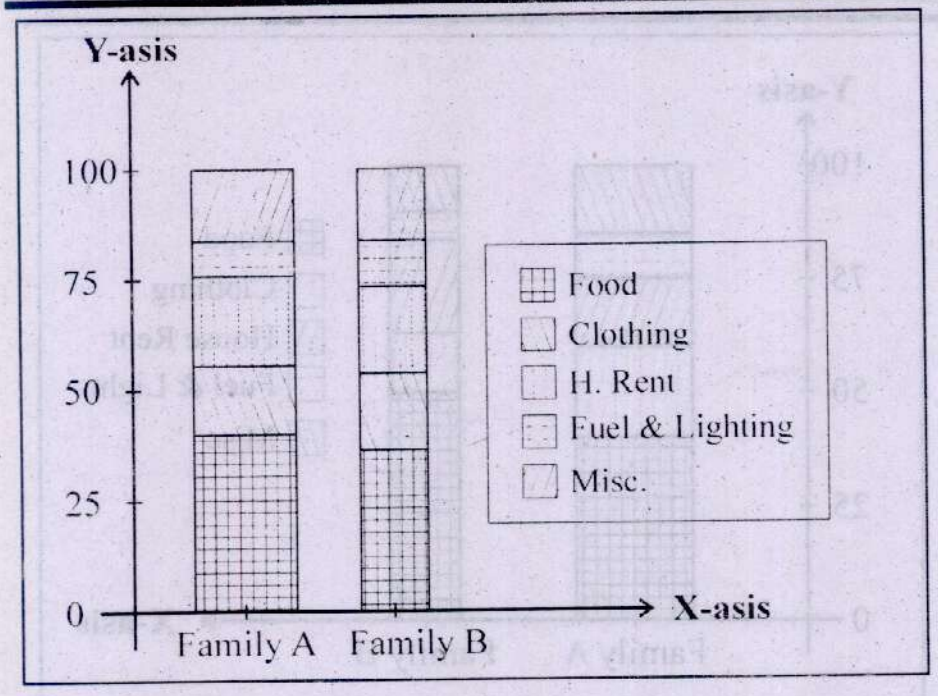
Items of Expenditure	Family A	%	Cumu-lative	Family B	%	Cumu-lative
Food	160	40	40	120	50	50
Clothing	80	20	60	32	13.33	63.33
House Rent	60	15	75	48	20	83.33
F. & Lighting	20	5	80	16	6.67	90
Miscellaneous	80	20	100	24	10	100
Total	**400**	**100**	----	**240**	**100**	----

400 : 240 → 40 : 24 → 10 : 6



-:2.23:-

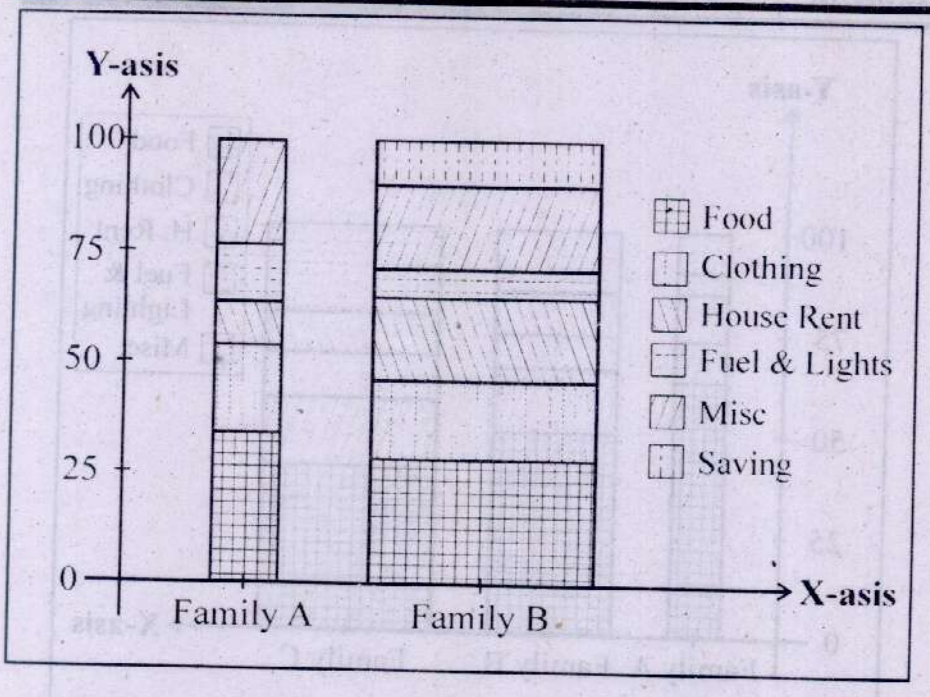
Items of Expenditure	Family A	%	Cumu-lative	Family B	%	Cumu-lative
Food	180	40	40	110	36.67	36.67
Clothing	70	15.55	55.56	50	16.67	53.34
House Rent	90	20	75.56	60	20	73.34
F. & Lighting	35	7.78	83.34	30	100	83.34
Miscellaneous	75	16.66	100	50	16.66	100
Total	**450**	**100**	----	**300**	**100**	----



-:2.24:-

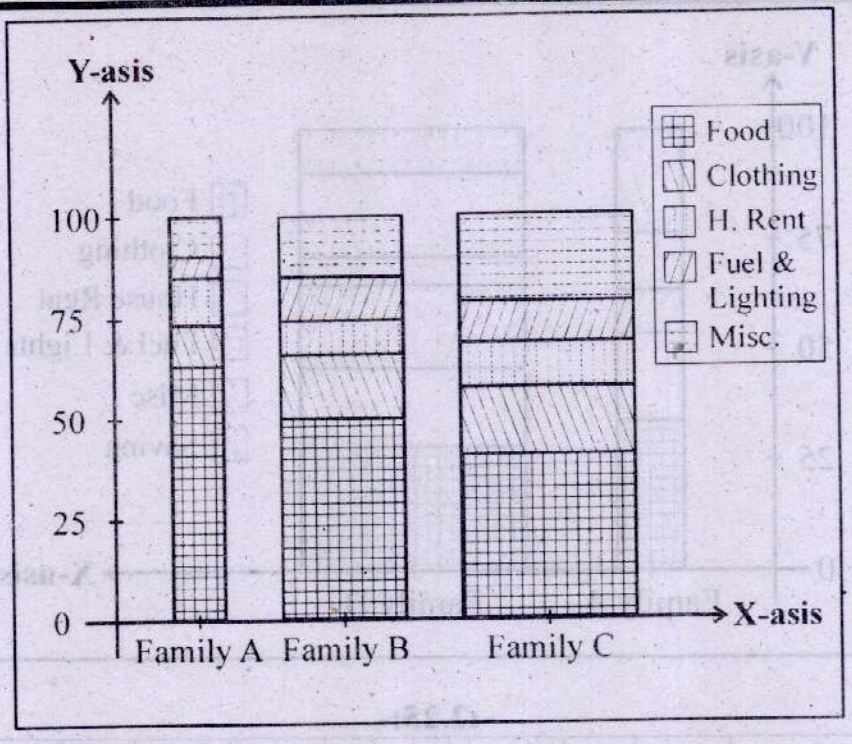
Items of Expenditure	Family A	%	Cumu-lative	Family B	%	Cumu-lative
Food	50	33.33	33.33	140	28	28
Clothing	30	20	53.33	90	18	46
House Rent	20	13.33	66.66	95	19	65
F. & Lighting	15	10	76.66	35	7	72
Miscellaneous	35	23.34	100	90	18	90
Saving	---	---	100	50	10	100
Total	**150**	**100**	----	**500**	**100**	----

