UGC-Economics – Statistics -Model Questions

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Mean and variance

1. The mean of a given distribution is 6. And standard deviation 0.5, then the coefficient of variation will be:
   a) 4 per cent b) 8.3 per cent c) 16.0 per cent d) None of the above.
2. Which of the following averages is known as 'root mean square'?
   a) Quadratic mean b) Harmonic
   c) Geometric mean d) Combined mean
3. Two alternatives, X and Y have equal expected value but Y has higher variance than X. A person choosing Y over X is a:
   a) Risk lover b) Risk averse
   c) Risk-neutral d) Speculator
4. Which of the following is not a measure of dispersion:
   a) Mean of deviations b) Variance
   c) Range d) Inter-quartile range
5. There are 50 students in a class. Their mean weight $\mu =$ 55 kg. and standard deviation $\sigma = 17$. Two students from the class whose weights are 47 k.g and 58 kg.respectievely leave the school and two new students with weight of 50kg. and 55 kg respectievely join the class. Then the new mean weight μ_1 and standard deviation σ_1 (in k.g) are:
   a) $\mu_1 = 55, \sigma_1 = 17$ b) $\mu_1 = 55, \sigma_1 < 17$
   c) $\mu_1 < 55, \sigma_1 > 17$ d) $\mu_1 > 55, \sigma_1 = 17$

Correlation and regression

1. Given two regression lines X on Y and Y on X as follows. 3x + 2y = 26, 6x + Y = 31. Then (r) will be equal to:
   a) 0.4 b) 0.5 c) 0.6 d) 0.7
2. $\hat{b}_{xy}$ and $\hat{b}_{yx}$ are are slopes in regressions of X on Y and Y on X respectievely. Then the correlation coefficient, r between X and Y is. a) $\sqrt{\hat{b}_{xy}.\hat{b}_{yx}}$ b) $(\hat{b}_{xy} + \hat{b}_{yx})/2$ c) $\hat{b}_{xy}/\hat{b}_{yx}$ d) not related to regression of y on x or X on Y.

3. In a regression equation of X on Y, b_{xy} is equal to:

   a) b_{yx} b) $\sqrt{r}$ c) r d) $\frac{r^2}{byx}$

4. Assertion (A): Coefficient of concurrent deviations is calculated between the direction of deviation, and not their magnitudes
   Reason (R): If it is desired to study correlation between two series in a very casual manner.
   a) A is false but R is true b) A is true but R is false
   c) Both A and R are true But R is not the correct explanation of A.
   d) Both A and R are true and R is the correct explanation of A.
5. The two regression coefficients are given by (-0.45) and (-0.8). Then the coefficient of correlation is:
   a) 0.6 b) 0.36 c) -0.6 d) -0.36
6. Based on a sample of 100 observations, the correlation coefficient between x and y found to be nearly zero. Then,
   a) X and Y are definitely unrelated
   b) x and y are linearly related to each other
   c) x and Y may me non- linearly related to each other
   d) None of the above
   Ans. (a)
7. Random variable is:
   a) an independent variable
   b) an endogenous variable
   c) a randomly chosen variable
   d) a function of states of nature

   Ans. (b) an endogenous variable is randomly determined but independent variables are not.
8. When fluctuations of two time series are negatively correlated, then:
   a) Trends may be in the same direction
   b) Trends may be in the opposite direction
   c) There is no trend at all
   d) It is difficult to estimate a meaningful trend
   Ans. (b)
9. Lines of regression of Y on X and of X on Y intersect:
   a) at origin b) at $\overline{X}, \overline{Y}$
   c) at X-axis d) at Y-axis
10. If coefficient of correlation between two variables is equal to 1, then these variables are:
    a) Uncorrelated b) Moderately correlated
    c) Highly correlated d) Perfect correlated

Sampling and sampling distributions

1. Which among the following is a sampling distribution.
   a) Poisson b) Binomial c) Standard normal d) Uniform

2. Under simple random sampling, as the size of the sample increased:
   a) Systematic errors increase but sampling errors decrease
   b) Systematic errors decrease but sampling errors increase
   c) both systematic and sampling errors decrease
   d) both systematic and sampling errors increase
   Ans. (c)
3. Which among the following is not a sampling distribution:
   a) Standard normal distribution b) Poisson Distribution
   c) t-distribution d) γ^2 - distribution
   Ans. (b)
4. Assertion (A): Stratified random sampling is often used for socio-economic surveys.
   Reason (R): Social stratification is a social reality.
   a) Both A and R are true and R is the correct explanation of A.
   b) Both A and R are true But R is not the correct explanation of A.
   c) A is true but R is false d) A is false but R is true
5. Assertion (A): For large sample size, all distributions tend to normal distribution.
   Reason (R): The basic assumption in all the exact sample tests the parent population from which samples are drawn is not normal .
   a) Both A and R are true and R is the correct explanation of A.
   b) Both A and R are true But R is not the correct explanation of A.
   c) A is true but R is false d) A is false but R is true
6. Which of the following is a type of probability sampling?
   a) Convenience sampling b) Purposive sampling
   c) Systematic sampling d) Quota sampling

