JK Lakshmipat University, Jaipur
Institute of Management
End Term Examination
(December 2019)

Programme: MBA–II Term/Ph.D
Time: 2 Hours

Course: ID2112: Data Analysis For Decisions
Max Marks: 40

Instructions: Attempt all questions. Statistical Tables shall be provided on request.

1. State the appropriate null and alternate hypotheses (symbolically as well as in narrative) for following scenarios: (6 marks)
   i) An HR manager wishes to determine whether the productivity of senior and junior engineers are the same.
   ii) A retailer wants to determine whether sales are better in the first fortnights of months than the second fortnights.
   iii) An advertising researcher wonders whether the fuel efficiency of a brand of car is significantly less than 25 kmph as stated in the advertisement.

2. An article in *Business Week* describes how three online news services now supply web surfers quick information on developing stories. Suppose that a random sample of users is available from the country. Data are shown in the table below. Is there evidence that the three web news services have different success rates in different regions of the country? Test at 5% level of significance. (6 marks)

	Northeast	South	West	Midwest
Goggle News	78	15	109	65
PBS Online	115	10	88	50
New York Times	208	3	52	40

3. Out of two independent samples, the first with 60 elements had a mean of 86 and a standard deviation of 6, while the second with 75 elements had a mean of 82 and a standard deviation of 9. Compute the standard error of difference between the two means. Also, at $\alpha = 0.01$, test whether the two samples can be considered to have come from the same population. (6 marks)

4. A University is contemplating whether to continue with the minimum attendance requirement of 75% for appearing in the examination or not. A survey of 150 students indicated that only 42 of them were in favor of attendance requirement. A similar survey done last year showed that 5% of the students were in favor. At a 5% level of significance, can we conclude that the students' attitude towards attendance requirement has changed? (6 marks)

5. At $\alpha = 0.10$, can we conclude that the following 200 observations follow a Poisson distribution with $\lambda = 3$? (6 marks)

# of Calls received per hour	0	1	2	3	4	5 or more
# of hours	10	28	49	43	39	31

6. Marks obtained by 10 students in two tests on statistics are as shown below:

Student ID	1	2	3	4	5	6	7	8	9	10
Marks in Test 1	36	46	22	32	32	16	29	37	41	19
Marks in Test 2	42	44	36	43	21	22	24	32	46	38

a) Create a scatter plot for marks in Test 1 and Test 2. Looking at the scatter plot, comment upon the relationship between marks in Test 1 and Test 2. (2 marks)

b) Compute Pearson's correlation coefficient between marks in Test 1 and Test 2. Also, rank Order the students in both the tests and compute Spearman's rank correlation coefficient. (4 marks)

c) Find the equation of a regression line to predict marks in Test 2 from the marks in Test 1. (4 marks)

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