150 : 500 → 15 : 50 → 3 : 10



-:2.25:-

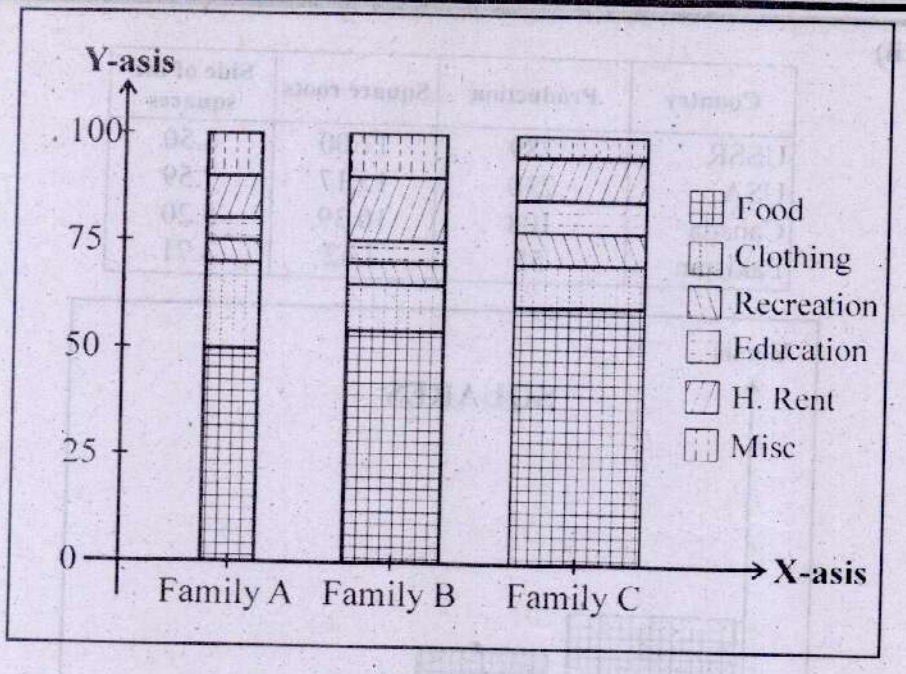
Items of Expenditure	Family A	%	Cumu-lative	Family B	%	Cumu-lative	Family C	%	Cumu-lative
Food	120	63.15	63.15	250	50	50	300	42.86	42.86
Clothing	20	10.53	73.68	80	16	66	100	14.28	57.14
House Rent	20	10.53	84.21	40	8	71	80	11.43	68.57
Education	10	5.26	89.43	50	10	84	70	10.00	78.54
Miscellaneous	20	10.53	100	80	16	100	150	21.43	100
Total	**190**	**100**	----	500	100	----	700	100	----



-:2.26:-

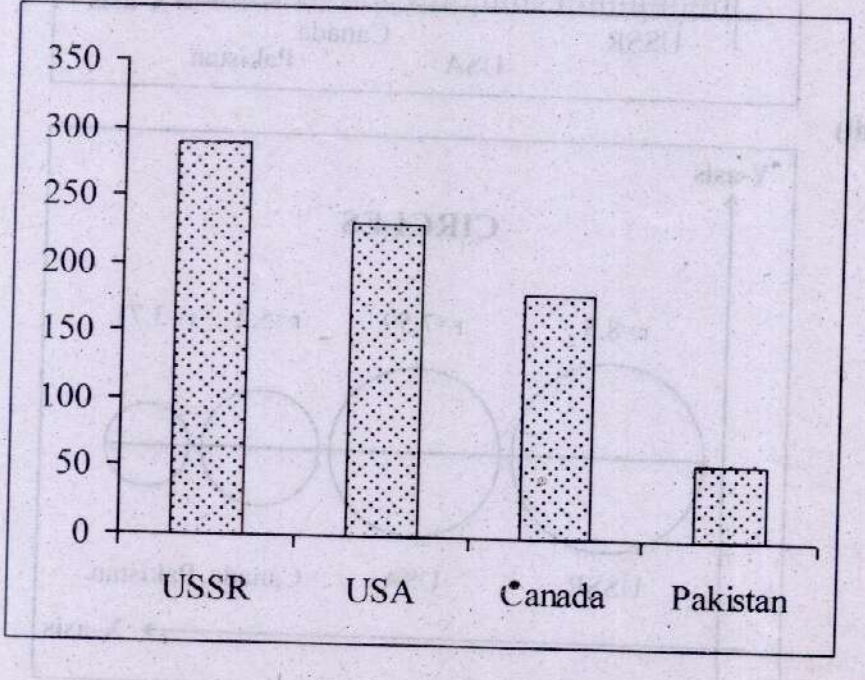
Items of Expenditure	Family A	%	Cumu-lative	Family B	%	Cumu-lative	Family C	%	Cumu-lative
Food	43	50.59	50.59	87	54.72	54.72	120	60	60
Clothing	18	21.17	71.76	17	10.69	65.41	25	12.5	72.5
Recreation	3	3.54	75.30	10	6.29	71.7	12	6	78.5
Education	5	5.88	81.18	9	5.66	77.36	15	7.5	86.0
House Rent	10	11.76	92.94	21	13.21	90.57	17	8.5	94.5
Misc	6	7.06	100	15	9.33	100	11	5.5	100
Total	**85**	**100**	----	159	100	----	200	100	----

85 : 159 : 200 → 5 : 9.35 : 12 → 5 : 9 : 12



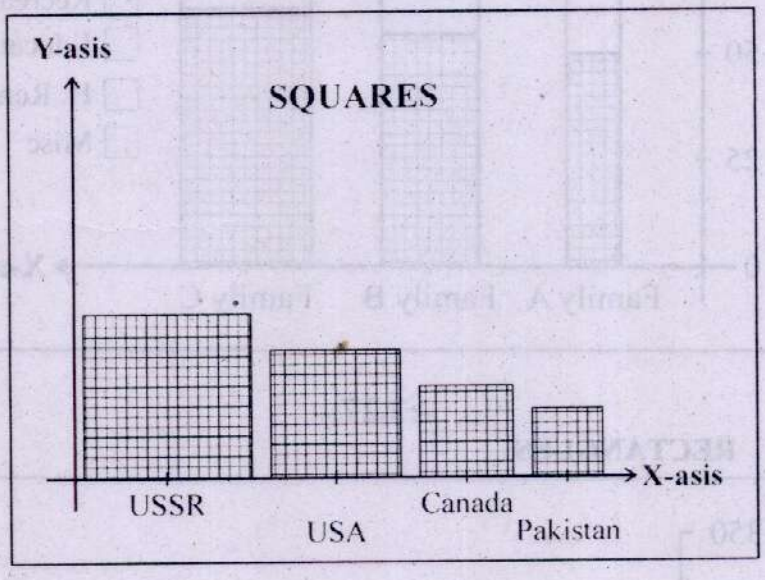
-:2.27:-

(i) **RECTANGLES**

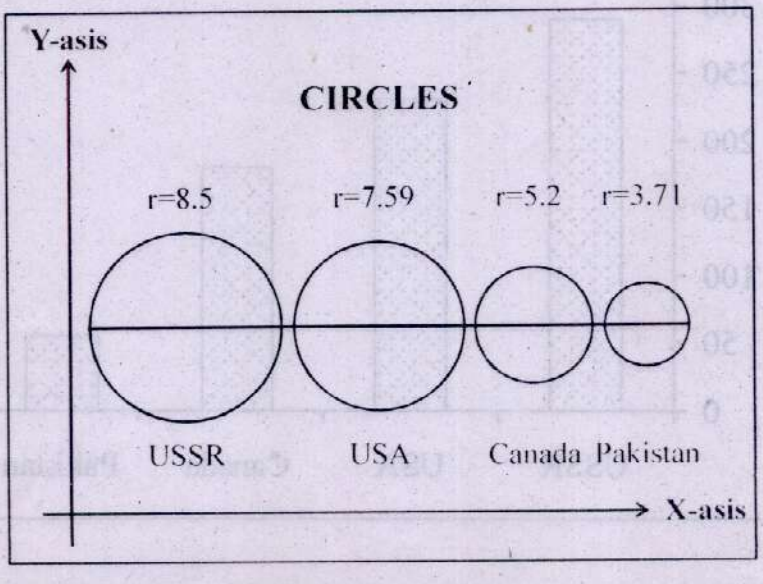


(ii)

