Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY 2026

Sixth Semester

Biomedical Engineering

BM3651 - FUNDAMENTALS OF HEALTHCARE ANALYTICS

F – table, Chi Square Table

Regulations - 2021

Duration : 3 Hrs *Maximum : 100 Marks*

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	How is distribution variability significant in statistical analysis?	L1	1	2
2.	Differentiate between likelihood and odds in statistics.	L2	1	2
3.	Outline the steps involved in hypothesis testing for the difference between two population proportions.	L1	2	2
4.	Elaborate on the role of p-values in making decisions in hypothesis testing.	L2	2	2
5.	Define the correlation coefficient in correlation analysis and its significance.	L1	3	2
6.	Discuss the implications of using regression models for predictive analytics in healthcare.	L2	3	2
7.	What is the main purpose of META analysis in research, and what kinds of data are typically used in META analysis studies?	L1	4	2
8.	How can researchers test for variance in their data using software tools like R or Python?	L2	4	2
9.	List the key aspects of reading and interpreting epidemiological studies, and how do these findings apply to improving community health?	L1	5	2
10.	How can respiratory data be analyzed to gain insights into pulmonary health? Provide a case study illustrating this process.	L2	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)*

Q.No		*Questions*	*BLT*	*CO*	*Marks*
11.	a	Explain the significance of computers in bio-statistical analysis. How does computational power aid in handling statistical computations?	L2	1	16
		Or			
	b	Describe the process of finding statistical distributions using R/Python. Provide step-by-step instructions for a chosen distribution.	L2	1	16
12.	a	Discuss the process of hypothesis testing for single population proportion. Provide a step-by-step guide with an example.	L2	2	16
		Or			
	b	Discuss the concept of tests of homogeneity and their role in statistical analysis. Provide real-world examples demonstrating their application.	L2	2	16

13.	a	Explain the fundamental principles of regression modeling. How is the regression equation evaluated in statistical analysis?	L2	3	16
		Or			
	b	Explore the concept of correlation coefficients and their significance in assessing relationships between variables.	L2	3	16
14.	a	Construct the completely randomized design, randomized complete block design, and repeated measures design in research studies.	L3	4	16
		Or			
	b	Identify the challenges associated with interpreting META analysis results. How can researchers address these challenges to ensure accurate interpretations?	L3	4	16
15.	a	Choose a case study involving medical imaging like MRI or CT. Evaluate the statistical methods used in analyzing and interpreting the data.	L4	5	16
		Or			
	b	Select a case study involving ECG data. How can statistical analysis of ECG data aid in medical diagnosis and treatment?	L4	5	16