Time allowed: 2 hrs 30 min   Max Marks: 50

Roll No: _____

Instruction: Students are required to write Roll No on every page of the question paper, writing anything except the Roll No will be treated as **Unfair Means.** In case of rough work please use answer sheet.

Sections	No. of Questions to attempt	Marks	Marks
A	3 out of 5(Short Questions)	5 marks each	3*5 = 15
B	2 out of 3 (Long Questions)	10 marks each	2*10= 20
C	Compulsory Case Study	15 marks	15
		Total Marks	50

Section A

A1. Business research methods are tools for decision making in the hands of a researcher. Justify the statement.

A2. What is reliability? How a researcher can handle the issue of reliability?

A3. Outline a research design using observation for each of the following situations:

    i.   A bank wishes to collect data on the number of customer services and the frequency of customer use of these services.

    ii.   A state government wishes to determine the driving public's use of seat belts.

A4. Design a complete questionnaire to evaluate a new South Indian fast food restaurant.

A5. A manufacture would like to survey users to determine the demand potential for a new power press. The new press has a capacity of 500 tons and costs$22500. It is used for forming products from lightweight and heavyweight steel and can be used by automobile, construction equipment, and major appliance manufacturers.

    a) Identify the population and the sampling frame that could be used.

    b) Describe how a simple random sample can be drawn using the identified sampling frame.

c) Which sampling technique would you recommend? Why?

Section B

Data Description

A department store chain wanted to examine the effect of the level of in-store promotion and a storewide coupon on sales. In-store promotion was varied at three levels; high (1), medium (2) and low (3). Couponing was manipulated at two levels. Either$20 storewide coupon was distributed to potential shoppers (denoted by 1) or it was not distributed (denoted by 2). The experiment was run for 2 months. Sales in each store was measured, normalized to account for extraneous factor (store size, traffic etc.) and converted to a 1-to-10 scale. In addition a qualitative assessment was made of the relative affluence of the clientele of each store, again using a 1-to-10 scale. In these scales, higher number denote higher sales or more affluent clientele.

The data file contains 37 observation, data fields (variables) used are:

Sl.	Variable	Description	Value Range
1	store_no	Store Number	None
2	Coupon	Coupon level	1 coupon given 2 No coupon given
3	Promotion	In-store promotion	1 High 2 Medium 3 Low
4	sales	Sales	1-to-10 scale
5	clientele	Clientele Rating	1-to-10 scale

B1 For the below data analysis frame the research problem, steps of Hypothesis testing and decision that will be taken by the department store.

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Group Statistics

	Coupon	N	Mean	Std. Deviation	Std. Error Mean
Sales	No	15	8.6793	3.61520	.24696
	Yes	22	4.7279	2.90280	.58419

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Sales	Equal variances assumed	32.377	.000	-11.175	36	.000	-6.04857	.54124	-7.11122	-4.98591
	Equal variances not assumed			-9.537	36	.000	-6.04857	.63425	-7.29771	-4.79942

B2. Using the summary statistics provided below, assess the normality of variable SALES separately for coupon given and No coupon given case. Frame the proper hypothesis and interpret it from the below table.

Tests of Normality

Coupon		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Yes	Sales	.058	22	.002*	.144	22	.004
No	Sales	.136	15	.200*	.958	15	.666

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

B3. Following are the SPSS regression outputs, comment on the regression model.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.848[a]	.719	.708	.938	1.489

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| a. Predictors: (Constant), Clientel |
| b. Dependent Variable: Sales |

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	62.847	1	62.847	71.475	.000
	Residual	24.620	35	.879		
	Total	87.467	36			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.605	.318		8.202	.000
	Clientel	.343	.041	.848	8.454	.000

a) Is the model statistically significant, comment with proper explanation?

b) Interpret R, R Square. What does the coefficient of determination indicate?

c) What is the regression equation?

SECTION C

Case # Frozen Pizza Targets Teens

McCain Foods Limited is one of the most recognizable and popular brand names in frozen food items. This company was founded in Florenceville, New Brunswick, in 1957, and today it is the world's leading producer of French fries and various frozen food items.

One of McCain's most well-known and well-liked frozen food products is its frozen pizza. In 1998, McCain introduced Crescendo Rising Crust Pizza, its first rising crust pizza. The concept of a rising crust pizza was developed in order to replicate as much as possible the taste and look of takeout pizza. However, sales for this pizza were not as McCain originally anticipated. This was due to the fact that just a few months after the Crescendo introduction, Kraft introduced its Delissio frozen pizza, and with extensive advertising, Delissio became the brand leader while McCain's Crescendo followed in second place.

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In 2016, McCain's research experts concluded that the main reason for Crescendo's lagging leadership in its field was its lack of appeal and absence of a "cool factor" with the teenage market. Teenagers were not able to relate to the Crescendo Rising Crust Pizza because they did not see it as a cool and trendy product. As such, McCain needed to change its image in order to attract the important teenage market.

a) Design a suitable research process to analyze the problem.

b) McCain's is considering further increasing in its market share. Define the management decision problem.

c) According to the McCain's Vice President of marketing; discount available, healthy ingredients, taste, and price are all independent variables that affect the preference for a pizza. Assume that in a survey, each of the leading pizza brand is evaluated on each of the independent variable using a 7-point scale with 1 = poor and 7 = excellent. Preference for pizza is also measured on a 7-point scale with 1 = not at all preferred and 7 = greatly preferred.

What statistical technique(s) would you use to answer the following questions?

(i) Is brand preference related to each of the independent variables considered individually?

(ii) Is brand preference related to all the independent variables considered simultaneously?