Country	Production	Square roots	Side of the squares
USSR	289	17.00	8.50
USA	230	15.17	7.59
Canada	108	10.39	5.20
Pakistan	55	7.42	3.71



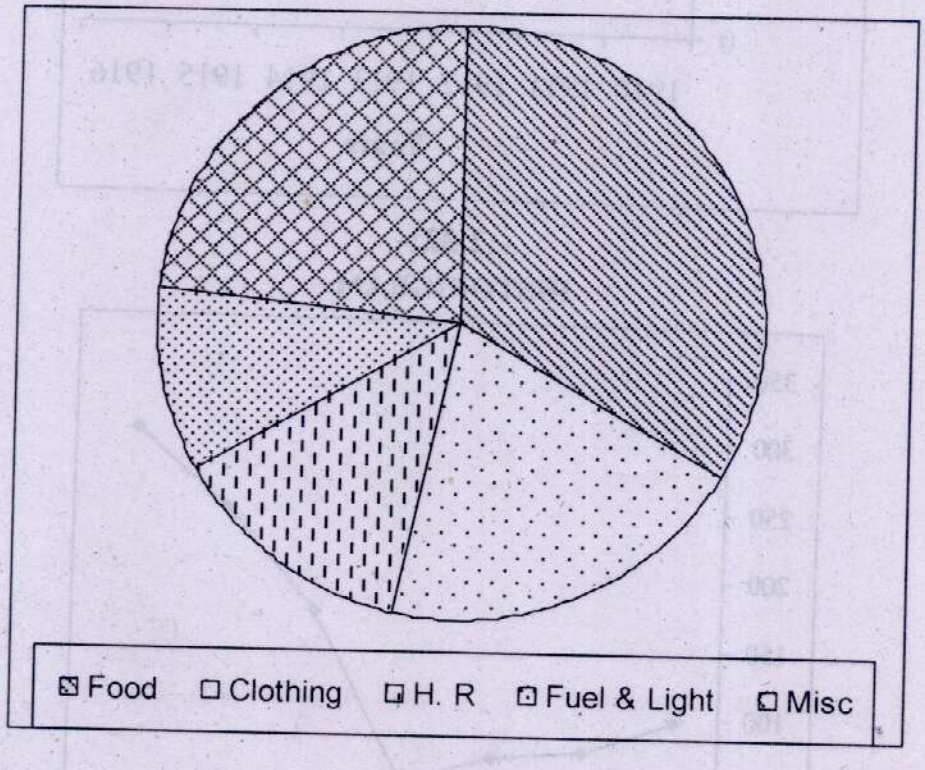
(iii)



-:2.28:-

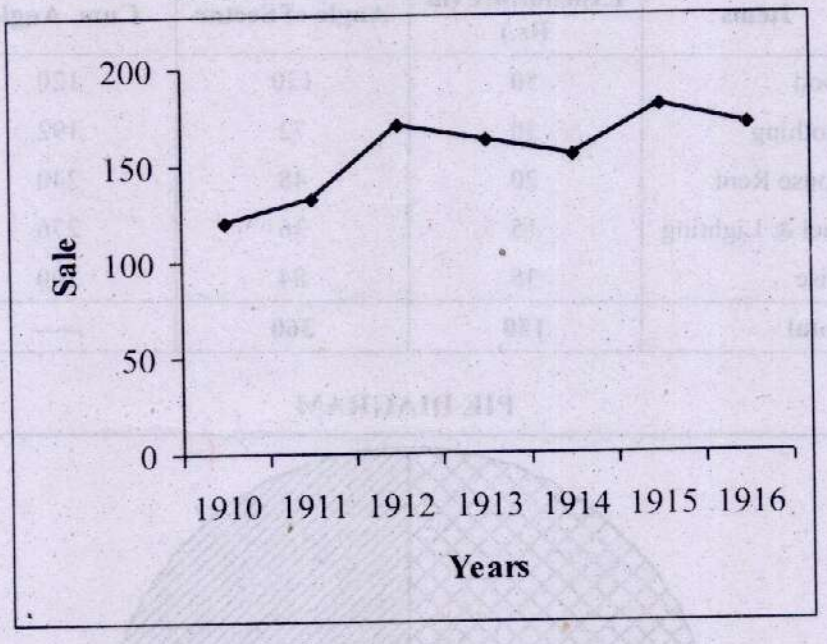
Items	Expenditure (in Rs.)	Angle of Sector	Cum. Angles
Food	50	120	120
Clothing	30	72	192
House Rent	20	48	240
Fuel & Lighting	15	36	276
Misc	35	84	360
Total	**150**	**360**	-----

