INDIAN INSTITUTE OF MATERIALS MANAGEMENT

Research Methodology

Date : 15.6.2010	**Max Marks: 100**
Time: 10.00 am to 1.00 pm	**Duration: 3 hours**

Instructions:

1. PART A : Contains 4 main questions (8 sub questions) .   Total 32 marks

2. PART B: Answer any three questions out of 5. Each carries 16 marks.
                                                                Total 48 marks
3. PART C is Case Study (Compulsory)   Total 20 Marks

Part A

1.   Select Correct Answer

   a)   Criteria of Good Research

         i)   Purpose is clearly defined
         ii)   Purpose is spelt out but to define before final result
         iii)   Validity of the data may not be clearly checked

   b)   Primary data can be collected

         i)   Either through experiment or through survey
         ii)   From journals and periodicals
         iii)   Government data sources

   c)   Important scaling techniques (give priority of two most important)

         i)   Arbitrary Scale
         ii)   Rating Scale
         iii)   Differential Scale
         iv)   Likert-type Scale

   d)   Geometric Mean of 4, 6, 9 is

         i) 5   ii) 4, 5   iii) 6

   e)   Difference between Survey and experiment is

         i)   Recording Method
         ii)   Sample Analysis
         iii)   One is behavioural science and other is physical science

f)   Standard deviation is commonly denoted by

i) Alpha   ii) Beta   iii) Sigma

g)   Curve showing no skewness in which case we have :-

i) $\overline{X} > M$ ii) $\overline{X} < Z$ iii) $\overline{X} = M = Z$

h)   The metric appreciation test consists of a set of :-

i) Algorithms   ii) Pictures   iii) Random Data

2.   Fill up the blanks :-

a)   Harmonic Mean of no. 4, 5, 10 _____

b)   Measure of dispersion is _____

c)   Standard deviation σ is _____ (express in term of Xi, X, n)

d)   Basic concepts in the context of testing of hypothesis are _____ _____

e)   One of the term of Research Validity is _____

f)   The itemized rating Scale is known as _____

g)   Reliability of Data depends on _____

h)   Research hypothesis must contain _____ and _____

3.   Match the following :-

	Column A		Column B
a)	Sampling Error	a)	Standard Error (SE)
b)	Charle's Spearman's co-efficient of co-relation	b)	Collected afresh
c)	Karl Pearson has suggested a measure known as	c)	is used to find out difference between ranks of two variables
d)	Time series model	d)	Done at Consumer's level
e)	Standard Deviation is also known as	e)	Indirect interview methods
f)	Primary Data	f)	Addition of frame, chance and

			response
g)	Pantry Audits	g)	Co-efficient of mean square contingency
h)	Projective technique	h)	Additive model

4. Find True or False of the following :-

   a) Partial Co-relation measure only relationship between two variables

   b) Structured interview involves predetermined questions

   c) Clinical interview concerns about individual's life experience

   d) Measures of dispersion is Mode

   e) Secondary data have not passed through statistical process

   f) In order to judge association between two attributes, we use chi-sq. test

   g) Y=a+bx is simple Regression

   h) Null hypothesis is accepted when x^2 value is not equal to table value

Part B

(Answer any three questions)

5 a) Explain the meaning of following co-relation co-efficient :
   i) r_{yx} ii) $r_{yx1. x2}$

  b) How would you workout following statistical measures :-
   i)   co-efficient of skewness
   ii) Regression equation of X on Y

6   Write short notes on (any two)

 a) ANOVA
 b) Cross tabulaton
 c) Chi-Square Distribution (x^2)
 d) Significance level

7   Explain and illustrate the following research designs :-
 a) Latin Square Design
 b) Simple factorial Design

8 Set up an analysis of variance table for the following per acre production data for three varieties of wheat, each grown on 4 plots . Find out total 'SS' value

Plot of land	Per Acre Production Data		
	Variety of Wheat		
	A	B	C
1	6	5	5
2	7	5	4
3	3	3	3
4	8	7	4

9 Distinguish between any two (8 + 8)
 a) t-test and z-test
 b) Hypothesis and null-hypothesis
 c) Likert-type and Arbitrary Scale
 d) Poisson and normal distribution

Part C
(Case Study)

Raja Restaurant near the railway station 'Hooghly' having average sales of 500 tea cups per day. Because of development of bus stand nearby it expects to increase its sales. During first twelve days of starting of bus stand the daily sales as under :

550, 570, 490, 615, 505, 580, 570, 460, 600, 580, 530, 526.

With these information can you conclude sales have increased. (use 5% level of confidence)

(t distribution value of 11 degrees of freedom 5% level = 1.796)