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Faculty of Science and Information Technology
Final Examination, Semester: Summer'2018
Course Code: STA 133
Course Title: Statistics and Probability
Course Teacher: All

Time: 2 hrs **Full Marks: 40**

Answer sequentially any three of the following questions including question # 1:

a. A sample of six data entry clerks employed in the Horry County Tax Office revised the following number of tax records last hour: 83, 73, 98, 60, 92 and 84. [3+1]
   i. Compute the coefficient of skewness.
   ii. What is your conclusion regarding the skewness of the data?

b. The following data show the duration of experience of machine operators and their performance ratings given by the number of good parts turned out per 100 pieces. [3+3 +1+1]

Experience (Years)	14	12	18	10	12
Performance Ratings	87	84	89	80	81

   i. Determine the coefficient of determination & interpret your finding.
   ii. Determine the fitted regression model for the given data.
   iii. Estimate the performance rating when an operator has 10 years' experience.
   iv. Draw the scatter plot.

c. i. Suppose a family has two children and one of the children is a boy. Show sample space. What is the probability that both children are boys? [4+4]

   ii. In an exam, two reasoning problems are asked. 45% students solved problem 1, 25% students solved both the problems and 15% students did not solve any problems. How many students who solved the first problem will also solve the second one? What is the probability that a student solved only problem 2?

a. Describe different types of skewness and correlation. Interpret the values if kurtosis = 9 and -3.2. [4+1]

b. A coin is tossed 2 times. What is the sample space of this experiment? Calculate the probabilities of the followings: [3]
   i. At least 1 tail ii. Less than 2 tails, iii. Exact 2 tails.

c. Out of 86 inspected item, it is found that there is 3.5 percent are defected items. If you choose an item, what is probability that it will be non-defective? [2]

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3. a. Write down the difference between: [2+2]
i. Correlation and Regression ii. Simple and multiple regression.

b. Mention the characteristics of correlation coefficient. [1]

c. Finishing time of two workers of given a work for 6 times is given below: [5]

Worker A	10	12	13	15	12	17
Worker B	13	10	12	14	13	17

Which worker will you chose for next assignment? Why?

4. a. States the laws of probability. Write some short notes on: [1+4]
General multiplication rule, Addition rule, conditional probability and joint probability.

b. Growth rate of production from 2011 to 2016 are as follows: 1.2%, 0.8%, 0.25%, 1.25%, 1.5% and – 0.12%. Calculate arithmetic and geometric mean. Find also standard deviation and variance. [5]