PIE DIAGRAM



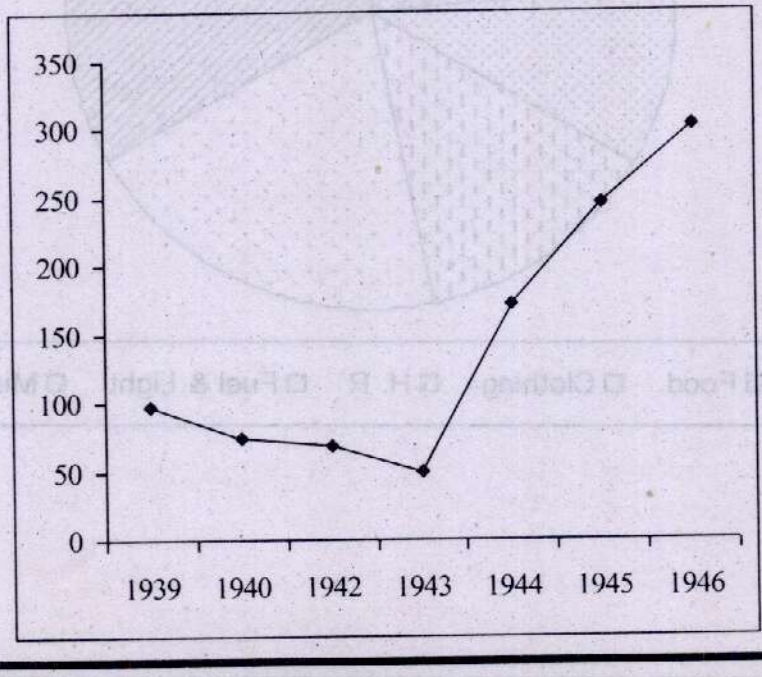
-:2.31:-

SALE OF FACTORY 1910 – 1916



-:2.32:-

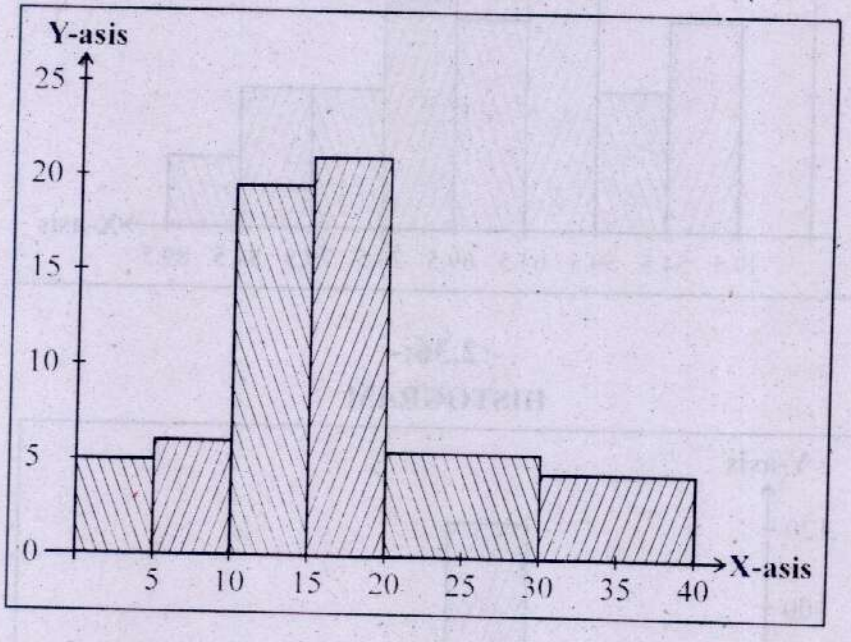
HISTORIGRAM



-:2.34:-

Group	Frequency	Length of Class Interval	Adjusted Height of Rectangle
0 – 5	5	5	$^5/_1 = 5$
5 – 10	7	5	$^7/_1 = 7$
10 – 15	19	5	$^{19}/_1 = 19$
15 – 20	22	5	$^{22}/_1 = 22$
20 – 30	12	10	$^{12}/_2 = 6$
30 – 40	8	10	$^8/_2 = 4$

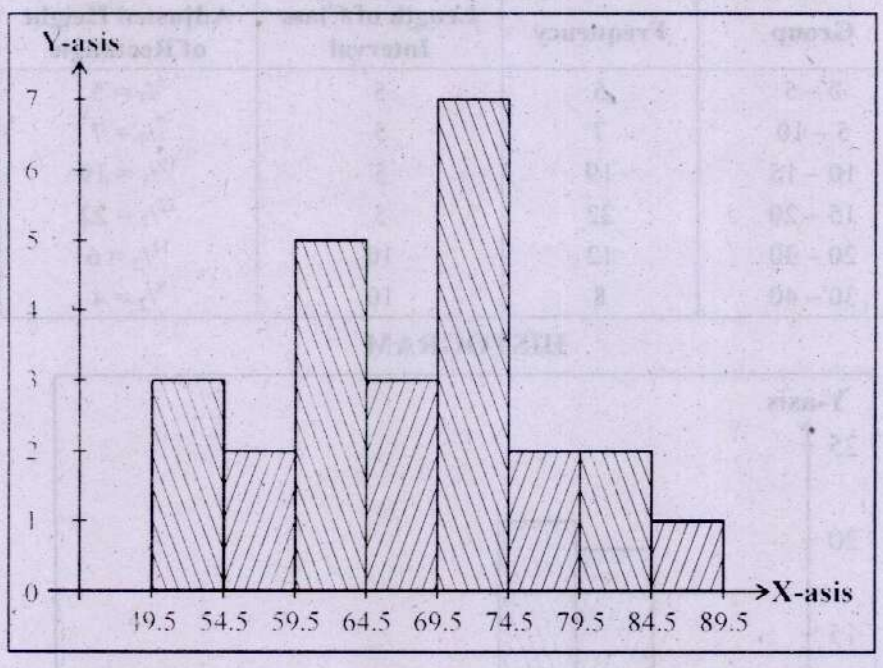
HISTOGRAM



-:2.35:-

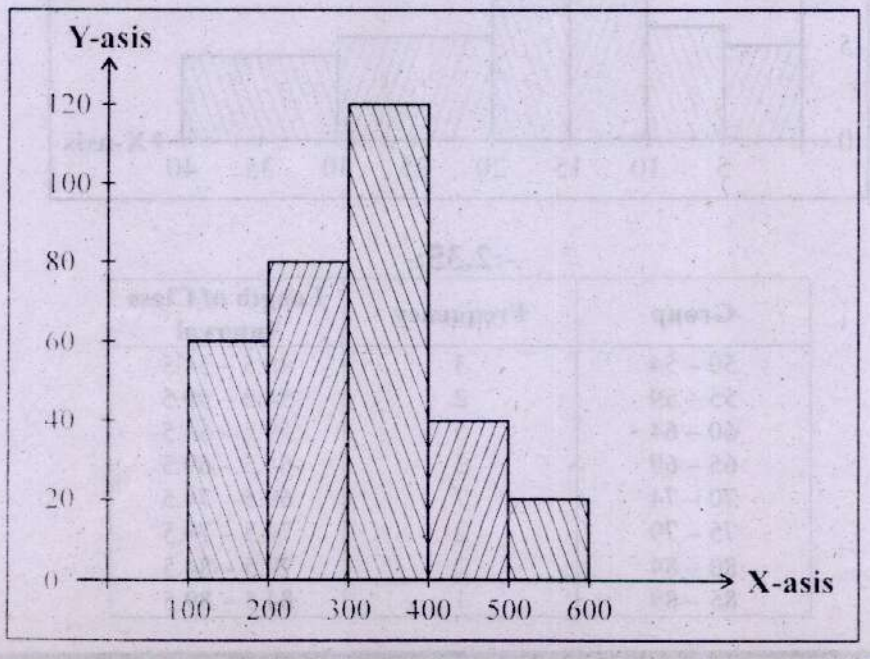
Group	Frequency	Length of Class Interval
50 – 54	3	49.5 – 54.5
55 – 59	2	54.5 – 59.5
60 – 64	5	59.5 – 64.5
65 – 69	3	64.5 – 69.5
70 – 74	7	69.5 – 74.5
75 – 79	2	74.5 – 79.5
80 – 84	2	79.5 – 84.5
85 – 89	1	84.5 – 89.5