Probability

1. A bag contains 7 red 12 white and 4 green balls. One ball is drawn from the bag. What is the chance that it is white?
   a) 12/23 B) 7/23 c) 4/23 d) 23/12
2. List 1 List 2
   a) For independent events A and B $P(A \cap B) = 0$
   b) For Mutually exclusive events A and B $P(A \cap B) = P(A).P(B)$
   c) $A \subseteq B = 0$ Bayes Theorem
   d) Conditional probability $P(B) \geq P(A)$
3. If E is the event of getting a total of 12 in throwing a dice twice, the probability of getting a total less than 12 is:
   a) 1/3 b) 1/6 c) 35/36 d) 1/18
4. A one rupee coin and a five rupee coin are tossed simultaneously. If one of the coins turn up head, then the probability that both coins turn up head?
   a) 1/2 b) 1/3 c) 1/4 d) 2/3
5. List 1 List 2
   a) ${}^nC_r$ (i) $\frac{n!}{r!}$

b) ${}^{n}P_{r}$ (ii) $n!$

c) ${}^{n}C_{r} \times (n-r)!$ (iii) $\dfrac{n!}{(n-r)!.r!}$

d) ${}^{n}P_{r} \times (n-r)!$ (iv) $\dfrac{n!}{(n-r)!}$

Code:	(a)	(b)	(c)	(d)
	(ii)	(iii)	(iv)	(i)
	(iii)	(i)	(ii)	(iv)
	(iv)	(ii)	(i)	(iii)
	(iii)	(iv)	(i)	(ii)

6. For two events A and B, P(A or B) = P(A) + P(B), When :
   a) A and B are independent events
   b) A and B can occur simultaneously
   c) A and B are Mutually Exclusive events
   d) None of the above
   Ans. (a)

Distributions

1. The probability distribution in which mean and variance are equal:

   a) Poisson b) Normal c) Binomial d) Chi – square

2. The mean and variance of a binomial distribution is equal to:
   a) $\sqrt{np}, \sqrt{npq}$ b) $\sqrt{n^2 p}, \sqrt{n.2p^2q^2}$ c) $\sqrt{npq}, n^2p^2$ d) np, npq
3. Consider the following distributions:
   a) z-distribution
   b) t- distribution
   c) Binomial distribution
   d) F-distribution
   Which among the above are not sampling distributions?
   Codes: (A) only (a) (B) Only (c) (C) both (a) and (c) (D)) both (a) and (d)
   Ans. (b) an endogenous variable is randomly determined but independent variables are not.

Hypothesis testing

1. In testing a given hypothesis the maximum P with which we would be willing to risk a type 1 error is known as:
   a) Null hypothesis B) Point estimate c) Level of significance d) Interval estimate
2. To test H_0 : $\mu = \mu_0$, against the alternative hypothesis H_1: $\mu \neq \mu_0$, in case $N(\mu, \sigma^2)$, where σ^2 is known, H_0 is rejected if

a) $|\bar{x}-\mu_0| > \frac{\sigma}{\sqrt{n}} z_{\alpha/2}$ b) $|\bar{x}-\mu_0| \le \frac{\sigma}{\sqrt{n}} z_{\alpha/2}$

c) $|\bar{x}-\mu_0| \ge \frac{s}{\sqrt{n}} t_{\alpha/2}(n-1)$ c) $|\bar{x}-\mu_0| < \frac{s}{\sqrt{n}} t_{\alpha/2}(n-1)$

3. Assertion (A): Z test is applied to test for mean of population for large sample.
Reason (R) All distributions obey central limit theorem.

a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true But R is not the correct explanation of A
c) A is true but R is false d) A is false but R is true

4.

List 1	List 2
a) $H_0 : \mu = \mu_0, H_1 : \mu > \mu_0$	All parameters of distribution are specified
b) Simple hypothesis	Point estimation
c) Consistency	One sided test
d) $P_{01} \times P_{10} = 1$	Time reversal test

5. The statement that (a,b) is a 99% confidence interval for population mean, μ implies;

a) 99% of population lies between a and b
b) there is 99% chance that μ lies between a and b.
c) 99% of intervals such as (a, b) contains μ

Select the code:
A) (a), (b) and (c) are true.
B) Only (c) is true
C) Only (b) is true
D) Both (a) and (b) are true

6.

