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OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE.
DEPARTMENT OF DEMOGRAPHY AND SOCIAL STATISTICS

Name of Examination:

Faculty:

Course:

Title:

Time:

Harmattan Semester, 20010/2011

Social Sciences

DSS 311

Social Statistics I

30 Mins.

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Matric. Number: _____

Name: _____

SECTION A (ANSWER ALL)

- In probability theory, the outcome from some experiment is known as an activity. True or False
- The probability of two or more statistically independent events occurring together or in succession is equal to the sum of their marginal probabilities. True or False.
- The set of all possible outcomes of an experiment is called the sample space for the experiment. True or False.

When a list of events resulting from some experiment includes all possible outcomes, the list is said to be collectively exclusive. True or False.

Events that cannot happen together are called _____

Assume that a die is rolled twice in succession and that you are asked to draw the probability tree showing all possible outcomes of the two rolls. How many branches will your tree have?

(a) 6 (b) 12 (c) 36 (d) 42 (e) 48

- The right and left tails of the normal distribution extend indefinitely, never touching the horizontal axis. True or False.
- The binomial distribution is not really necessary, since its values can always be approximated by another distribution. True or False.
- The principles of simple random sampling are the theoretical foundation for statistical inference. True or False.
- The standard error of the mean is the standard deviation of the distribution of sample mean. True or False.
- When using a chi-square test, we must ensure an adequate sample size, so that we can avoid any tendency for the value of the chi square statistic to be overestimated. True or False.
- An assumption or speculation made about a population parameter is a _____

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- The assumption about a population parameter that we wish to test is the _____. The conclusion we accept when the data fail to support this assumption is the _____.
- The probability of one event occurring, given that another event has occurred is called _____.
- Chi-square tests enable us to test whether more than two population proportions can be considered equal. True or False.
- If the dependent variable in a relationship decreases as the independent variable increases the relationship is _____.
- _____ is a measure of the proportion of variation in the dependent variable that is explained by the regression line.
- If 75 percent of the variation in the dependent variable is explained by the regression line, then the value of r will be about _____.

A statistical technique used to test the equality of three or more population means is called _____.

The principal advantage of multiple regression over simple regression is that it allows us to use more of the information available to us to estimate the dependent variable. T or F.

If $p=0.4$ for a particular Bernoulli process, the calculation $\frac{7!}{3!4!} (0.4)^3(0.6)^4$ gives the probability of getting:

- Exactly 3 successes in 7 trials.
 - Exactly 4 successes in 7 trials.
 - 3 or more successes in 7 trials.
 - 4 or more successes in 7 trials.
 - none of these.
- In which of these cases would the Poisson distribution be a good approximation of the binomial?
 - $n=40, p=0.32$
 - $n=40, q=0.79$
 - $n=200, q=0.98$
 - $n=10, p=0.03$
 - All of these.
 - A binomial distribution may be approximated by a Poisson distribution if:
 - n is large and p is large.
 - n is small and p is large.
 - c is small and p is small.
 - none of these.
 - Which of the following is a necessary condition for use of a Poisson distribution?
 - Probability of 1 arrival per second is constant.
 - The number of arrivals in any 1-second interval is independent of arrivals in other intervals.
 - The probability of 2 or more arrivals in the same second is zero.
 - All of these.
 - b and c but not a.

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Instructions:

Harmattan Semester, 2010/2011

Social Sciences

DSS 311

Social Statistics I

- (1) Answer all the questions in Section B.
- (2) Do not write anything on your question paper expect your Matriculation Number. Your question papers are not transferable and do not cheat.

Time:

2 Hours.

SECTION B

- 1a The data below show the number of health institutions, the monthly expenditure on child care delivery and the number of infant deaths per thousand live births in 12 communities.

Health Institutions	1	3	2	4	2	1	3	2	3	4	3	5
Monthly Expenditure	10	20	15	30	17	12	24	10	19	40	14	13
Infant Deaths	100	92	96	86	95	97	90	98	94	82	62	88

- (i) Determine the response variable(s) (ii) Determine the explanatory variable(s)
 - (iii) Are your variable(s) in (i) and (ii) the same as dependent(s) and independent(s)?
 - (iv) Determine the multiple regression that relate health institutions, monthly expenditure and infant deaths for the communities more than one health institutions and interpret your answer.
 - (v) Calculate the product moment correlation coefficient between your response(s) and other explanatory variables.
- b. Out of 60 applicants to a University, 40 are from the East. If 20 applicants are to be selected at random, find the probability at (a) 10, (b) not more than 2, will be from the East.
- 2a. Find the probability that a student can guess correctly the answers to (a) 12 or more out of 20, (b) 24 or more out of 40, questions on a true-false examination.
- 2b. According to the FRSC, the average number of accident per year in Nigeria is 3.0 per 100,000 population. Find the probability that in a city of 200,000, there will be (a) 0, (b) 2, (c) between 4 and 8, (d) fewer than 3, accident per year.
- 3a. A sample poll of 350 voters from district A and 250 voters from district B showed that 57% and 49%, respectively, were in favour of a given candidate. At a level of significance of 0.05, test that hypothesis that (a) there is a difference between the districts, (b) the candidate is preferred in district A (c) find the respective P values p of the test.
- 3b. On an examination in Demography 12 students in one class had a mean grade of 78 with a standard deviation of 6, with 15 students in another class had a mean grade of 74 with a standard deviation of 8. Using a significance level of 0.05, determine whether the first group is superior to the second group.