HISTOGRAM



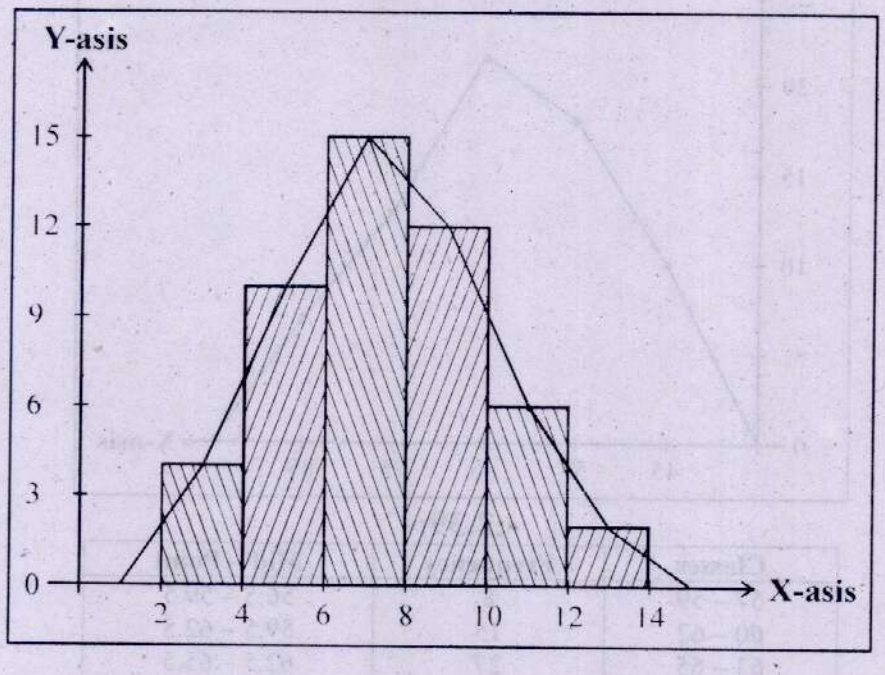
-:2.36:-

HISTOGRAM



-:2.37:-

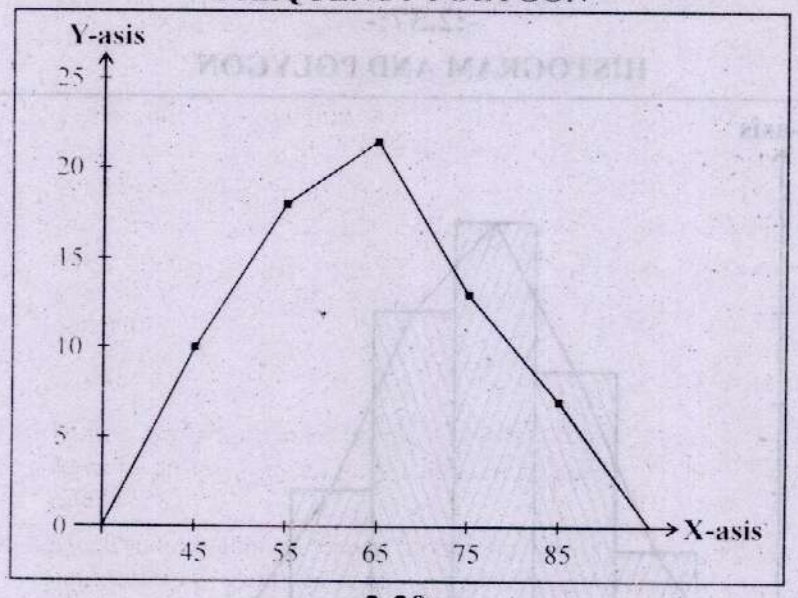
HISTOGRAM AND POLYGON



-:2.38:-

Classes	Frequency	Mid – Point
40 – 50	10	45
50 – 60	18	55
60 – 70	22	65
70 – 80	13	75
80 – 90	7	85

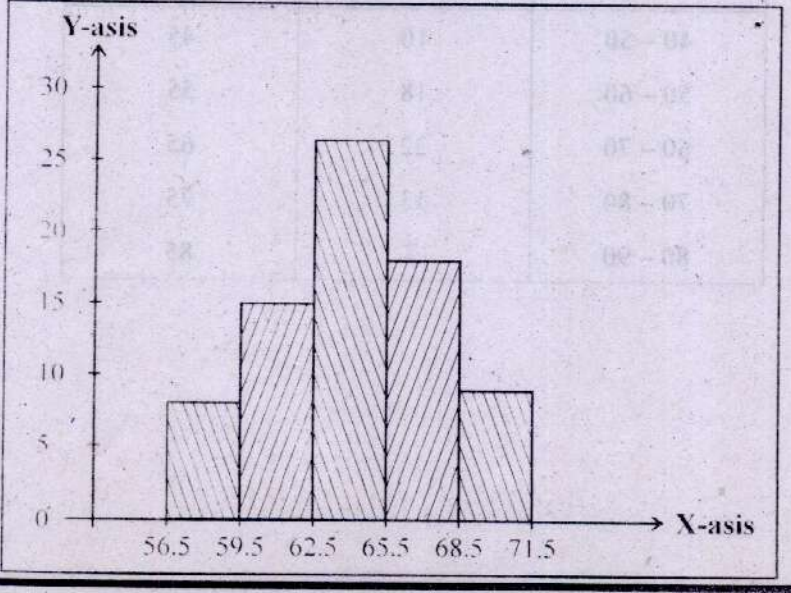
FREQUENCY POLYGON



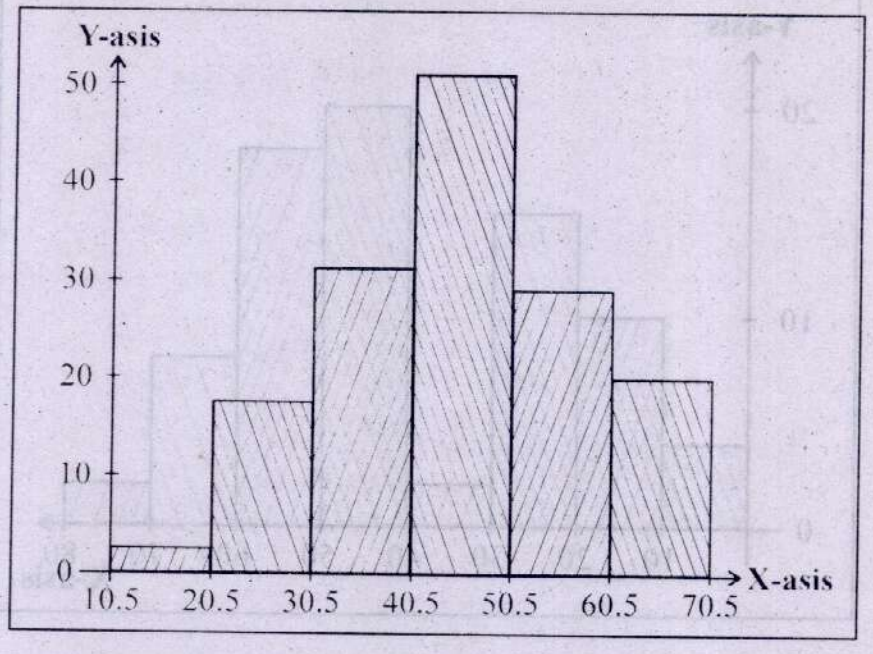
-:2.39:-

Classes	Frequency	Mid – Point
57 – 59	8	56.5 – 59.5
60 – 62	15	59.5 – 62.5
63 – 65	27	62.5 – 65.5
66 – 68	18	65.5 – 68.5
69 – 71	9	68.5 – 71.5

