LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Com. DEGREE EXAMINATION – **COMMERCE**

FIRST SEMESTER – NOVEMBER 2016

16PCO1MC01 - ADVANCED BUSINESS STATISTICS

Date: 02-11-2016   Dept. No.   Max. : 100 Marks
Time: 01:00-04:00

Part-A   (10 x 2 marks)
Answer ALL questions.
(Use the enclosed Table: 'Working Habits Survey Data' to answer Qs. 1 and, 2)

1) a) Identify any two nominal variables.(1 mark);

   b) What is the 'range' for the variable 'WorkPro'? (1mark)

2) Calculate the mean for the variable 'WorkPro' for 'AGE' values Above 40 year

3) Explain 'Control Limits'.

4) Explain 'Alternate' Hypothesis.

5) What is a 'Z' distribution?

6) Identify two benefits of a 'Transforming' data.

7) Mention any two benefits of a random sample.

8) Comment on the value of an 'XY' plot.

9) Explain Beta error.

10) What is the probability of a card drawn from a pack of cards will be both a '9' and a 'Queen'?

Part-B   (4 x 10 = 40 marks)
Answer any FOUR questions.
(Use the enclosed Table: 'Working Habits Survey Data' to answer Qs. 11 and, 17)

Develop an interval variable combining W1Posiw, W2Tim, & W3Frenat, W4Pro variables.

Code and Label it appropriately (2 marks). Calculate its Variance (4 marks). Prepare

frequency tables for the variables, 'W3Frenat & W4Pro'.(4 marks)-PLEASE CHECK TABLE

AT THE END.

12) A number of Academicians in a State were selected at random to investigate their Leisure
time habits. Their patronage for four Leisure time activities, were verified across three
Universities. The results of the survey are shown below. Test the hypothesis (level of
significance of 0.01) that the choice of Leisure Time experience is independent of University
Type.

LEISURE TIME CHOICES	UNIVERSITY CATEGORIES		
	I	**II**	**III**
MOVIES	29	30	42
EATING	34	34	38
READING	47	62	27
DREAMING	33	37	41

TABLE SHOWING LEISURE TIME CHOICES AMONG ACADEMICIANS IN THREE UNIVERSITIES

Answer any **ONE** of the following:

Pascal's triangle.

b. A sample of 169 mobiles produced by an Indian Brand is taken from a lot. The average life of a mobile key pad is known to be 8lakh key presses, with a standard deviation of 20000. Test whether the sampled mobiles are chosen from a mobile population with an average of 10 lakh keystrokes. Establish 99% confidence limits within which the average life of mobile keypads are expected to lie.

c. A bag contains 4 Green and 6 Yellow balls. Two drawings of 4 balls are made such that a) the balls are replaced before the second trial and b) the balls are not replaced before the second trial. Find the probability that the first drawing will give 2 Green and the second 2 Yellow balls in each case.

14) Explain the SignTest using an example. How does it compare with the Mann Whitney U Test?

15) A) On the basis of the following information compute: 1) r23.1 ii) r13.2, and iii) r12.3: r12 = 0.7; r13 = 0.63; r23 = 0.52   (6 marks)

B) zero order, first order, and second order coefficients (4 marks)

16) An Arts and Science College in Chennai, has two popular courses, BBA(France) and BBA (Italy), in their Commerce Department. The former has 30% of the total students registered and the latter, 70%. 5% of the BBA(F) students, and 2% of the BBA(I) students fail in the Statistics paper. If a student who has failed in Statistics, is drawn from the Commerce department at random, what is the probability that the failed candidate belong to the BBA(F) or the BBA(I) course?

(17) What is the correlation between 'WorkPro' and 'Age'? (CHECK TABLE AT THE END)

Part-C   (2 x 20 = 40 marks)
Answer any TWO questions.
(Use the enclosed Table: 'WORKING Habits Survey Data' to answer Qs. 18 C)

(18) Answer any TWO of the following:

What is the utility of 'STANDARD ERROR' in Statistics?

A Private Restaurant in Chennai had the average weight of a standard veg. meal to be 600 gms., with a standard deviation of 250 gms. A random sample of 28 meals were drawn from the Nungambakkam Branch. (i) What is the probability that the arithmetic mean of the sample exceeds 650 gms. Interpret the result.   (ii) Find the value of sample arithmetic mean within which the middle 95% of all sample means will fall.

Attempt a regression analysis, using 'Sleep Time (P7Sleep), as the independent variable, and 'Healthy Work Habits (WorkPro)' as the dependent variable. Report the explained variance, unexplained variance and the R^2 value.

Calculate Trend values by the method of 'Least squares'.from the data given below.

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Value	372	357	367	352	362	377	392	407	447	462

Estimate the projected value for 2018, and plot the entire trend series on an XY graph. (You need not use a graph paper)

The number of students coming late on an average day in a city school is presented as follows. 550 students were chosen for the exercise

No. of minutes late	0	1	2	3	4	5	6
No of Students	315	121	83	20	6	3	2

On the basis of this information, can it be concluded that the errors are distributed according to the Poisson probability law?

The following are a random list of Loss making customers for three Mumbai based Chemical Manufacturing firms.

Business-A:		220	168	195	155	153	35	
Business-B:		195	167	219	74	153	160	111

| Business-C: | | 220 | 72 | 115 | 265 | 74 | | |

Use the Krushkal Wallis or H test, at the 0.05 level of significance to test the null hypothesis that the three Business Houses are equally effective.

Working Habits Survey Data

S. No	P1AGE	P2Gender	P3Relign	P4Reside	P5Educ	P6Income	P7Sleep	W1POSIW	W2TIM	W3FEWNat	W4PRO	WORKPRO
1	52	2	3	3	2	2	8	5	7	7	6	25
4	51	1	1	1	1	2	8	5	7	5	5	22
3	52	2	2	3	1	4	9	5	7	5	5	22
4	54	2	2	3	3	3	10	7	7	7	7	28
5	51	2	1	1	3	2	10	7	7	7	7	28
6	51	1	1	3	4	1	8	7	7	6	7	27
7	53	1	1	1	3	3	2	7	7	3	7	24
8	51	1	1	3	2	2	8	5	6	3	6	20
9	51	1	1	3	2	2	8	5	6	5	6	22
10	54	2	1	1	4	3	2	7	7	5	5	24

Description of Variables:

CODE	VARIABLE LABELS		CODE	VARIABLE LABELS
P1Age	1. Age (in Years)			The following variables are coded '1' (Strongly Disagree to '10' = Strongly Agree)
P2Gender	2. Gender (1 Male; 2= Female)		W1POSIW	POSITIVE VIBRATION
P3Relign	3. Religion (1= Hindu; 2= Xian; 3= Muslim)		W2TIM	TIMELINESS
P4Reside	4. Your residence area		W3FRENAT	FRIENDLY NATURE
P5Educ	5. Educational Qualification (Years of (EDUCATION)) 1=SCHOOL; 2-UG; 3-PG; 4-PG+		W4PRO	PROFESSIONAL
P6Income	6. Monthly income (in '00,000's of Rupees)		WORKPRO	Combined values of variables W1+W2+W3+W4
P7Sleep	7. Number of hours of sleep/day			