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Daffodil International University

Department of Computer Science and Engineering (CSE)
Faculty of Science and Information Technology (FSIT)
Final Examination, Semester: Spring'2018
Course Code: STA133 Course Title: Statistics and Probability
Section: ALL
Course Teacher: ALL

Time: 2.0 hrs **Full Marks: 40**

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

1. a. In an exam, students were sitting for theoretical and practical test. It is found that no student failed in both subject. 85% passed in theoretical and 70% passed in practical test. Calculate probability for a randomly chosen student (i) failed in both test; (ii) passed in both test; (iii) passed in theoretical test, it is confirmed that the student passed in practical test. **1+3+**

b. If average time to get a service in a Bank is 2.5 minutes, what is the probability that you will get a service in less than 2 minutes? **4**

c. A study conducted at. VP1&SU to determine if certain static arm-strength measures have an influence on the "dynamic lift" characteristics of an individual. 5 individuals were subjected to strength tests and then were asked to perform a weight-lifting test in which weight was dynamically lifted overhead. The data are given here, **4+3**

Individual	Arm Strength,	Dynamic Lift,
1	17	71
2	19	48
3	19	88
4	19	75
5	22	91

i. Find the fitted regression equation of Dynamic Lift on Arm-strength.
ii. Calculate the coefficient of determination and also comment on it.

2. a. A tire manufacturer wants to determine the inner diameter of a certain grade of tire. The data are as: 572, 572, 573, 568, 569, 575, and 565. **3+2**
i. Find the coefficient of variation and range.
ii. If the Coefficient of variation of two set of variables like set A is 10 % and set B is 30%.Then comment on that.

b. The probability of a telesales representative making a sale on a customer call is 0.05. Find the probability that- **5**
i. No sales are made in 5 calls
ii. More than 3 sales are made in 10 calls
iii. Average sales in 7 calls

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3. a. Define Binomial probability distribution. Two balls are drawn successively without replacement from a box which contains 4 white balls and 3 red balls. Find the probability that- 5

i. The first ball drawn is white and the second is red ii. Both balls are red

b. A lot of 500 parts produced on 3 machines were inspected and classified into three grades. The results were given in the following table. If a part is selected at random from this lot, then find the following probabilities that: 2+1+1+1

Grade	Machine			
	I	II	III	Total
Satisfactory	95	105	100	300
Rework	19	21	110	150
Scarp	05	15	30	50
Total	119	141	240	500

i. It is a satisfactory part or is produced on machine II.
ii. It is produced by machine III
iii. It is scrapped given that it is produced on machine I.0

iv. It is a rework part and is produced on machine II.

4. a. A random sample of five drivers insured with a company and having similar auto insurance policies was selected. The following table lists their driving experiences (in years) and monthly auto insurance premiums: 4+2

Driving Experience (years)	Monthly Auto Insurance Premium
5	64
2	87
12	50
9	71
15	84

i. Do you expect a positive or a negative relationship between these two variables? Explain your opinion.

ii. Calculate coefficient of determination and comment on it.

b. Illustrate the following terms with examples: 4
Coefficient of determination, Poisson probability distribution, conditional probability, Correlation coefficient.