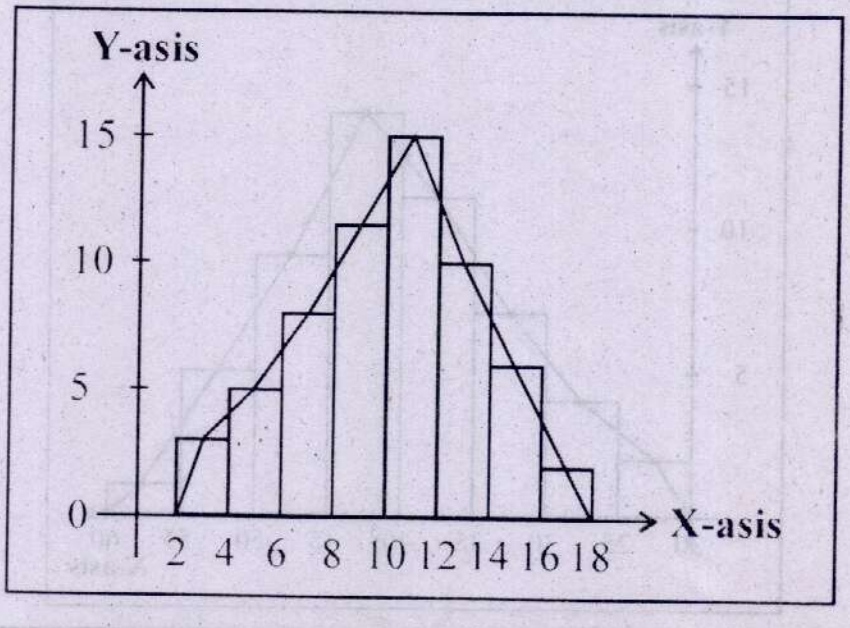
HISTOGRAM



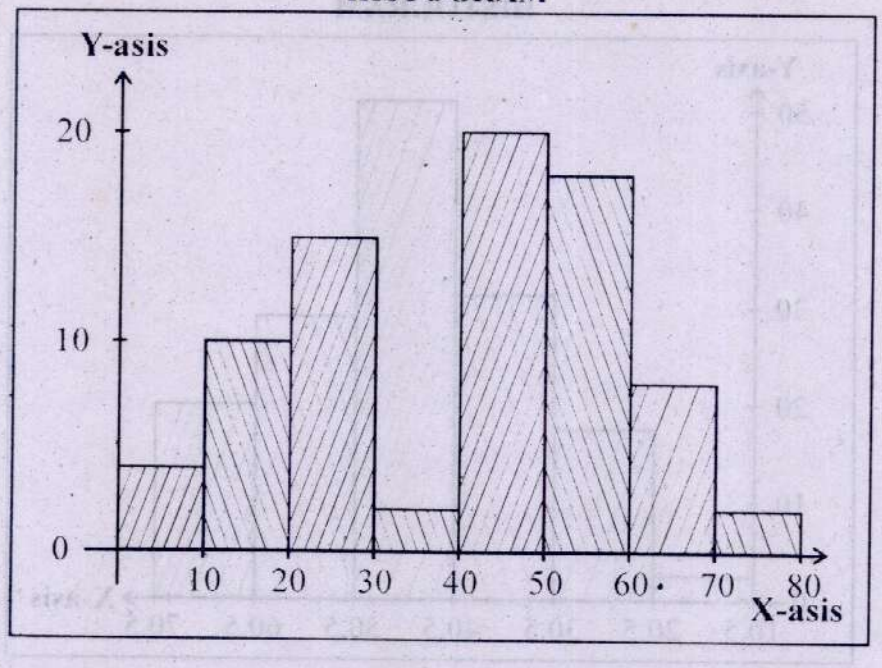
-:2.40:-
HISTOGRAM



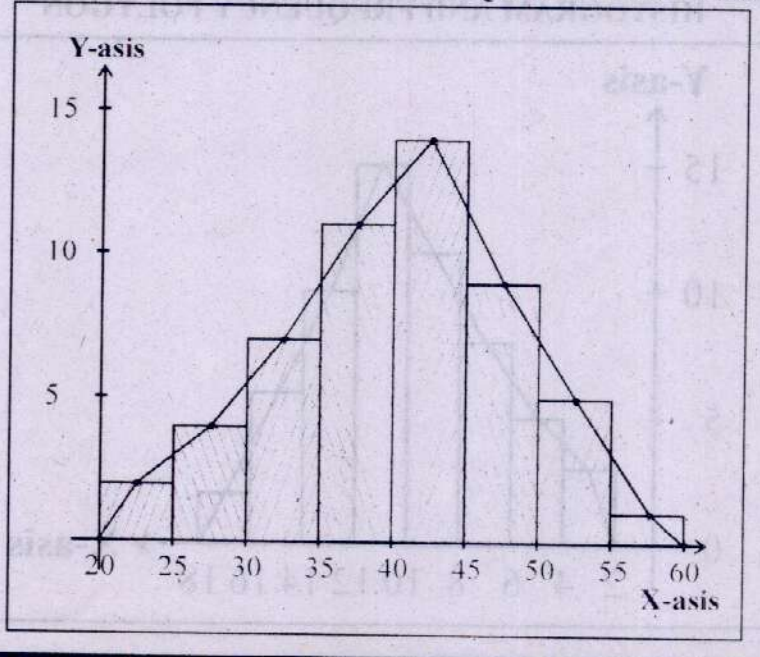
-:2.41:-
HISTOGRAM AND FREQUENCY POLYGON



-:2.42:-
HISTOGRAM



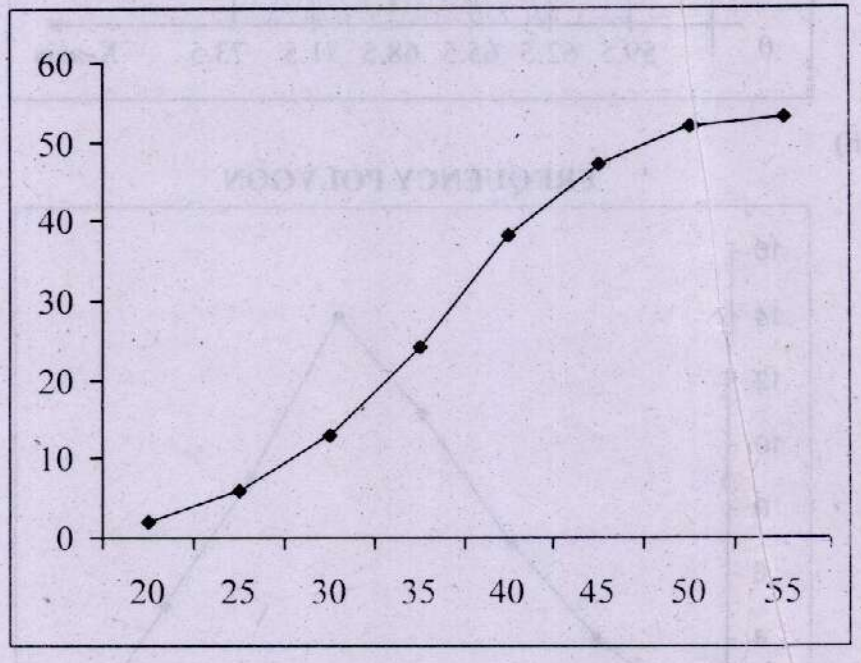
-:2.43:-
(i) & (ii) HISTOGRAM AND FREQUENCY POLYGON



(iii)

Weekly Wages	No of Persons (F)	C.F.
20 – 25	2	2
25 – 30	4	6
30 – 35	7	13
35 – 40	11	24
40 – 45	14	38
45 – 50	9	47
50 – 55	5	52
55 – 60	1	53

