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 MECHATRONICS ENGINEERING
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 19/ENG05/052

CI	Group A	Group B	x	$x f_A$	$x f_B$	$f_A (x - \bar{x}_A)^2$	$f_B (x - \bar{x}_B)^2$
1-5	0	2	3	0	6	0	587.6
6-10	7	4	8	56	32	676.4	589.5
11-15	10	7	13	130	91	233.3	356.9
16-20	2	20	18	36	360	0.0588	91.6
21-25	1	16	23	23	368	26.78	130.9
26-30	5	10	28	140	280	517.1	617.8
31-35	4	4	33	132	132	920.5	661.5
	29	63		517	1269	2374.08	3035.8

(i) Calculate:-

(i) The mean and standard deviation of each group

$$\bar{x}_A = \frac{\sum f_A x}{\sum f_A} = \frac{517}{29} = 17.83$$

$$\bar{x}_B = \frac{\sum f_B x}{\sum f_B} = \frac{1269}{63} = 20.14$$

$$S.D_A = \sqrt{\frac{\sum f_A (x - \bar{x}_A)^2}{\sum f_A}} = \sqrt{\frac{2374.058}{29}} = \sqrt{81.86} = 9.048$$

$$S.D_B = \sqrt{\frac{\sum f_B (x - \bar{x}_B)^2}{\sum f_B}} = \sqrt{\frac{3035.8}{63}} = \sqrt{48.19} = 6.942$$

(ii) The coefficient of variation for each group

$$C.V = \frac{SD}{\bar{x}} \times 100$$

$$C.V_A = \frac{S.D_A}{\bar{x}_A} \times 100 = \frac{9.048}{17.83} \times 100 = 50.75\%$$

$$C.V_B = \frac{SD_B}{\bar{x}_B} \times 100 = \frac{6.942}{20.14} \times 100 = 34.47$$

III Group B