

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: M. PHARM. (ALL)
BRANCH: PHARMACY**

**SEMESTER : III
SESSION : MO/19**

SUBJECT: MRM301T RESEARCH METHODOLOGY AND BIOSTATISTICS

TIME: 3 HOURS

FULL MARKS: 75

INSTRUCTIONS:

1. The question paper contains 7 questions each of 15 marks and total 105 marks.
2. Candidates may attempt any 5 questions maximum of 75 marks.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

- Q.1(a) Define Research. Discuss the basic components of research with special emphasis on “Rationale”. [7]
Q.1(b) Support the importance of Research Design in Pharmaceutical Development with suitable examples. [8]

- Q.2(a) Discuss the significance of Sampling for Statistical Analysis. Explain and differentiate Multistage Sampling and Multiphase Sampling. [7]

- Q.2(b) A psychologist was interested in whether different books lead to a more positive outlook on life. People were split into 3 groups and then taken to a room to read a book. The four groups read: Biography of Dr. Kalam, Children Magazine, News Paper. After reading, a blood sample was taken, and serotonin levels measured (More Serotonin = More Happy). [8]

Biography	Children Magazine	News Paper
12	8	3
8	8	4
9	10	2
13	11	2
14	9	3
12	8	4
8		

Carry out one-way ANOVA to test the hypothesis that some TV shows make people happier than others. Given $F_{crit}=3.63$

- Q.3(a) Define and write down the significance of Correlation and Regression. Discuss the different types of correlations with suitable examples. [7]
Q.3(b) Is there a relationship between student’s performance on their mean mid-semester percentage and the final end-semester percentage? [8]

Mid	80	92	82	60	67	75	86	88	100	95
Final	76	94	85	58	70	72	87	86	96	95

- a) Discuss the type of correlation observed in the above data.
- b) Find the correlation coefficient.

- Q.4(a) Discuss the significance of Statistical Analysis in Drug Discovery with suitable examples of both parametric and non-parametric tests. [7]

- Q.4(b) The incubation period of smallpox in 9 patients were found to be 14, 13, 11, 15, 10, 7, 9, 12 and 10. Find Mean, Variance, Standard deviation and Range ($\pm 1SD$, $\pm 2SD$ and $\pm 3SD$) of incubation period. [8]

- Q.5(a) Define medical ethics. Explain four types of moral principles of medical ethics. [7]
Q.5(b) Write detail description about Conflict of interest, Informed consent and double effect. [8]

- Q.6(a) Describe quarantine, stabilization, separation and technical personnel under the CPCSEA guidelines. [7]
Q.6(b) Describe surveillance, diagnosis, treatment and control of diseases. Explain animal experimentation involving hazardous agents. [8]

- Q.7(a) Write notes on medical ethics committee and their composition. Discuss euthanasia with respect to medical ethics. [7]

- Q.7(b) Appraise the Declaration of Helsinki. [8]