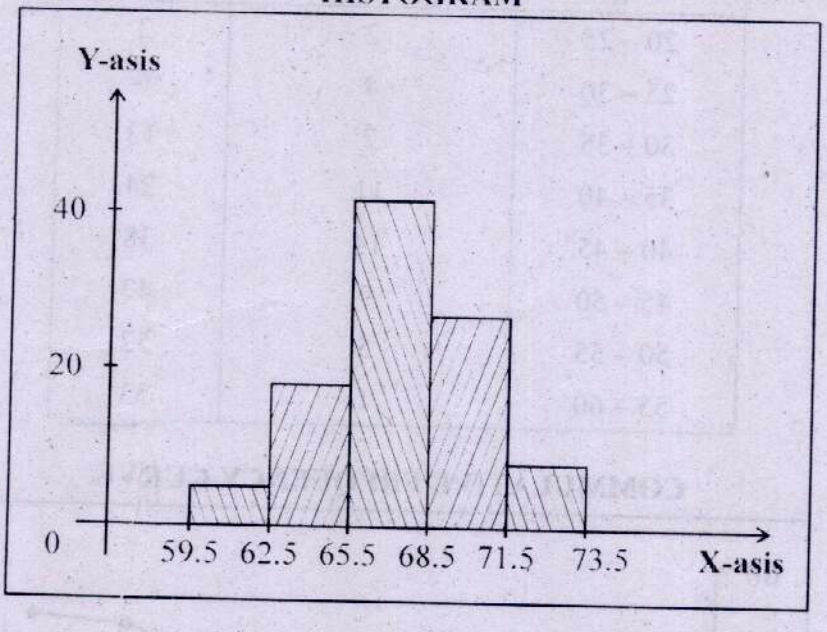
COMMULATIVE FREQUENCY CURVE



-:2.44:-

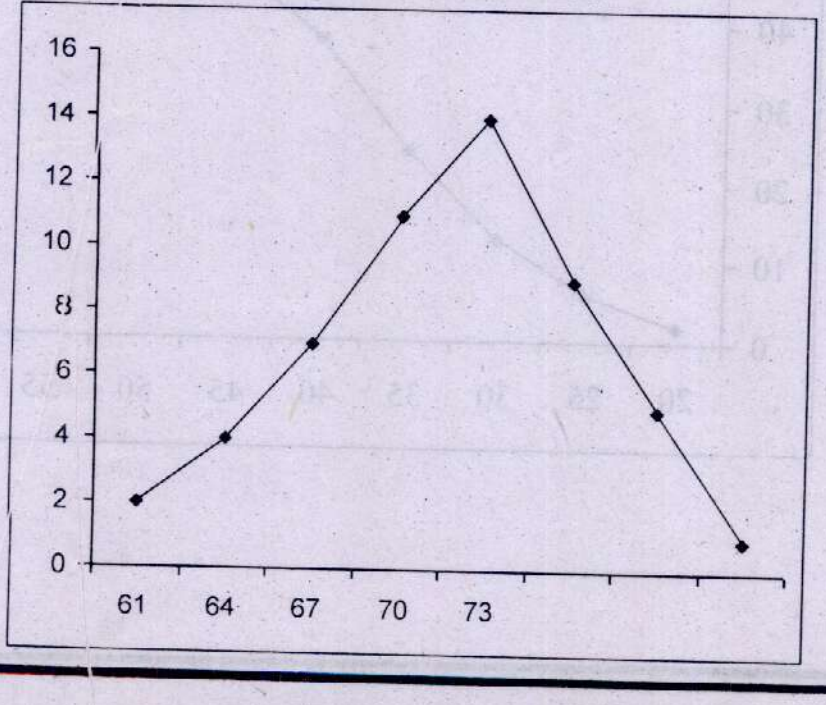
(i)

HISTOGRAM

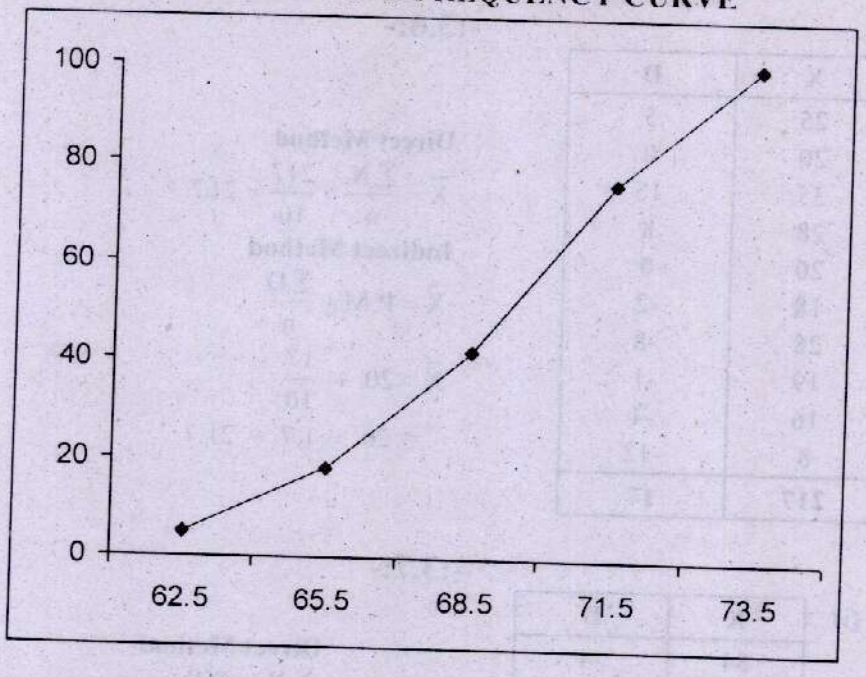


(ii)

FREQUENCY POLYGON



(iii)


COMMULATIVE FREQUENCY CURVE
100
80
60
40
20
0
62.5
65.5
68.5
71.5
73.5

2 DIAGRAMMATIC AND GRAPHIC REPRESENTATION OF DATA

QUESTION NO. 1

Possible answers are given to each statement. Tick (✓) the correct one.

S#	Questions	Answers			
1)	What is total angle of pie-chart	90^0	180^0	✓ 360^0	60^0
					(Lahore Board, 2008)
2)	A statistical table has at least\	One part	Two parts	Three parts	✓ Four parts
					(Lahore Board, 2008) (Gujranwala Board, 2010)
3)	A graph of cumulative frequency distribution is called	Histogram	Historigram	Frequency polygon	✓ Ogive
					(Gujranwala Board, 2009) (Lahore Board, 2010)
4)	The data, when plot on graph paper is called	Frequency distribution	Graphic	Ogive	✓ Diagrammatic representation
					(Lahore Board, 2009)
5)	The graph of time series is called	Pie-chart	Ogive	Histogram	✓ Historigram
					(Lahore Board, 2009) (Gujranwala Board 2010)
6)	Graph of frequency distribution is called	Histogram	Historigram	Pie diagram	✓ Frequency curve
					(Faisalabad Board, 2010)
7)	Graph of frequency distribution is	Histogram	Bell shaped	j-shaped	✓ Curve
					(Lahore & Gujranwala Boards, 2010)

S#	Questions	Answers			
8)	An ogive is a	Frequency polygon	✓ Cumulative frequency polygon	Frequency curve	Histogram
					(Lahore Board, 2010)
9)	Total angles of pie chart are	60^0	260^0	✓ 360^0	460^0
					(Rawalpindi Board, 2010)
10)	The data which is plotted on the graph paper is called	Classification	Tabulation	Frequency distribution representation	✓ Graphic representation
					(Sargodha Board, 2010)
11)	Main classes of graphs are (types of graph)	One	✓ Two	Three	Four
					(Sargodha Board, 2010)
12)	In graphic representation data is used:	Individual items	Discrete series	✓ Grouped data	None of these
13)	The data when plot on graph paper it is called:	Frequency distribution	Graphic	Ogive	✓ Diagrammatic representation
14)	Histogram, histogrigram, frequency polygon, ogive are types of:	Diagrammatic representation	✓ Graphic representation	Two dimensional diagram	None of these
15)	In two dimensional diagrams we use:	✓ Length and breadth	Length	Breadth	Volume
16)	In one dimensional diagrams we draw:	✓ Component bar diagrams	Rectangles	Cubes	Pie Diagram
17)	The main classes of graphs are:	Four	Three	✓ Two	Five

