

بنك الاسئلة لمادة Sampling :

Q1/ Selected random sample with size ($n=3$) from population contain (4) unit with value (3,8,5,4). Find:

1- The number of samples which contain unit (8) .

$$2- E \sum_{i=1}^n y_i = \frac{n}{N} \sum_{i=1}^N Y_i .$$

Q2/ if you have the following function:

$$P(X_i) = \frac{3}{X_i} \quad X_i = 6,9,24,18$$

Is this function (PMF) and find $E(X_i), E(X_i^2)$

Q3/

1. Explain Quota sampling.
2. What is the error bias?

Q4/ Selected random sample with size ($n=3$) from population contain (4) unit with value (8, 11, 15, 4). Find:

3- The Probability to get a sample contain unit (4) .

$$4- E \sum_{i=1}^n y_i = \sum_{i=1}^{C_n^N} \sum_{j=1}^n y_{ij} \frac{1}{C_n^N} .$$

Q5/

3. What are the types of non-probability Sampling methods?
4. Explain purposive sampling.

Q6/ A/prove that:

$$\sigma^2 = E(X^2) - (E(X))^2$$

B/ our community is composed of four individuals their income is equal to (5,7,11,3) and took samples consists of all two items what bias in estimating the amount?

Q7/A/ Prove that:

$$\text{If } \hat{Y} = N \bar{y}_{st} \text{ then}$$

$$V(\hat{Y}) = \sum_{h=1}^L N_h (N_h - n_h) \frac{\sigma_h^2}{n_h}$$

B/ from the information about sampling stratum with size of population (5000) by the table:

stratum	σ_h	W_h
1	6	0.4
2	11	0.6

Find: sample size and the partial of sample size

in Equal allocation if $V(\bar{y}_{st}) = 1$

Q8/ A/ find sample size for estimate mean of population if the error allowed is 4% from the mean and with this information:

$$N = 450, \sigma = 4, \bar{y} = 25, t = 1.64$$

B/ Derive the law for determination sample size to estimate proportion of population.

Q9/ Prove that:

$$1- S^2(p) = \frac{pq}{n-1} (1-f)$$

$$2- \text{If } \hat{Y} = N \bar{y}_{st} \text{ then } V(\hat{Y}) = \sum_{h=1}^L N_h (N_h - n_h) \frac{\sigma_h^2}{n_h}$$

$$3- \text{From Proportion distribution } \bar{y}_{st} = \bar{y}$$

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Q10/ From the information about sampling stratum with size of population (2600) by the table:

stratum	σ_h	W_h
1	10	0.23
2	20	0.46
3	15	-----

Find/

1- W_3

2- portion of sample size in Equal Allocation if

$$V(\bar{y}_{st}) = 1$$

Q11/ Selected Sample random with size (n=2) from population contain (5) unit with value (4, 1, 3, 6, 2).

Find:

5- The Probability to get any sample.

6-
$$E(\bar{y}) = \sum_{i=1}^N y_i \frac{1}{C_n^N}$$

7-
$$V(\bar{y}) = \frac{\sigma^2}{n} (1 - f)$$

.....
Q12/ Prove that:

1.
$$S^2(p) = \frac{pq}{n-1} (1 - f)$$

2.
$$E(S^2(\hat{y})) = V(\hat{y})$$