INDIAN INSTITUTE OF MATERIALS MANAGEMENT

Post Graduate Diploma in Materials Management- 3 years **July 2019**

Graduate Diploma in Materials Management

PAPER No. 13

Research Methodology

Date : 28.07.2019 **Max. Marks :100**

Time : 10.00 a.m to 1.00 pm **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)**

PART- A **32 marks**

Attempt all questions. Each Question carries 1 mark.

Q : 1 State True or False **8 Marks**

a)Research is an art of scientific investigation.

b) Induction moves forward from particular to the general.

c) Descriptive research attempts to determine the status of the phenomenon under investigation.

d)Research is based on insight and imagination.

e)Personal experiences of the investigator in the field are the main source for identifying suitable research problem.

f) A hypothesis is not a tentative solution to a problem.

g)A review of literature avoids replication of study of findings.

h)Fundamental research is secondary research.

Q : 2 Fill in the Blanks . **8 Marks**

a) A research design is a _____ stage of research.

b) A _____ method is concerned with the present and attempts to determine the status of the phenomena under investigation.

c) A _____ _____ is conducted only for a specific case / phenomenon.

d) A secondary source is an account or record of an historical event.

e) Experimentation is verifies _____ relationships among phenomena under controlled conditions.

f) An _____ or general question allows expression of points which the respondent thinks important.

g) A _____ question will have only two answers.

h) A _____ _____ ascertains the degree, intensity, or frequency of a variable.

Q : 3 Match the Pairs . 8 marks

	Column A		Column B
A	Descriptive	1.	Cumulative frequency
B	Percentile	2.	Non-probability sample
C	Sampling distribution of mean	3.	Central item
D	Small sample	4.	Probability distribution of all possible means of all random samples
E	Quota	5.	Dispersion
F	Ogive	6.	Sample size <=30
G	F distribution	7.	Ex-Post facto
H	Median	8.	Anova

Q.4. State the general full forms of the given abbreviations [8 marks]

(i) C2C; (ii) SPSS; (iii) CRM; (iv) ANOVA;

(v) JIT; (vi) EDI; (vii) ERP; (viii) CII

PART B

(Answer any three) (3 x 16 = 48 Marks)

Q.5 : Explain In Short :(any two)

(a) Frequency polygon (b) Simple Random Sampling

(c) Spearman Rank Order Coefficient of Correlation (d) The Mann-Whitney *U* test

Q. 6 : Explain the four basic levels of measurements with your own examples.

Q. 7 : Write Notes On .(any two)

(a) Wilcox on Matched-Pairs Signed Rank Test (b) One way ANOVA

(c) Canonical Correlation (d) Judgment Sampling

Q.8 :(A) **8 marks**

A study is conducted in a company that employs 800 engineers. A random sample of 50 engineers reveals that the average sample age is 34.3 years. Historically, the population standard deviation of the age of the company's engineers is approximately 8 years. Construct a 98% confidence interval to estimate the average age of all the engineers in this company. (Given z =2.33 at 98% confidence)

(B) **8 marks**

A production engineer is asked to grade, on the basis of 12 criteria A to L a junior colleague who has applied for promotion. In order to ensure that he treats the colleague fairly, the engineer repeats his grading after a few days. On the basis of the results below, can you conclude that the results are consistent? The grading are percentages.

Criteria	First Grading(X)	Second Grading(Y)
A	55	75
B	53	80
C	78	89
D	50	63
E	48	67
F	61	69
G	66	73
H	76	93
I	85	87
J	90	95
K	69	92
L	45	59

Q. 9 :(A) Define and Explain the Terms : **8 marks**

(a) Scientific Thinking

(b) Decision Tree Analysis

(B) Discuss different steps of action research. **8 marks**

PART C (compulsory) (20 Marks)

Q 10 Analyze the below case study and prepare a detailed note of your understanding about the case study.

The existing electricity infrastructure in the United States is outdated and inefficient. Energy companies provide power to consumers, but the grid provides no information about how the consumers are using that energy, making it difficult to develop more efficient approaches to distribution. Also, the current electricity grid offers few ways to handle power provided by alternative energy sources, which are critical components of most efforts to go “green.” Enter the smart grid.

A smart grid delivers electricity from suppliers to consumers using digital technology to save energy, reduce costs, and increase reliability and transparency. The smart grid enables information to flow back and forth between electric power providers and individual households to allow both consumers and energy companies to make more intelligent decisions regarding energy consumption and production. Information from smart grids would show utilities when to raise prices when demand is high and lower them when demand lessens. Smart grids would also help consumers program high-use electrical appliances like heating and air conditioning systems to reduce consumption during times of peak usage. If implemented nationwide, proponents believe, smart grids would lead to a 5 to 15 percent decrease in energy consumption. Electricity grids are sized to meet the maximum electricity need, so a drop in peak demand would enable utilities to operate with fewer expensive power plants, thereby lowering costs and pollution.

Another advantage of smart grids is their ability to detect sources of power outages more quickly and precisely at the individual household level. With such precise information, utilities will be able to respond to service problems more rapidly and efficiently. Managing the information flowing in these smart grids requires technology: networks and switches for power management; sensor and monitoring devices to track energy usage and distribution trends; systems to provide energy suppliers and consumers with usage data; communications systems to relay data along the entire energy supply system; and systems linked to programmable appliances to run them when energy is least costly.

If consumers had in-home displays showing how much energy they are consuming at any moment and the price of that energy, they are more likely to curb their consumption to cut costs. Home thermostats and appliances could adjust on their own automatically, depending on the cost of power, and even obtain that power from nontraditional sources, such as a neighbor’s rooftop solar panel. Instead of power flowing from a small number of power plants, the smart grid will make it possible to have a distributed energy system. Electricity will flow from homes and businesses into the grid, and they will use power from local and faraway sources. Besides increasing energy efficiency, converting to smart grids along with other related energy initiatives could create up to 370,000 jobs. That’s why pioneering smart grid projects such as Smart Grid City in Boulder, Colorado, are attracting attention. Smart Grid City represents collaboration by Xcel Energy Inc. and residents of Boulder to test the viability of smart grids on a smaller scale .Participants can check their power consumption levels and costs online, and will soon be able to program home appliances over the Web.

Students are required do the analysis based on their experience.

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