S#	Questions	Answers			
18)	Bar chart has:	Two types	✓ Four types	Six types	Ten types
19)	When we construct histogram, which is to be taken along X-axis:	Class intervals	Mid points	✓ Class boundaries	Class limits
20)	The graph of class boundaries and frequency is:	Bar chart	Ogive	✓ Histogram	None of these
21)	When we connect the mid – points of rectangles in a histogram with lines, we get:	Ogive	Histogram	✓ Frequency polygon	Frequency curve
22)	Which one of the following charts is suitable when two or more different variables are presented with total is:	Simple bar chart	✓ Multiple bar chart	Pie chart	None of these
23)	A set of adjacent rectangles is called:	Ogive	✓ Histogram	Multiple bar diagram	Historigram
24)	A circle in which sectors represent various quantities is called:	✓ Pie chart	Simple bar chart	Multiple bar chart	All above
25)	To show the component parts by sectors, the angle for each sector is obtained by:	$\frac{\text{Component part}}{\text{Total}} \times 90^\circ$	$\frac{\text{Component part}}{\text{Total}} \times 180^\circ$	$\frac{\text{Component part}}{\text{Total}} \times 270^\circ$	✓ $\frac{\text{Component part}}{\text{Total}} \times 360^\circ$
26)	The graph of a time series is called:	Histogram	Ogive	✓ Histogrigram	Pie chart

S#	Questions	Answers			
27)	A graph formed by joining the mid-points of the tops of successive bars in a histogram by straight lines is:	✓ Frequency polygon	Histogrigram	Ogive	None of these
28)	A graph of a cumulative frequency distribution is called:	Histogram	Historigram	Frequency polygon	✓ Ogive
29)	The data related to import and export of Pakistan should be presented by:	Simple bar diagram	✓ Multiple bar diagram	An ogive	Histogram
30)	The graph of a symmetrical distribution is:	U shaped	J shaped	✓ Bell shapped	None of these
31)	Presentation of statistical data by geometrical curves is called:	✓ Graphs	Diagrams	Both graph & diagram	None of these
32)	Translation of statistical data into geometrical figures is called:	Graphs	✓ Diagrams	Both graph & diagram	None of these

QUESTION NO. 2

Write the short answer to the following questions in the space provided

Q. 1: What is diagrammatic representation?

Ans: Presentation of statistical data by geometrical figures is called diagrammatic representation.

Q. 2: What are the types of diagrams?

Ans: The following are the different types of diagrammatic representation.

(i) One dimensional diagrams (ii) Two dimensional diagrams
(iii) Three dimensional diagrams (iv) Pie diagrams
(v) Pictograms (vi) Cartograms

Q. 3: What is a chart?

(Faisalabad Board, 2008)

Ans: A chart is a device used for presenting a statistical data in a simple, clear and effective manner.

Q. 4: Write any four types of diagrams.

(Faisalabad Board, 2009)
(Sargodha Board, 2010)

Ans: Following are the different types of diagrams

(i) One dimensional diagrams
(ii) Two dimensional diagrams
(iii) Three dimensional diagrams
(iv) Pie diagrams
(vi) Cartograms
(v) Pictogram

Q. 5: Define a simple bar chart.

Ans: A simple bar chart consists of equally spaced vertical or horizontal bars of the same width, having heights proportional to the corresponding numerical values.

Q. 6: Define a multiple bar chart.

Ans: Multiple bar chart is used to represent two or more related sets of data having some common characteristics in a variable value.

Q. 7: Define subdivided or component bar chart.

Ans: The charts used to present the data which are to be shown in the parts are called subdivided or component bar charts.

Q. 8: Define two dimensional diagrams or charts.

Ans: In two dimensional diagrams two dimensions i.e. length and breadth is taken into account. These are called area diagrams.

Q. 9: What are the types of two dimensional diagram.

Ans: Following are the two dimensional diagrams: (i) Squares (ii) Rectangles (iii) Circles.

Q. 10: Define three dimensional diagrams or charts.

Ans: These diagrams are based on three dimensions i.e. length, breadth and thickness. These are called volume diagram.

Q. 11: What are the types of three dimensional diagrams?

Ans: Following are the three dimensional diagrams (i) Cubes (ii) Blocks (iii) Cylinder.

Q. 12: What is a pie diagram or chart?

(Lahore Board, 2008)
(Faisalabad Board, 2008 & 2010)

Ans: Pie chart consists of a circle divided into sectors whose area are proportional to the various parts into which the total quantity is divided.

Q. 13: What is the formula used to obtain the sector wise degree of angles?

Ans: Sector wise degree of angles can be calculated through the help of following formula.

$$\text{Angle of Sector} = \frac{360 \times \text{Figure of the Sector}}{\text{Aggregate i.e. Total}}$$

Q. 14: Define the pictograms.

Ans: When relative values of items are represented by symbols or pictures, it is called pictograms.

Q. 15: Define cartograms.

Ans: The used of maps in the representation of data is called cartograms.

Q. 16: What are the advantages of diagrams?

(Lahore Board, 2010)

Ans: Following are some advantage of diagrams.

(i) Attractive impression (ii) Effective impression
(iii) Easy to understand (iv) Helpful to economists
(v) Helpful in business and administration
(vi) Helpful to all

Q. 17: Define the graph.

Ans: Presentation of statistical data into geometrical curves is called graphic representation of data.

Q. 18: What are main classes of graphs? Or name the types of graphs?

(Lahore Board, 2008)
(Gujranwala Board, 2010)

Ans: There are two main classes of graphs:

(i) Graphs of time series or historigram
(ii) Graphs of frequency distributions

Q. 19: What is the historigram?

(Faisalabad Board, 2010)

Ans: Historigram is a curve which shows the changes in the value of one or more variables from one period of time to the next.

Q. 20: What are the important graphs of frequency distributions?

(Lahore Board, 2008, 2009 & 2010
(Gujranwala Board, 2010)
(Sargodha Board, 2010)

Ans: Following are the important graphs of frequency distributions:

(i) Histogram
(ii) Frequency polygon
(iii) Frequency curve
(iv) Cumulative frequency polygon or ogive

Q. 21: Define Histogram.

(Lahore Board, 2008, 2009 & 2010)
(Gujranwala & Sargodha Board, 2010)

Ans: A histogram consists of a set of adjacent rectangles having bases along X-axis with centres at mid points and areas proportional to class frequencies.

Q. 22: What is the difference between histogram and historigram.

Ans: Histogram is the graph of frequency distribution where as historigram is the graph of a time series.

Q. 23: Define frequency polygon.

Ans: Frequency polygon is a graph that represent the data by using lines that connect points plotted for the frequencies at the mid points of the classes.

Q. 24: What is meant by frequency curve?

Ans: If the frequency polygon is smoothed, the resulting curve is called a frequency curve.

Q. 25: Define cumulative frequency polygon or ogive.

(Faisalabad Board, 2009)

Ans: An ogive is a graph drawn for the cumulative frequency distribution by joining with straight lines the dots marked above the upper boundaries of classes at heights equal to the cumulative frequencies of respective classes.

Q. 26: What are different methods of representation? Write two names.

(Lahore Board, 2010)

Ans: Following are the two methods of representation.

(i) Graphical
(ii) Tabular

Q. 27: For which distribution the graph is bell shaped?

Ans: For symmetrical distribution the graph is bell shaped.

Q. 28: What do you meant by bivariate frequency distribution?

Ans: The constructed frequency distribution, considering two variables at a time is called bivariate frequency distribution.