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Reg. No. :

Code No. : 7483

Sub. Code : HESM 23

M.A. (CBCS) DEGREE EXAMINATION, APRIL 2016.

Second Semester

Economics

STATISTICAL METHODS

(For those who joined in July 2012 and afterwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL the questions.

Choose the correct answer :

1. Mean is a measure of

- (a) Location (Central value)
- (b) Dispersion
- (c) Correlation
- (d) None of the above

- 2. Out of all measures of dispersion, the easiest one to calculate is
 - (a) Standard deviation
 - (b) Range
 - (c) Quartile deviation
 - (d) Variance
- 3. The term regression was introduced by
 - (a) R.A. Fisher
 - (b) Sir Francis Galton
 - (c) Karl Pearson
 - (d) None of the above
- 4. In the regression line $Y = \alpha + \beta X$, β is called the
 - (a) Slope of the line
 - (b) Intercept of the line
 - (c) Neither (a) nor (b)
 - (d) Both (a) and (b)
- 5. The out coming of tossing a coin is a
 - (a) Simple event
 - (b) Mutually exclusive event
 - (c) Complementary event
 - (d) Compound event
- 6. The height of persons in a country is a random variable of the type
 - (a) Continuous random variable
 - (b) Discrete random variable
 - (c) Neither discrete nor continuous random variable
 - (d) Continuous as well as discrete random variable

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7. A sample consists of
- All units of the population
 - 50% units of the population
 - 5% units of the population
 - Any fraction of the population
8. A selection procedure of a sample having no involvement of probability is known as :
- Purposive Sampling
 - Subjective Sampling
 - Judgement Sampling
 - All of the above
9. The idea of testing of hypothesis was first set forth by
- R.A. Fisher
 - J. Neyman
 - E.L. Lehman
 - A. Wald
10. A test which maximises the power of the test for fixed α is known as
- Optimum test
 - Randomized test
 - Bayes test
 - Likelihood ratio test

PART B — (5 × 5 = 25 marks)

Answer ALL the questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) State the uses of Index numbers.

Or

- (b) From the following information, find the standard deviation of X and Y variable :

$$\sum X = 235, \sum Y = 250, \sum X^2 = 6750, \\ \sum Y^2 = 6840, N = 0.$$

12. (a) The ranks of the same 15 students in two subjects A and B are given below; the number within the brackets denoting the ranks of the same students in A and B respectively.
(1, 10), (2, 7), (3, 2), (4, 6), (5, 4), (6, 8), (7, 3), (8, 1), (9, 11), (10, 15), (11, 9), (12, 5), (13, 14), (14, 12), (15, 13). Use spearman's formula to find the rank correlation coefficient.

Or

- (b) What are the assumptions made in a linear regression?



13. (a) What is the probability that a leap year, selected at random, will have 53 sundays?

Or

- (b) Discuss Bayes' probability and give formula for its calculation.

14. (a) Briefly explain the sampling theory.

Or

- (b) Write the types of Estimation.

15. (a) Write the concept of standard error.

Or

- (b) Following results were obtained from two samples, each drawn from two different populations A and B :

Population	A	B
Sample	I	II
Sample size	$n_1 = 25$	$n_2 = 17$
Sample S.d.	$S_1 = 3$	$S_2 = 2$

Test the hypothesis that the variance of brand A is more than that of B.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL the questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Describe the methods of constructing index numbers.

Or

- (b) The weighted geometric mean of the four numbers 8, 25, 17 and 30 is 15.3. If the weights of the first three numbers are 5, 3 and 4 respectively, find the weight of the fourth number.

17. (a) Calculate the correlation coefficient between the following data :

x : 5 9 13 17 21

y : 12 20 25 33 35

Or

- (b) The regression equations of y on x and x on y are $y = 1.25x$ and $x = 0.64y$ respectively. Where x and y are deviations of x and y from their respective means variance of y is known to be equal to 16. Find
- The coefficient of determination
 - The coefficient of correlation and
 - The variance of x .



18. (a) A bag contains 8 white and 5 red balls. Five balls are drawn at random. What is the probability that 3 of them are red and 2 white?

Or

- (b) Elucidate the characteristics of Binomial distribution.
19. (a) Describe the methods of sampling.

Or

- (b) 600 apples taken at random from a large consignment showed that 200 were damaged. Find
- (i) 95% and
 - (ii) 99% confidence limits for the proportion of damaged units in the consignment.
20. (a) Describe the procedure of testing hypothesis.

Or

- (b) Explain how t-test is applied to test the equality of two population means.
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