NAME - MARKMANUEL AGBEZIBE MARKBERE WINNER

DEPT - MECHANICAL ENGINEERING

MATRIC NO – 19/ENG06/035

STA 132

$\Sigma f(A) = 29 \quad \Sigma f(B) = 63$

$M.D = \frac{\Sigma f|x-\bar{x}|}{\Sigma f}$. For grouped data

For A : $\bar{x} = \frac{\Sigma fx}{\Sigma f} = \frac{517}{29} = 17.83$

Table of A

CI	f	x	fx	$f\|x-\bar{x}\|$	$f\|x-\bar{x}\|^2$
1-5	0	3	0	0	676.41
6-10	7	8	56	68.81	233.3
11-15	10	13	130	48.3	0.06
16-20	2	18	36	0.34	23
21-25	1	23	23	5.19	26.7289
26-30	5	28	140	50.85	517.15
31-35	4	33	132	606.8	920132
			517	234.15	2374.17

① Mean $(\bar{x}) = \frac{\Sigma fx}{\Sigma f} = \frac{517}{29} = 17.83$

② Standard deviation = $\sqrt{\text{variance}}$

$= \sqrt{\frac{\Sigma f(x-\bar{x})^2}{\Sigma f}} = \sqrt{\frac{237.17}{29}}$

$= 9.05$

$\therefore$ ① Mean deviation $= \frac{\Sigma f|x-\bar{x}|}{\Sigma f}$

$= \frac{234.15}{29} = 8.17$

③ coefficient of variation =

$\frac{50}{\text{mean}(\bar{x})} \times 100 = \frac{9.05}{17.83} \times 100$

$\Rightarrow 51\%$

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TABLE B.

CI	f	x	fx	$f\|x-\bar{x}\|$	$f\|x-\bar{x}\|^2$
1-5	2	3	6	84.28	387.56
6-10	1	8	32	48.56	587.52
11-15	7	15	91	49.98	356.86
16-20	20	18	360	42.8	90.6
21-25	16	25	568	45.16	180.88
26-30	10	28	280	78.6	617.8
31-35	4	33	132	51.44	661.52
			1269		3035.74

mean $(\bar{x}) = \frac{\Sigma fx}{\Sigma f} = \frac{1269}{63} = 20.14$

i) M.D $= \frac{\Sigma f|x-\bar{x}|}{\Sigma f} = \frac{351.42}{63} = 5.58$

ii) S.D $= \sqrt{\text{variance}}$

$= \sqrt{\frac{\Sigma f(x-\bar{x})^2}{\Sigma f}} = \sqrt{\frac{3035.74}{63}} = \sqrt{48.19} = 6.94$

iii) coefficient of variance $= \frac{\text{standard deviation}}{\text{mean } (\bar{x})} \times 100$

$= \frac{6.94}{20.14} \times 100 = 34\%$

5/07 iv) Group B is the one with less varied distribution