QCode: R251B044 | Reg. No | | | | | | | | | | | AY 24

GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY UNIVERSITY, ODISHA, GUNUPUR

(GIET UNIVERSITY)

M.Tech. (First Semester) Regular Examinations, February – 2025

2MRMMC11001 – Research Methodology and IPR

(Common to all branches)

Time: 3 hrs | Maximum: 60 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions	CO #	Blooms Level
a. Express the Nature of research.	CO1	K1
b. Describe i10 index	CO3	K2
c. Differentiate Patent and Copyright.	CO5	K1
d. Differentiate primary and secondary data.	CO2	K1
e. Explain type I and type II error.	CO4	K2

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions	Marks	CO #	Blooms Level
2. a. Discuss the importance of critical literature review and its uses in planning innovation research.	10	CO3	K2
(OR)			
b. Explain the types of literature review on the purpose of research.	10	CO3	K2
3.a. Discuss in detail different types of research design.	5	CO2	K2
b. Explain the concept of random sampling and its importance in research.	5	CO2	K2
(OR)			
c. Explain the Data collection analysis interpretation.	10	CO2	K3
4.a. Describe the characteristics of a good thesis research problem.	5	CO1	K2
b. Explain the different types of research.	5	CO1	K2
(OR)			
c. Identify the sources of the research problem and how to analyze a problem.	10	CO1	K3
5.a. Explain the different types of patents.	5	CO5	K2
b. List out the various works which are not patentable in India.	5	CO5	K2
(OR)	10	CO5	K2
c. Describe IPR of Biological system.			
6.a. Samples of two types of electric light bulbs sere tested for length of life and the following data were obtained.	5	CO4	K3

	Type I	Type II
Sample size	8	7
Sample Mean	1,234 hrs	1,036 hrs
Sample standard deviation	36 hrs	40 hrs

Is the difference in the means significant to warrant that Type I bulbs are superior to type II bulbs regarding length of life?

b. For the following data, test for independence between a person's ability in Mathematics and interest in Economics 5 CO4 K3

	Ability in Mathematics			
Interest in Economics		Low	Average	High
	Low	63	42	15
	Average	58	61	31
	High	14	47	29

(OR)

c. The following represents the number of units of production per day turned out by four different workers by five different machines.

		Machine Type					Total
		A	B	C	D	E	
Worker	1	4	5	3	7	6	25
	2	5	7	7	4	5	28
	3	7	6	7	8	8	36
	4	3	5	4	8	2	22
	Total	19	23	21	27	21	111

On the basis of the above information can it be concluded that

i. The mean productivity is same for different machines and

ii. The workers do not differ with regard to productivity

Use Two way analysis of variance and take level of significance as 5%.

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