List 1 **To test for these**	List 2 **we use the following**
a) population mean with known variance	(i) t-distribution
b) population mean with unknown variance	(ii) F-distribution
c) Comparison of variances	(iii) χ^2-distribution
d) Goodness of fit	(iv) F -distribution

Code:

(a)	(b)	(c)	(d)
(i)	(ii)	(iii)	(iv)
(ii)	(i)	(iv)	(iii)
(iv)	(i)	(ii)	(iii)
(iii)	(i)	(ii)	(iv)

7. Assertion (A): For large samples mean can be tested using standard normal distribution.
Reason (R): When original population has normal distribution, mean of a sample from this population has t-distribution.
a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true But R is not the correct explanation of A.

c) A is true but R is false d) A is false but R is true

Ans.

8. Match the following.

List 1	List 2
a) Mean's test with small sample	(i) Chi-square statistic
b) Mean's test with small sample	(ii) t-statistic
c) Test of independence	(iii) F-statistic
d) Goodness of fit	(iv) Z-statistic

Code:

(a)	(b)	(c)	(d)
(iii)	(iv)	(ii)	(i)
(iii)	(ii)	(i)	(iv)
(ii)	(iv)	(i)	(iii)
(i)	(ii)	(iii)	(iv)

Index Numbers

1. Fisher's formula for constructing index numbers is termed as ideal because:
   a) it takes into account both current year as well as base year prices and quantities.
   b) it satisfies both the time reversal and factor reversal test
   c) It is based on geometric mean which is suitable for studying the rates of variation between two periods d) All of these
2. Which of the following satisfy factor reversal test?
   a) Laspeyre's index number b) Marshal-Edgeworth index number
   c) Fisher's Index number d) Paache's index number
3. Implicit GNP Deflator is:
   a) Current year weighted index
   b) Base year weighted index
   c) Arithmetic mean of (a) and (b)
   d) Geometric mean of (a) and (b)

   Ans. (a) Paasche's method
4. GDP deflator is an index of type:
   a) Paasche index b) Laspyre's index
   c) Fisher index d) Divisia index

General

1. Mesokurtic distribution is also known as:
   a) Gamma Distribution b) Beta Distribution c) normal distribution d) chi-square distribution

2. Let x1, x2, ... be a randomly selected variables from a population and let $(X_{\min} + X_{\max})/2$ and $\overline{X}$ be two estimators for population mean called $\hat{\mu}_1$ and $\hat{\mu}_2$ respectievely. Then,

   a) $\hat{\mu}_1$ is biased and $\hat{\mu}_2$ is unbiased b) $\hat{\mu}_1$ is unbiased and $\hat{\mu}_2$ is biased

   c) Both $\hat{\mu}_1$ and $\hat{\mu}_2$ are unbiased but only $\hat{\mu}_1$ is BLUE

   d) Both $\hat{\mu}_1$ and $\hat{\mu}_2$ are unbiased but only $\hat{\mu}_2$ is BLUE

3. Select the correct code:

   Assertion (A): In moving average method, the number of periods included must be as large as possible.

   Reason (R): Including more periods in moving average achieves greater smoothing of data.

   a) Both A and R are true and R is the correct explanation of A

   b) Both A and R are true But R is not the correct explanation of A

   c) A is true but R is false d) A is false but R is true

4. Assertion (A): Though $\overline{x}$ and $x_{\min}$ for a sample are both unbiased estimators of population mean, $\overline{x}$ is the preferred estimator.

   Reason (R): $\overline{x}$ is more efficient compared to $x_{\min}$

   Codes:

   a) Both A and R are true and R is the correct explanation of A

   b) Both A and R are true But R is not the correct explanation of A

   c) A is true but R is false d) A is false but R is true

5. If $\beta_3 > 3$, the curve is called.

   a) Platykurtic b) Leptokurtic

   c) Mesokurtic d) None of the above

6. List 1

   a) Rejection of H_0 when it is true

   b) Mean is equal to degrees of fgreedom

   c) Population is hetrogenous

   d) Mean > mode

   List 2

   (i) Stratifiesd random sampling

   (ii) Type 1

   (iii) Positievely skewed distribution

   (iv) χ^2 distribution

   Code:

(a)	(b)	(c)	(d)
(ii)	(iv)	(iii)	(i)
(i)	(ii)	(iii)	(iv)
(ii)	(iv)	(i)	(iii)
(iv)	(i)	(ii)	(iii)

7. List 1

   a) Trend

   List 2

   (i) (SD / mean) X 100

b) Coefficient of variation (ii) Normal distribution

c) mean = np (iii) Time series

d) Symmetric distribution (iv) Binomial

Code:

(a)	(b)	(c)	(d)
(ii)	(iv)	(i)	(ii)
(i)	(iii)	(iv)	(ii)
(vi)	(i)	(iii)	(ii)
(iii)	(i)	(iv)	(ii)