Assignment 5.3

(Q) Calculate F Test for given 10,20,30,40,50 & 5,10,15,20,25

~~For 10,20,30,40,50:~~

(Solution) Given groups

G1 : 10, 20, 30, 40, 50

G2 : 5, 10, 15, 20, 25

	ΣG	$\bar{x}$	
G1	150	30	$S_1^2 = 250$
G2	75	15	$S_2^2 = 62.5$

where S_1^2 & S_2^2 are variance of two groups.

Calculation of variance

$$\sigma^2 = \frac{\Sigma (x-\mu)^2}{N}$$

where μ is average of all No. in the set

N is total number of elements in the set.

$$S_1^2 = \frac{(10-30)^2 + (20-30)^2 + (30-30)^2 + (40-30)^2 + (50-30)^2}{5}$$

$$= \frac{400+100+0+100+400}{5} = \frac{1000}{5} = 250$$

$$S_2^2 = \frac{(5-15)^2 + (10-15)^2 + (15-15)^2 + (20-15)^2 + (25-15)^2}{5}$$

$$= \frac{(-10)^2 + (-5)^2 + (0)^2 + (5)^2 + (10)^2}{5} = \frac{250}{5} = 62.5$$

$$F_{value} = \frac{S_1^2}{S_2^2} = \frac{250}{62.5} = 4$$

For F_{cv} = degree of freedom of numerator = 5-1 = 4

degree of freedom of denominator = 5-1 = 4

∴ From F-table we take $K_1 = 4, K_2 = 4, \alpha = 0.05$

If α not given we take α as 0.05

F_{cv} from table = 6.38 $F_{value} < F_{cv}$

∴ We fail to reject null hypothesis.

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