

**DEC-2009**

**INDIAN INSTITUTE OF MATERIALS MANAGEMENT**

**Post Graduate Diploma in Materials Management**

**Graduate Diploma in Materials Management**

**PAPAR – 13**

**Research Methodology**

**Date : 11.12.2009**

**Time: 10.00 am to 1.00 pm**

**Max Marks: 100**

**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.**
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**1. Select Correct Answer**

- a) Conceptual research is that related to
  - i) Concept ideas
  - ii) Abstract ideas
  - iii) Empirical analysis
- b) Research can either be
  - i) Fundamental or basic
  - ii) Information oriented
  - iii) Knowledge driven
- c) Basic approach of Research is
  - i) Qualitative
  - ii) Diagnostic
  - iii) Field Oriented
- d) Simulation approach is basically
  - i) Model approach
  - ii) Creating artificial environment within which data can be generated
  - iii) Experimental
- e) Deliberate Sampling is known as
  - i) Cluster Sampling
  - ii) Quota Sampling
  - iii) Non-Probability Sampling

- f) Good Research is
  - i) Non logical
  - ii) Empirical
  - iii) Non-Replicable
- g) Continuous variables are
  - i) Integer in nature
  - ii) Discrete
  - iii) Quantitatively different values
- h) Standard deviation is commonly denoted by
  - i) Alpha
  - ii) Beta
  - iii) Sigma

**2. Fill up the blanks**

- a) Mean deviation from mode = \_\_\_\_\_  $X_i = i$  th values of variable X;  $n = \text{no.}$ ;  $Z = \text{mode.}$
- b) Dividing standard deviation by arithmetic average is known as \_\_\_\_\_
- c) Geometric mean of n number 4, 6, 9 = \_\_\_\_\_
- d) Harmonic mean of number 4, 5, and 10 = \_\_\_\_\_
- e) Range is the simplest possible measure of \_\_\_\_\_
- f) Inferential statistics are also known as \_\_\_\_\_
- g) Most popular statistical averages are Mean, \_\_\_\_\_, \_\_\_\_\_
- h) ANOVA is \_\_\_\_\_

**3. Match the following :-**

	<b>Column A</b>		<b>Column B</b>
a)	Mode is commonly	a)	Average of reciprocal
b)	Sample does not constitute homogenous group	b)	Null hypothesis is accepted
c)	Tests consists of service of pictures	c)	Spearman's co-efficient
d)	Statistical relationship between two or more variables	d)	T.A.T.
e)	Harmonic Mean	e)	Comparing variance
f)	Chi-square as a test for	f)	Occurring value in a series
g)	$X^2$ value is equal to table value	g)	Stratified sampling
h)	Rank co-relation is named as	h)	Regression

**4. Find True or False of the following**

- a) Co-efficient of standard deviation is the ratio of standard deviation and arithmetic average
- b) Rating scale is known as numbering scale
- c) Louis Guttman's Scalogram analysis is a cumulative scale
- d) Pilot survey is not a replica of main survey
- e) Range is the difference between highest & lowest value of a series
- f) Analysis of co-variance is termed
- g) Irregular as ANOVA fluctuations is also known as Random fluctuation
- h) Focused interview is to focus attention to given experience

**Part – B**  
**(Answer any three)**

5. a) What are the measure of central tendency? Discuss (8)  
b) Illustrate different graphical methods of data presentation (8)
6. Given the forecasting figures of four years; find out forecast value of the 5<sup>th</sup> year, with the help of regression analysis. ( $Y = a + bx$ ) (16)

<u>Year (X)</u>	<u>F/C Values (Y)</u>
1	100
2	110
3	110
4	105

7. Write short notes (any four) (4X4 = 16)
- a) Chi-Square test
  - b) ANOVA
  - c) Louis Guttman's Scalogram Analysis
  - d) Two-factor Evaluation Approach
  - e) Preparation of normal distribution
  - f) Procedures for testing of hypothesis
8. Distinguish between any two (8 + 8)
- a) Ordinal Scale & Nominal Scale
  - b) Poisson Distribute & normal Distribution
  - c) 't' – test and 'z' test
  - d) ANOVA & ANOCOVA
9. a) What is simple random sampling? (6)  
b) What are the major component of research reports? (6)  
c) What do you mean by 'Decision Tree Analysis' (4)

## **Part C**

**Marks – 20**

### **CASE STUDY**

Cummins Engine, heavy Capital Intensive Company frequently made decision for outsourcing as level of difficulty to produce a part / component. Firm must evaluate entire hierarchy of components essential to its competitive position, thinking future product generation. Cummins need to invest heavily to upgrade capabilities in 'Backhoe' design. Debate occurred over whether to in-source or outsource 'Piston'. Designer found Cummins internal capabilities inferior to leading piston manufacturer. A Company like Cummins can achieve 'architectural knowledge' in order to facilitate this process and when large number of parts that were formerly made in-house, the organization must upgrade its supply base management practices. RON Temple, VP of Electronic Technology called a meeting for the Designers, Engineers, Operation Engineers & Marketing Executives to discuss and debate about outsourcing of the main part (Piston Assembly) of the engine and asked for the opinion of the development of the architectural knowledge to upgrade supply base management.

**Q :** You are to give your analysis supporting RON's advice.