1. Calculate mode from the data given below

Marks	15 - 19	20 -24	25 -29	30- 34	35 -39	40 - 44
No of Students	4	3	5	3	6	12

Solution: To find out mode, (I) Inclusive class should be converted into exclusive class limits and (ii) use bi - modal formula, since can not be found out in this problem.

Calculation of mode

Marks X	No. of students f	M	(m - 27)5 d	fd	c.f
14.5 - 19.5	4	17	-2	-8	4
19.5 - 24.5	3	22	-1	-3	7
24.5 - 29.5	5	27	0	0	12
29.5 - 34.5	3	32	1	3	15
34.5 - 39.5	6	37	2	12	21
39.5 - 44.5	12	42	3	36	33
	N = 33			Σfd = 40	

$$X = A + \frac{\Sigma fd}{N} \times C$$

$$= 27 + \frac{40}{33} \times 5 = 33.06$$

Median = Size of N/2th item = 33/2 = 16.5[th] item

Hence median class is (34.5 - 39.5)

$$Median = L + \frac{N/2 - C.f}{f} \times i$$

L = 34.5: N /2 = 16.5:   c.f = 15:   f = 6: I = 5

Median = 34.5 $+ \dfrac{16.5 - 15}{6}$ X 5 = 35.75

Mode = 3 Median - 2 mean

= (3 x 35.75) - (2 x 33.06)

= 107.25 - 66.12 = 41.13

Hence modal mark is 41.13