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Daffodil International University
Faculty of Science and Information Technology
Department of Computer Science and Engineering
Final Examination. Fall 2018

Course Code: STA 133 **Course Title:** Statistics and Probability

Time: 2 Hours **Total Marks: 40**

Answer any 3 questions including question # 1

1. a) A study was made by a retail merchant to determine the relationship between Weekly advertising expenditure and sales. The recorded data are as follows:

Expenditure($)	40	20	27	20	30	50	40	20	50	40	25	50
Sales($)	385	400	395	365	475	440	490	420	560	525	480	510

i. Define dependent and independent variable. For the given data identify dependent and independent variable. 02
ii. Determine the coefficient of correlation and comment on that. 03
iii. Find the equation of the regression line to predict weekly sales from advertising expenditures and interpret the Intercept and Slope co-efficient. 03
iv. Calculate co-efficient of determination and interpret the result. 01
v. Find out residual when the expenditure is 27. 01
vi. Draw scatter diagram and regression equation. Also comment on them. 04

b) Write the function, mean and variance of Binomial and Poisson distribution 02

c) Write a note on kurtosis. 02

d) Marginal probability of traffic congestion and attending in a meeting on time is 0.72 and 0.65 respectively. In addition, the probability of traffic congestion and attending in a meeting on time 0.55. What is the probability that in a confirm traffic congestion day you will attend in a meeting on time? 03

2. a) Interpret $r_{xy} = 0.58$, $r_{yx} = -0.87$, $b_{xy} = -1.25$, $b_{yx} = 1.25$, $b_0 = 0.85$ and MD=1.5. The notations are usual. 03

b) Two cricketers scored the following runs in randomly selected 10 one-day matches:

Player A	42	32	40	45	17	83	59	64	76	72
Player B	95	3	28	70	31	14	82	0	59	108

i. Who is the consistent player? 06
ii. Suppose you are in the selection board, which player you will choose for next match? Why? 01

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3. a) Write the model of simple and multiple linear regression. 02

b) Consumers were surveyed on the relative number of visits to a store (Often, Occasional, Never) and if the store was located in an enclosed mall (Yes, No). The results of the survey are given below:

		Enclosed Mall		Total
		Yes	No	
Visits	Often		20	80
	Occasional	25	/	60
	Never	5	50	
Total		90	105	195

i. Are the number of visits and enclosed mall variables independent? Why? 02
ii. Find out the probability of a consumer often visits or store is enclosed to mall. 02
iii. Find out the probability that consumers occasionally visit the store given that it is not enclosed mall. 02
iv. What is the probability of a consumer never visit a mall? 02

4. a) What are the differences between correlation and regression 02
b) Discuss the type of skewness. 02
c) Show sample space for tossing a coin three times. 05
Find the probability of getting (i) exact 1 head and 2 tails (ii) at most 3 heads or 3 tails (iii) at least 1 head