[Use a separate Answer Book for each group]

Group – A

(*Answer the following questions*) [2×5]

1. Describe how would you fit a linear trend equation and explain how would you convert an yearly trend equation to a monthly trend equation?

OR,

Distinguish between seasonal and cyclical variation? State methods to obtain seasonal variation.

2. State Fisher's price index formula and explain why this formula is better than Laspeyres' formula?

OR,

State different uses of index number.

Group – B

(*Answer **any three** questions*) [3×5]

3. Let $T = \dfrac{w}{\sqrt{\dfrac{v}{r}}}$, where the independent random variables W and V are, respectively, 'normal into mean zero and various 1' and 'χ^2 with r degree of freedom'. Find out the distribution of T^2 with suitable explanation.

4. a) Explain what do you mean by MVUE? [2]

   b) An observation is drawn randomly from $N(0, \sigma^2)$. Find the unbiased estimator of σ^2. [3]

5. An random sample of size 'n' is drawn from $N(\mu, \sigma^2)$. Find the MLE (Maximum Likelihihood estimator) of μ.

6. Let t_n be a consistent estimator of θ. Define $t_n' = \dfrac{n-1}{n-2} t_n$. Show that t_n' is also a consistent estimator of θ.

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