

Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2018

Course: Research Methodology and Report Writing

Programme: BBA AVO

Time: 03 hrs.

Instructions:

Semester: III

CC: BBCQ123

Max. Marks: 100

SECTION A

S. No.		Marks	CO																																							
Q 1	<p>Two competing brands A & B were being tested by a data scientist. To do so a sample data on preferences was collected on a seven point likert scale. Having collected the data, t test was conducted to see whether actual differences exist in terms of preferences. The results of the test are presented below:-</p> <table border="1"><thead><tr><th colspan="3">t-Test</th></tr><tr><th></th><th>Brand A</th><th>Brand B</th></tr></thead><tbody><tr><td>Mean</td><td>1.98</td><td>4.11</td></tr><tr><td>Variance</td><td>0.453</td><td>0.96</td></tr><tr><td>Observations</td><td>9</td><td>9</td></tr><tr><td>Pooled Variance</td><td>0.64</td><td></td></tr><tr><td>Hypothesized Mean Difference</td><td>0</td><td></td></tr><tr><td>df</td><td>16</td><td></td></tr><tr><td>t Stat</td><td>4.79</td><td></td></tr><tr><td>P(T<=t) one-tail</td><td>0</td><td></td></tr><tr><td>t Critical one-tail</td><td>1.75</td><td></td></tr><tr><td>P(T<=t) two-tail</td><td>0</td><td></td></tr><tr><td>t Critical two-tail</td><td>2.12</td><td></td></tr></tbody></table> <p>As a part of your answer</p>	t-Test				Brand A	Brand B	Mean	1.98	4.11	Variance	0.453	0.96	Observations	9	9	Pooled Variance	0.64		Hypothesized Mean Difference	0		df	16		t Stat	4.79		P(T<=t) one-tail	0		t Critical one-tail	1.75		P(T<=t) two-tail	0		t Critical two-tail	2.12			
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	<p>a: Explicitly write the underlying null and alternate hypotheses of the test. Write them both mathematically and in statement form</p>	5	2																																							
	<p>b: Critically examine and interpret the results. What inference must be drawn from the results obtained?</p>	5	3,4																																							

Q 2	Exemplify the types of measurement scales used while capturing data for research	10	2
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SECTION B

Q 3	Describe the steps involved in problem definition?	10	1
	Exemplify various types of research	10	1

SECTION-C

Q Independent random samples of marks were selected from three classes namely LSCM, OC and General management. The subjects were then subjected to a presentation on aptitude building . The objective of the experiment was to see whether three classes have the similar levels of intelligence or not. After the presentation, all three classes were subjected to a written test and the marks obtained were recorded. The obtained data were then subjected to analysis of variance and the results found were below:-

Groups	Sum	Average	Variance
LSCM	407	40.7	9.788889
OC	360	36	9.333333
General management	300	30	2.666667

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	575.2667	2	287.6333	39.60275	9.34E-09	3.354131
Within Groups	196.1	27	7.262963			
Total	771.3667	29				

As a part of your answer:

	a: Categorically write the concerning null and alternate hypotheses.	5	2
	b: Is there sufficient evidence to reject null hypothesis? Substantiate.	5	2,3

c: What was the total sample size in this study? What recommendations can follow the results?

5

4

SECTION-D

Q

A retailer is investigating his past sales, advertising expenditure and number of salespeople employed data. He sets up a linear regression model to see the relationship of advertising and sales people employed onto sales and finds following results.

<i>Regression Statistics</i>	
Multiple R	0.882
R Square	0.778
Adjusted R Square	0.704
Standard Error	1.5066
Observations	9

ANOVA					
	<i>d</i> <i>f</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p value</i>
Regression	2	47.93555806	23.96777903	10.55849491	0.010833
Residual	6	13.6199975	2.269999583		
Total	8	61.55555556			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	9.957632	3.123798548	3.187668	0.0188994
Ad Expenses	5.2316129	1.42500293	3.6712994	0.0104397
Salespersons	0.1280192	0.24482654	0.5291613	0.6195961

As a part of your answer

a) Give a detail note on the model used by the analysis including its assumptions. Explicitly write the model obtained mathematically.

15

1,3

b) Interpret the results obtained.

10

3,4

c) Explicitly mention any two implications to the retailer based on obtained results

5

4