

Question Paper

Exam Date & Time: 26-Nov-2019 (02:00 PM - 04:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER MASTER OF PUBLIC HEALTH DEGREE EXAMINATION - NOVEMBER 2019
SUBJECT: INTRODUCTORY BIOSTATISTICS FOR PUBLIC HEALTH (MPH 603)
(REGULAR)

Tuesday, November 26, 2019 (14.00 - 16.00)

Marks: 50

Duration: 120 mins.

Answer all the questions.

- 1A) What are the two types of variables? Explain with examples. (3)
- 1B) Emory University wants to know which dormitories the students prefer. The administration counts the number of applications for each dorm. Administrators assign a rank to each dorm based on the number of applications received. Choose the appropriate scale of measurement (1)
i) Discrete ii) Continuous iii) Ordinal iv) Nominal
- 1C) All new clients in a mental health clinic are given a symptoms checklist that asks them to report how often they experienced each symptom in the past week. They assign a frequency rating to each symptom (0 - not at all, 1 - sometimes, 2 - often, 3 - almost all the time). (1)
Choose the appropriate scale of measurement.
i) Discrete ii) Continuous iii) Ordinal iv) Nominal
- 2) Write short notes on mean, median, and mode. State the merits and demerits. (5)
- 3) Find the range and interquartile range for the following data: (5)
- 3 9 5 3 12 10 18 4 7 19 21 19
- 4) Explain the coefficient of variance. State the merits and demerits. (5)
- 5) **Write short notes on:** (5)
a) Prevalence rate
b) Incidence rate
c) Infant mortality rate
d) Histogram
e) Bar graph
(1+2+2 = 5 marks)
- 6) **Write a note on:** (5)
a) Joint probability
b) Conditional probability
c) The addition rule
d) The multiplication rule
e) Complementary events
- 7) Describe the Bayes theorem with the help of the table. (5)

8) In a study of violent victimization of women and men, Porcerelli et al. (A-2) collected information from 679 women and 345 men aged 18 to 64 years at several family practice centers in the metropolitan Detroit area. Patients filled out a health history questionnaire that included a question about victimization. The following table shows the sample subjects cross-classified by sex and the type of violent victimization reported. The victimization categories are defined as no victimization, partner victimization (and not by others), victimization by persons other than partners (friends, family members, or strangers), and those who reported multiple victimizations.

| No Victimization | Partner | Non-partners | Multiple Victimization | Total |
|------------------|---------|--------------|------------------------|-------|
| Women | 611 | 34 | 16 | 679 |
| Men | 308 | 10 | 17 | 345 |
| Total | 919 | 44 | 33 | 1024 |

- 8A) Suppose we pick a subject at random from this group. What is the probability that this subject will be a woman? (2)
- 8B) If we pick a subject at random, what is the probability that the subject will be a woman and have experienced partner abuse? (1)

- 8C) Suppose we picked a man at random. Knowing this information, what is the probability that he experienced abuse from non-partners? (1)
- 8D) Suppose we pick a subject at random. What is the probability that it is a man or someone who experienced abuse from a partner? (1)
- 9) In a study by Thomas et al., the Poisson distribution was used to model the number of patients per month referred to an oncologist. The researchers use a rate of 16 patients per month that are referred to the oncologist. Calculate the probability that in a month (i) exactly 10 patients are referred to an oncologist (ii) at least 5-10 patients are referred to an oncologist. (5+5 = 10 marks) (10)

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