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MATRIC NO: 19/ENG05/016

DEPARTMENT: MECHATRONICS ENGINEERING.

COURSE: STA 132

COVID-19 HOLIDAY ASSIGNMENT

CI	x	F _A	F _B	F _A x - \bar{x}_A ²	F _B x - \bar{x}_B ²	F _A x	F _B x
1 - 5	3	0	2	0	439.7146	0	6
6 - 10	8	7	4	$\frac{568575}{841}$	386.3258	56	32
11 - 15	13	10	7	$\frac{19600}{841}$	163.1391	130	91
16 - 20	18	2	20	$\frac{50}{841}$	$\frac{500}{841}$	36	360
21 - 25	23	1	16	$\frac{22500}{841}$	$\frac{360000}{841}$	23	368
26 - 30	28	5	10	517.39	1034.78	140	280
31 - 35	33	4	4	920.1085	920.8085	132	132
		$\sum F_A = 29$	$\sum F_B = 63$	$\sum F_A x - \bar{x}_A ^2 = 2374.7379$	$\sum F_B x - \bar{x}_B ^2 = 3373.4243$	$\sum F_Ax = 517$	$\sum F_Bx = 1269$

(I) $\bar{x} = \frac{\sum fx}{\sum f}$
 $\bar{x}_A = \frac{\sum f_Ax}{\sum f_A} = \frac{517}{29} = 17.8276$
 $\bar{x}_B = \frac{\sum f_Bx}{\sum f_B} = \frac{1269}{63} = 20.1429$

S.D_A = $\sigma_A = \sqrt{\frac{\sum f_A(x - \bar{x}_A)^2}{\sum f_A - 1}} = \sqrt{\frac{2374.7379}{29 - 1}} = \sqrt{\frac{2374.7379}{28}} = \sqrt{84.79} = 9.2081$

S.D_B = $\sigma_B = \sqrt{\frac{\sum f_B(x - \bar{x}_B)^2}{\sum f_B - 1}} = \sqrt{\frac{3373.4243}{63 - 1}} = \sqrt{\frac{3373.4243}{62}} = \sqrt{54.41} = 7.3763$

(II) $C_{VA} = \frac{\sigma_A}{\bar{x}_A} \times 100 = \frac{9.2081}{17.8276} \times 100 = 51.6508 = 51.65\%$
 $C_{VB} = \frac{\sigma_B}{\bar{x}_B} \times 100 = \frac{7.3763}{20.1429} \times 100 = 36.6199 = 36.62\%$

(III) Group B has less variable distribution and it's homogenous