



**INDIAN INSTITUTE OF MATERIALS MANAGEMENT**  
**Post Graduate Diploma in Materials Management**  
**Graduate Diploma in Materials Management**  
**PAPER No. 13**  
**Research Methodology**

**Dec 2013**

**Date** : 22.12.2013  
**Time** : 10.00 a.m to 1.00 pm

**Max. Marks** :100  
**Duration** : 3 Hrs.

**Instructions :**

1. Part A: Four Questions (Q 1 to Q 4). All questions are compulsory. Each Question carries 1 mark. **(Total marks 32).**
2. Part B: From Part B answer any three out of 5 questions. Each question carries 16 marks. **(Total marks 48).**
3. Part C: (Compulsory). Case study. **( Total marks 20)**

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**PART- A**

**32 marks**

**Attempt all questions. Each Question carries 1 mark.**

**Q.1. Select correct answers from the following** (Write the full answer of your choice and not only (i), (ii) or (iii) )

(a) Primary Data is:

- (i) data collected from the field
- (ii) data that is published
- (iii) data collected at a point of time

(b). A snowball sample is a

- (i) a random sample
- (ii) a sample by convenience
- (iii) an unbiased sample

(c). If coefficient of correlation is -1 the two variables

- (i) may be correlated
- (ii) are not correlated
- (iii) perfectly negatively correlated

(d) SPSS stands for :

- (i) software package for social sciences
- (ii) Statistical package for social sciences
- (iii) Special package for scientific study.

(e) Geometric mean of 2, 3, and 36 is:

- (i) 12      (ii) 3      (iii) 6

(f) Standard deviation is commonly denoted by:

- (i) Alpha   (ii) Beta   (iii) sigma

(g) ANOVA stands for:

- (i) Analysis of variation  
(ii) Analysis of variables  
(iii) Analysis of variance

h) In Linear Discriminant Analysis dependent variable is:

- (i) Continuous variable  
(ii) Categorical variable  
(iii) Product of two variables

**Q.2. Match the following in correct order:**

**(8 x 1 = 8 marks)**

**A**

1. Median
2. Mode
3. Standard Deviation
  
4. Normal Distribution
5. Strategy
6. Binomial distribution
7. Outcome of an experiment
8. Validity

**B**

- a. Spread of data
- b. Continuous variable
- c. Mid-point of the data distribution
  
- d. Random Variable
- e. Ability to measure
- f. General approach
- g. Maximum Frequency
- h. Discrete variable

**Q.3. Complete the statements:**

**(8 x 1 = 8 marks)**

(i) An observation pertaining to sample is called \_\_\_\_\_

(ii) In Probability sampling each and every element of the population has an \_\_\_\_\_ chance of being selected in the sample.

(iii) A \_\_\_\_\_ is a possible solution to a research problem.

- (iv) A focus group is a type of \_\_\_\_\_ research.
- (v) A research that is used to describe something is called a \_\_\_\_\_ research.
- (vi) In a \_\_\_\_\_ study, an event or occurrence is measured again and again over a longer period of time.
- (vii) Variation in the dependent variable is influenced by changes in the \_\_\_\_\_ variable.
- (viii) When two variables X and Y move in the same directions the correlation between them is \_\_\_\_\_

**Q.4. Write true or false against the following statements: (8 x1 = 8 marks)**

- (i) Cartograms are used to represent the data relating to a particular country.
- (ii) Poisson distribution is applicable to trials which have two mutually exclusive outcomes
- (iii) A Silhouette Graph is a time series graph.
- (iv) An Ogive is a cumulative frequency distribution curve.
- (v) A sampling frame is a correct list of population.
- (vi) A Type – II error is the failure to reject a false null hypothesis.
- (vii) A lottery method can be used in non-probabilistic sampling.
- (viii) An event is a subset of a sample space.

## PART B

48 marks

(Answer any three out of five. Each question carries 16 marks)

**Q.5.** Calculate and analyze the correlation coefficient between the number of study hours and the number of sleeping hours of different students.

<b>Number of Study hours</b>	<b>2</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>10</b>
<b>Number of sleeping hours</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>

**Q.6.** A high school math teacher claims that students in her class will score higher on the math portion of the ACT than students in a colleague's math class. The mean ACT math score for 49 students in her class is 22.1 and the standard deviation is 4.8. The mean ACT math score for 44 of the colleague's students is 19.8 and the standard deviation is 5.4. At  $\alpha = 0.10$ , can the teacher's claim be supported?

**Q.7. Distinguish between (any two )**

- (i). Parametric tests and Non-Parametric tests
- (ii). Point estimate and Interval estimate
- (iii). Sequential sampling and Quota sampling

**Q.8. Write short notes (any two )**

- (i) Research proposal
- (ii) Association of attributes
- (iii) Data presentation methods

**Q.9.** Define Research Design. Describe briefly the various research designs. What are the characteristics of a good research and components of a research proposal?

## **Part C (Compulsory)**

### **Q.10. Case Study**

**20 marks**

When Eric Roberts began his Salt Lake City-based private practice, Worksite Wellness, in 2002, he knew from the start that Isernhagen Work Systems (IWS) would play a critical role in his success. “I wanted to build an industrial- and workers’ compensation-based practice, but I was nervous about going out on my own. Isernhagen made it easy for me to get started.”

Prior to investing in IWS programs, Eric was the clinic director for an industrial outpatient physical therapy clinic in Salt Lake. As a result, he was knowledgeable and experienced with many other methodologies and testing systems. But it quickly became clear that Isernhagen offered the best programs and the ongoing support he needed to confidently move ahead with his own business. “As a therapist, I was impressed by Isernhagen’s methodologies, which use objective measures to evaluate patients using practical, real-world work scenarios, and put the therapist in control of the testing. But equally important was the professional support they offered and their tremendous experience and expertise in the industrial arena. Isernhagen was the perfect fit for me.” Eric purchased and trained in Isernhagen’s industrial programs, including Functional Capacity Evaluations, Functional Job Analysis, and Prewrite Screening, and built his private practice around them. His business was doing well—and then really took off when Isernhagen called with a new business opportunity. Swift Transportation, a national trucking company, had contracted with Work Well to develop prework screens that would measure a new applicant’s ability to handle the physical demands of truck driving. By screening out job candidates that are physically unable to handle routine tasks, Swift can reduce on-the-job injuries and workers’ compensation costs by 30 to 50 percent—costs average around \$32,000 per injury. “WorkWell needed a service provider in the Salt Lake City area to handle the Swift prework screens—and they basically handed me my largest and most profitable client.” Today, Eric has one other therapist working with him to handle between 10-20 Swift prescreens a week. To ensure a smooth, easy start, Isernhagen designed the custom prescreen tests for him, as well as assisted in the setup of the on-site facility, complete with all of the equipment and computer systems required to handle the patient volume. “Isernhagen uses the most cutting-edge technology, including a Web-based application where we can input data as we go and then instantly generate reports. Even the billing is handled by Work Well. It just doesn’t get any easier than this.”

1. Should the Eric right away introduce IWS program for all the staff or seek the help of a reliable researcher?
2. For research, would it be desirable to use “before-after” experimental design?
3. What other Research method would you suggest? Give an outline only.

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