Printed page: 02 **Subject Code: AMTCC0101**

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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MASTER OF TECHNOLOGY (M. Tech)

(SEM: 1st THEORY EXAMINATION (2020-2021)

Subject Name: RESEARCH PROCESS & METHODOLOGY

Time: 3 Hours **Max. Marks:70**

General Instructions:

- All questions are compulsory. Answers should be brief and to the point.
- This Question paper consists of 02 pages & 8 questions.
- It comprises of three Sections, A, B, and C. You have to attempt all the sections.
- Section A -Question No. 1 is objective type questions carrying 1 mark each, Question No. 2 is very short answer type carrying 2 mark each. You are expected to answer them as directed.
- Section B - Question No. 3 is Long answer type –I question with external choice carrying 4 marks each. You need to attempt any five out of seven questions given.
- Section C - Question No. 4–8 are Long answer type –II (within unit choice) questions carrying 7 marks each. You need to attempt any one part *a* or *b*.
- Students are instructed to cross the blank sheets before handing over the answer sheet to the invigilator.
- No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION – A

1.	**Answer all the parts-**		**[5x1=5]**	**CO**
	a.	Describe the qualitative and quantitative measures with example.	**(1)**	**CO1**
	b.	Explain the meaning of extraneous variables in context of research design.	**(1)**	**CO2**
	c.	Distinguish between an experiment and a survey.	**(1)**	**CO3**
	d.	Explain the meaning and significance of the concept of "Standard Error" in sampling analysis.	**(1)**	**CO4**
	e.	Explain the various component of a research report.	**(1)**	**CO5**
2.	**Answer all the parts-**		**[5×2=10]**	**CO**
	a.	Briefly discuss the various sampling technique.	**(2)**	**CO3**
	b.	Explain the One-tailed test and Two-tailed test.	**(2)**	**CO4**
	c.	Briefly describe the different steps involved in a research process	**(2)**	**CO1**
	d.	Explain and illustrate the informal experimental designs.	**(2)**	**CO2**
	e.	Explain the various parts and component of a research report.	**(2)**	**CO5**

SECTION – B

3.	**Answer any five of the following-**		**[5x4=20]**	**CO**
	a.	Write a comprehensive note on the "Task of defining a research problem".	**(4)**	**CO2**
	b.	Give your understanding of a good research design. Is single research design suitable in all research studies? If not, why?	**(4)**	**CO2**
	c.	Enumerate the different methods of collecting data. Which one is the most suitable data collection method for conducting enquiry regarding "Digital India" campaign? Explain in detail.	**(4)**	**CO3**
	d.	Explain the meaning of analysis of variance. Describe briefly the techniques of analysis of variance for one-way and two-way classifications.	**(4)**	**CO4**
	e.	Distinguish between Research methods and research methodology with suitable example.	**(4)**	**CO1**
	f.	Describe the types of invention which are not patentable in India with suitable example.	**(4)**	**CO5**
	g.	Data collection through projective technique is considered relatively more reliable. Explain examples.	**(4)**	**CO3**

SECTION – C

4 Answer any one of the following- **[5×7=35]** **CO**

a. "Creative management, whether in public administration or private industry, depends on methods of inquiry that maintain objectivity, clarity, accuracy and consistency". Discuss this statement and examine the significance of research". **(7)** **CO1**

b. "Empirical research in India in particular creates so many problems for the researchers". State the problems that are usually faced by such researchers. **(7)** **CO1**

5. Answer any one of the following-

a. "We can teach methods of analysis, yet any extensive research... requires something equally important: an organization or synthesis which provides the essential structure into which the pieces of analysis fit." Examine this statement and show how a good research report may be prepared (taking any arbitrary example). **(7)** **CO5**

b. Write a short note on "Editing of the Thesis". What is the most accepted order for writing a Thesis? **(7)** **CO5**

6. Answer any one of the following-

a. A certain manure was used on four plots of land *A*, *B*, *C* and *D*. Four beds were prepared in each plot and the manure used. The output of the crop in the beds of plots *A*, *B*, *C* and *D* is given below: **(7)** **CO4**

Output on Plots

A	*B*	*C*	*D*
8	9	3	3
12	4	8	7
1	7	2	8
3	1	5	2

Find out whether the difference in the means of the production of crops of the plots is significant or not.

b. Write the steps involved in the process of hypothesis testing. Also, explain the non-parametric test such as Chi-square. **(7)** **CO4**

7. Answer any one of the following-

a. Explain the meaning and significance of a research design. Describe some important research designs used in experimental hypothesis-testing research study. **CO2**

b. Explain the meaning of the following in context of Research Design: (i) Extraneous variables, (ii) confounded relationships, (iii) research hypothesis, (iv) Treatments, and (v) Experimental & control groups. **(7)** **CO2**

8. Answer any one of the following-

a. A random sample of 900 members is found to have a mean of 4.45 cm. can it be reasonably regarded as a sample from a large population whose mean is 5 cm and variance is 4 cm. **(7)** **CO3**

b. How would you differentiate between simple sampling and random sampling and complex random sampling designs? Explain clearly giving examples. **(7)** **CO3**