

# Question Paper

Exam Date & Time: 23-Jan-2023 (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 /M.Sc. AOTT / M.Sc. EMT 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 / RES 601 BIostatISTICS (2021 SCHEME/2018 SCHEME )

Marks: 50

Duration: 120 mins.

Answer all the questions.

- 1A) The following data represent the blood cholesterol levels of 15 first-year students at a particular college. (8)

213 174 193 196 220 183 194 200 192 200 200 199 178 183 188

Report the value of the range and interquartile range.

- 1B) Define power of the test (2)
- 2A) In a random sample of 1000 subject's prevalence of diabetes is assessed. The summary of the data is presented below. (8)

Gender	Diabetes			Total
	Present	Absent	Total	
Male	60	540	600	
Female	20	380	400	
Total	80	920	1000	

Test whether there is association between gender and diabetes (assume  $\alpha=0.05$ , Chi-square critical value (1df=3.84)

- 2B) Differentiate type I error and level of significance. (2)
- 3A) Consider the prediction equation obtained from a sample of 500 individuals of 30-40 years old adults population. (5)  
Systolic blood pressure=103.34+ 0.52\*AGE  
Identify slope and intercept of the equation, Can the above prediction equation be used to predict the systolic blood pressure of an adult with age 50 years? Justify your answer
- 3B) With the help of scatter diagrams describe the concept of correlation. (5)
- 4A) A certain drug was found to be effective in the treatment of pulmonary disease in 160 of 200 cases treated. (5)  
i) What is the standard error of proportion?  
ii) Construct a 95% confidence interval for the population prevalence.

iii) Determine the margin of error for the above estimate.  
(1+3+1 = 5 marks)

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| 4B) | Elaborate normal distribution with neat diagram               | (5) |
| 5)  | Explain the design and analysis of RCT with example           | (5) |
| 6)  | List the steps involved in constructing the research protocol | (5) |

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