

Question Paper

Exam Date & Time: 25-Apr-2022 (10:00 AM - 12:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER M.Sc. CLINICAL PSYCHOLOGY / M.Sc. ECHOCARDIOGRAPHY / M.Sc. IN AUDIOLOGY / M.Sc. IN SLP / M.Sc. CC & I T / MPT / M.Sc. RRT & DT / M.OPTOM / M.Sc. E & SS / M.Sc. H.I.M. / M.Sc. M.I.T / M.Sc. M.R.P. / M.Sc. N.M.T. / M.Sc. RT / M.Sc. MLT / MOT / M.Sc. MHI/ M.Sc. PFT DEGREE EXAMINATION - JAN/FEB 2022
SUBJECT: ABS5101 - ADVANCED BIOSTATISTICS AND RESEARCH METHODOLOGY / RES 601 BIOSTATISTICS/RES 601 RESEARCH METHODS, EPIDEMIOLOGY AND STATISTICS/RES 601 ADVANCED BIOSTATISTICS AND RESEARCH METHODOLOGY
(2021 SCHEME/2018 SCHEME)

Marks: 50

Duration: 120 mins.

Answer all the questions.

1A) The CD4 T cell counts ($\times 10^6 / l$) at base line for 10 - HIV positive subjects are as follows: (8)
230 210 313 173 158 103 181 115 301 216
Calculate coefficient of variation.

1B) Define Skewness (2)

2A) The following table gives result of Screening test done for disease in a population (8)

Screening test	Disease present	Disease absent	Total
Positive	90	10	100
Absent	25	105	130

Calculate the sensitivity, Specificity, Positive predictive value, Negative predictive value of the test.

2B) Differentiate Standard deviation and Standard Error (2)

3. In a sample of 60 men who have had myocardial infarction, the mean CPK (Creatine Phosphokinase) level is $285 \mu/l$ and the standard deviation is $16 \mu/l$

3A) What is the standard error of this mean? (1)

3B) Determine the margin of error for the above estimate. (3)

3C) Construct a 95% confidence interval for the population mean. (1)

4) Draw the normal distribution curve and list its properties. (5)

5A) A study has been planned to compare mean body mass index between diabetes and non-diabetes subjects. A minimum difference of 2 kg/m^2 is considered as clinically significant. What is the minimum number of subjects required in each group at 5% level of significance and 80% power if the pooled standard deviation is found to be 7 kg/m^2 ? (5)
($Z_\alpha = 1.96$, $Z_\beta = 0.84$)

5B) Explain systematic random sampling with an example, what are the advantage and disadvantage of this method. (5)

- 6) Explain the design, conduct and analysis of cohort study (5)
- 7) Discuss about materials and methods in research report (5)

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