Question Paper

Exam Date & Time: 03-Jun-2024 (10:00 AM - 12:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER MSc. (MOT / MPT / MASLP / MLT / HI / RT / MOPTOM / MRT / MRP / MAOTT / CCIT / CLINICAL PSYCHOLOGY / AUDIOLOGY / ESS / MPFT / ECHOCARDIOGRAPHY / HIM / NMT / RRT & DT / EMT / CVT / MIT DEGREE EXAMINATION - JUNE 2024
SUBJECT: ABS5101 - ADVANCED BIOSTATISTICS AND RESEARCH METHODOLOGY
RES 601 - BIOSTATISTICS AND RESEARCH METHODOLOGY
(2021/2018 SCHEME)

Marks: 50 **Duration: 120 mins.**

Answer all the questions.

1A) Outline scales of measurement with examples. (5)

1B) The triglycerides (serum) (in mg/dL) of 10 patients were as follows, (5)
155, 150, 106, 89, 63, 68, 144, 125, 130, 74
Calculate mean, median and mode for the above data.

1C) Distinguish between paired t test and Wilcoxon signed rank test. (5)

1D) Summarize cohort studies and their merits and demerits. (5)

2A) Ten patients' weight (in grams) were given below, (5)
64, 75, 62, 70, 82, 69, 85, 70, 62, 77
Find range, Quartile deviation and standard deviation and its coefficients.

2B) Distinguish between probability sampling and non-probability sampling (5)

3A) Calculate the rank correlation for the following (5)

X	1	2	3	4	5	6	7	8	9	10
Y	6	5	8	4	3	2	1	9	19	7

3B) Determination of sample size using difference between single mean and difference between two means with example. (5)

4) A study consists of 263 participants, where the aim of the study is to assess the OR of having the flu virus given the presence of a diet pill. The two dichotomous variables to be examined are flu virus (yes vs. no) and diet pill consumption (takes regularly vs. does not take regularly). Of the 100 participants: 45 participants have the flu virus and regularly consume diet pills, 86 participants have the flu virus and do not take diet pills regularly, 32 participants do not have the flu virus and take diet pills regularly, and 100 participants do not have the flu virus and do not take diet pills regularly.

i) Find odd ratio and interpret the result. (2)

ii) Compute prevalence rate and interpret the result. (3)

5) Scores on exams in statistics are normally distributed with an unknown population mean and a population standard deviation of 3 points. A random sample of 50 scores is taken and gives a sample mean (sample mean score) of 70. Find a confidence interval estimate for the population mean exam score (the mean score on all exams).

i) Find a 95% confidence interval for the true (population) mean of statistics exam scores. (2.5)

ii) Find a 99% confidence interval for the true (population) mean of statistics exam scores. (2.5)

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