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UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End term Examination, May 2018

Program:	BBA AM/LM/FT/MM	Semester –	IV
Subject (Course):	research methodology & report writing	Max. Marks	: 100
Course Code :	BBCQ 123	Duration	: 3 Hrs
No. of page/s:	3		

Section -A

Attempt all questions

Q.1. 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:-

t-Test		
	Brand A	**Brand-B**
Mean	1.98	4.11
Variance	.453	.96
Observations	9.00	9.00
Pooled Variance	.64	
Hypothesized Mean Difference	0.00	
df	16.00	
t Stat	4.79	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.75	
P(T<=t) two-tail	0.00	
t Critical two-tail	2.12	

a. Explicitly write the underlying null and alternate hypotheses of the test. Write them both mathematically and in statement form.
b. Critically examine and interpret the results. What inference must be drawn from the results obtained?

Q.2. Elucidate the research process in detail.

[10 Markes]

Section-B

Attempt all

Q.3. Describe the steps involved in problem definition?

[10 marks]

Q.4. Explain and exemplify various types of research in detail?

[10 marks]

Section-C

Q.5. 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	Count	Sum	Average	Variance
LSCM	10	407	40.7	9.788889
OC	10	360	36	9.333333
General management	10	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.
b) Critically interpret the results.

[7.5 * 2 =15 marks]

Q.6. Exemplify the various sampling techniques in detail?

[15 marks]

Section-D

Q.7. 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.

Regression Statistics	
Multiple R	0.882460482
R Square	0.778736503
Adjusted R Square	0.704982004
Standard Error	1.506651779
Observations	9

ANOVA					
	df	*SS*	*MS*	*F*	*p value*
Regression	2	47.93555806	23.96777903	10.55849491	0.010833
Residual	6	13.6199975	2.269999583		
Total	8	61.55555556			

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	9.957632733	3.123798548	3.18766802	0.018891894
Ad Expenses	5.231612429	1.42500293	3.67129942	0.010438097
Salespersons	0.128091192	0.24482654	0.523191613	0.619592061

[10*3 = 30 marks]

As a part of your answer

a. Give a detail note on the model used by the analysis. Explicitly write the model obtained mathematically.
b. Interpret the results obtained.
c. Explicitly mention any two implications to the retailer based on obtained results.