



# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

## M.Com. DEGREE EXAMINATION – COMMERCE

FIRST SEMESTER – APRIL 2017

### 16PCO1MC01- ADVANCED BUSINESS STATISTICS

Date: 02-05-2017  
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

#### Part-A (10 x 2 marks)

**Answer ALL questions.** (Use the enclosed Table: 'Health Study Project' to answer Qs. 1 to 3, & 6)

0. What are the 'ranges' for the variables 'NoStress', & 'GoodHeal'?
1. The  $\bar{X}$  for the variable 'NoStress' for 'EDUC' (refer variable 'EDUC').
2. Combine the variables 'HEA1' and 'HEA2,' and 'HEA3,' for respondents who spent 2-4 hours on Exercise and Leisure' (refer variable 'EXERCLEI').
3. Mention any two Benefits of Transforming Data
4. Mention any two Utilities of a Range Chart.
5. Identify an ordinal and a Interval variable.
6. What is 'd. f'?
7. State two properties of a kurtic curve.
8. Explain 'beta' error.
9. Define a Binomial Distribution.

#### Part-B (4 x 10 = 40 marks)

**Answer any FOUR questions.**

(Use the enclosed Table: 'Health Study Project' to answer Qs. 15 and 16)

11) The Contingency Table below summarises the results obtained in a study conducted on the performance of three brands of Electric Cars among selected users in Delhi & Chennai. Test appropriate Hypothesis.

Performance (Mileage per UNIT CHARGE)	ELECTRIC CAR Brands			
	A	B	C	Total
less than 25	18	17	15	50
25 and above	32	43	45	120
Total	50	60	60	170

(Table Values of  $\chi^2$ : for 2 d. f. = 5.99; and 9.21, at 5%, and 1% sig. levels, respectively.)

12) The simple correlation coefficients between 'cleanliness' (X1), 'no. of tourists' (X2), and 'good food' (X3), are  $r_{12} = 0.7$ ,  $r_{13} = 0.6$ , and  $r_{23} = 0.8$ . Calculate partial correlation coefficient  $r_{13.2}$ , and  $R_{2.13}$ .

13) Explain Coefficient of Variation, using an example.

14) The following are the numbers of hours which 10 NATIONAL Athletes practiced for an Athletic event, and the scores they obtained:

No. of hours of Practice (x)	5	2	8	10	7	2	13	10	5	3
Score (y)	128	116	151	144	142	126	161	157	105	128

Calculate Rank correlation; and test at 0.05 level of significance.

15. Develop frequency Tables for the variables 'AGECAT', 'EXERCLEI' and 'NOSTRESS.' (6 marks); b) Explain 'Moments'. (4 marks).

16. Combine the three variables 'HEA1' and 'HEA2,' and 'HEA3,' and assign it a new variable code and label, 'HEAACT,' and 'HEALING ACTIVITIES,' respectively. Check for any association between the variables 'HEAACT' and 'GDHEAL' for the 'MALE' respondents (refer variable 'GENDER').

17. The following is a random list of accreditation scores for three City Colleges, for the Academic Year 2016.

- College A                      374, 325, 367, 295, 356
- College B:                     440, 355, 379, 264, 313,
- College C:                     415, 234, 285, 414, 215, 295, 265

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

**Part-C (2 x 20 = 40 marks)**  
**Answer any TWO questions in about four pages each.**

(Use the enclosed Table: 'Health Study Project' to answer Qs. 18)

(18) Calculate the cause effect relationship between 'GDHEAL' (Dependent) and 'NOSTRESS'. Report the R<sup>2</sup> value. What is the 'GDHEAL' score for 'NOSTRESS' values of 20? Interpret these results.

(19) Calculate the seasonal indices by the ratio to the Moving Average Method (ADDITIVE) from the following temperature data related to an IT Firm in Bangalore.

**PROFITABILITY Data for 5 Years**

Year	Quarters			
	I	II	III	IV
2012	30	29	30	34

## PROFITABILITY Data for 5 Years

2013	32	31	32	34
2014	33	31	34	35
2015	35	33	33	36
2016	36	34	27	30

(20) (a) The incidence of SENIOR CITIZEN'S in Chennai affected by FEAR due to Floods was 65%. What is the probability that out of 6 SENIOR CITIZEN'S in your hometown, 4 or more will have FEAR due to Floods?

(b) Answer any ONE of the following: a) Mann Whitney U Test b) Parametric Tests.

### SALES DATA (in 'CRORES) WITHIN SALES STRATEGIES, and COUNTRY ZONES

	New Age Sales Strategies			
Country Zones	BI	SAM	TE	HB
NORTH	230	260	280	380
SOUTH	220	300	330	300
WEST	270	180	175	210

(21) (a) The following SALES data related to the NEW AGE SALES STRATEGY initiatives in three different ZONES in a country. The SALES STRATEGIES were, Better Interiors(BI); Store Ambience(SAM); Tech Environments(TE); and Healing Behaviours(HB). Find using 2 wayAnova, whether there are differences in SALES DATA between Sales Strategies, as well as for Zonal type.

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Case No	AgeCat	Gender	EDUC	TVwatch	Pro1	Pro2	Pro3	GoodEco	Proachom
1	1	1	2	2	6	6	3	14	19
2	1	2	2	3	4	5	4	13	14
3	1	1	2	1	4	5	6	14	11
4	1	2	2	1	5	6	6	14	16
5	2	2	2	3	4	3	5	8	14
6	1	1	2	2	6	7	7	8	19
7	2	2	2	3	7	6	5	13	18
8	1	2	2	3	6	7	4	8	15
9	2	2	1	1	7	3	3	15	19
10	2	1	1	3	4	6	5	14	13
11	2	2	1	1	7	5	6	10	15
12	2	2	1	2	4	5	4	11	17
13	2	1	3	1	7	3	4	14	17
14	2	2	1	1	7	6	6	13	13
15	2	2	1	2	7	3	6	15	18
16	2	2	1	3	5	6	4	14	16
17	2	2	1	3	7	6	7	13	16
18	2	1	1	1	4	3	3	15	16
19	2	1	2	1	6	6	6	13	18
20	3	1	1	3	7	7	5	14	14
21	2	1	1	1	4	6	7	14	15
VARIABLE DEFINITIONS									
VARIABLE No	Variable Code	Variable	Label	Value	VARIABLE No.	Variable Code	Variable	Label	Value
1	Gender	Gender	Male	1	4	HEA1	YOGA	10 POINT SCALE Applies to Nos. 4, 5, & 6	
			Female	2	5	HEA2	ORGANIC FOOD	Strongly Agree	10
					6	HEA3	MEDITATION	Strongly Disagree	1
2	Educ	Educational Qualification	UG	2	7	NOSTRESS		HEALING EMOTIONS	
			PG	3	8	GDHEAL GOOD HEALTH		BALANCED HEALTH	
3	EXERCISE	EXERCISE & LEISURE PER DAY		< 2hrs	1	2-4 hours	2	above 4 hours	3