

**LOYOLA COLLEGE (AUTONOMOUS) CHENNAI - 600 034**

M.COM DEGREE EXAMINATION

Ist Semester-NOVEMBER 2014

**CO-1812 - ADVANCED BUSINESS STATISTICS**

DATE:

MAX: 100 MARKS

**Part-A****(10 x 2 marks)****Answer ALL questions.(Use the enclosed Table: 'Stress Study' to answer Qs. 1 to4)**

- (1) Identify an Interval and a nominal variable.
- (2) What is the 'range' for the variables 'HelpNei', &'ProacHom'? ;
- (3) Calculate the for the variable 'HelpNei' for 'Males' (refer variable 'GENDER').
- (4) Combine the variables 'Stress1' and 'Stress2,' and 'Stress3,' for students who sleep between '5-8 hours' (refer variable 'SleepCat').
- (5) How do you test a hypothesis?
- (1) Utilities of a Control Charlot.
- (2) What is 'd. f'?
- (3) State two properties of a normal distribution curve?
- (4) Explain ' ' error.
- (5) What is a Poisson Process?

**Part-B****(4 x 10 = 40 marks)****Answer any FOUR questions.**

(Use the enclosed Table: 'Stress Study' to answer Qs. 13 and 14)

- (11) Explain Coefficient of Variation using an example.
- (12) Calculate Yules's Coefficient of Association between 'Maths Orientation', and 'Achievement in Life' of an Alumni Batch of 550 students from an Engineering College in Chennai.

**TABLE RELATING MATHEMATICS ORIENTATION & ACHIEVEMENT IN LIFE**

MATHS ORIENTATION	ACHIEVEMENT IN LIFE		
	HIGH ACHIEVER	LOW ACHIEVER	TOTAL
MATHS	250	150	<b>400</b>
NON-MATHS	50	100	<b>150</b>
	<b>300</b>	<b>250</b>	<b>550</b>

- (13) a) Develop frequency Tables for the variables 'AGECAT', 'SLEEPCAT' and 'HELPNEI.' (6 marks); b) Explain 'Moments'. (4 marks)
- (14) Combine the three variables 'Stress1' and 'Stress2,' and 'Stress3,' and give it a new variable code and label, 'StressLev,' and 'Being Stressed in Life,' respectively. Check for any association between the variables 'StressLev' and 'ProacHom' for the 'Post Graduate' students (refer variable 'EDUC').
- (15) The following are a random list of match scores for three IPL cricket teams.
- First IPL Team: 335, 283, 310, 270, 268, 275
- Second IPL Team: 310, 282, 334, 189, 268,
- Third IPL Team: 335, 187, 230, 380, 189, 226, 150
- Use the Kruskal Wallis or H test, at the 0.05 level of significance to test the null hypothesis that the three Teams are equally effective.
- (16) The incidence of young students in Chennai to be affected by Dengue Fever (indicated by diarrhoea, vomiting etc) is 65%. What is the probability that out of 6 students in your neighborhood, 3 or more will contract the disease?
- (17) Examine through a  $\chi^2$  test whether there is any relationship between 'Gender' and 'Email Brand' from the following data.

**Table Showing Relationship Between Gender and Email Branding**

Email Brand	Gender	
	Males	Females
Gmail	40	60
Yahoo	35	25
Rediff	25	15

**Part-C**

**(2 x 20 = 40 marks**

**Answer any TWO questions in about four pages each.**

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

- (18) Calculate the cause effect relationship between 'ProacHom' (Dependent) and 'HelpNei'. Report the  $R^2$  value. What is the 'ProacHom' score for 'HelpNei' values of 3? Interpret these results.

- (19) Calculate the seasonal indices by the ratio to the Moving average method (ADDITIVE) from the following Sales data related to an Indian-Soft drink company in Chennai.

**Table Showing Quarterly Sales Data for 5 Years**

Year	Quarters			
	I	II	III	IV
1	12	11	12	16
2	14	13	14	16
3	15	13	16	17
4	17	15	15	18
5	18	16	9	12

- (20) Answer any TWO:

- Components of a Time Series
- Non-parametric tests
- Benefits of Transforming Data
- Cumulative Frequency polygon / Ogive.

- (21) (a) The following productivity data relates to the yield of four age categories of workers in three different software companies. Find using 2 way Anova, whether there is a significant difference between the mean productivity of the Software workers as well as for company type. (15 marks)

**Table Showing Productivity Data for Software Worker Categories and Company Type**

Company Type	Categories of Software Workers			
	Kumar	Ashita	Blair	NaMo
TATA	200	230	250	350
BIRLA	190	270	300	270
McKINSEY	240	150	145	180

- (b) What are the key differences between the 2-tailed and 1-tailed tests of hypothesis? (5 marks)

## Stress Study

Case No	AgeCat	EDUC	SleepCat	Gender	Stress1	Stress2	Stress3	HelpNei	ProacHom
1	1	1	2	1	5	4	5	9	15
2	1	1	1	1	2	3	2	8	10
3	1	1	2	1	2	3	1	9	7
4	1	1	2	1	4	4	4	9	12
5	2	1	2	1	2	4	3	3	10
6	1	1	2	1	4	1	1	3	15
7	2	1	1	1	5	4	3	8	14
8	1	1	1	1	4	1	2	3	11
9	2	2	1	2	5	5	5	10	15
10	2	2	1	2	5	4	3	9	9
11	2	2	2	1	5	2	4	5	11
12	2	2	2	1	2	3	3	6	13
13	2	2	2	1	5	5	2	9	13
14	2	2	2	1	5	4	4	8	9
15	2	2	3	1	5	5	3	10	14
16	2	2	1	1	2	4	2	9	12
17	2	2	2	1	5	4	1	8	12
18	2	2	2	2	4	5	1	10	12
19	2	3	2	2	4	4	4	8	14
20	3	3	2	2	5	4	3	9	10
21	2	3	2	2	2	4	2	9	11

### VARIABLE DEFINITIONS

No.	Variable Code	Variable	Label	Value	No.	Variable Code	Variable	Label	Value
1	Gender	Gender	Male	1	5	Stress2	Agitated Emotion	Strongly Agree	5
			Female	2				Agree	4
								No-opinion	3
2	Educ	Educational Qualification	UG	1	6	Stress3	Agitated Body	Disagree	2
			PG	2				Strongly Disagree	1
			Others	3				Strongly Agree	5
3	Sleep	Categories of Sleep	< 5hrs	1				Agree	4
								No-opinion	3
			5-8 hours	2				Disagree	2
			above 8 hours	3				Strongly Disagree	1
4	Stress1	Agitated	Stressful	5	7	HelpNei	Helpful	Combination of	