Question Paper

MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER MASTER IN HOSPITAL ADMINISTRATION DEGREE EXAMINATION - NOVEMBER 2019
SUBJECT: MHA 505 - STATISTICS AND RESEARCH METHODOLOGY
(REGULAR & REPEATER)
Thursday, November 28, 2019 (14.00 - 16.00)

All questions are compulsory.
Use of non-programmable calculator is allowed.

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

SECTION-A

1) **Long answer type questions:**

1A)   Explain in detail the methods of secondary data collection with illustrative examples. Give its merits   (5)
           and demerits.

1B)   Draw a line graph for the infant mortality (per 1000 live births) for Delhi and Chandigarh given below.   (5)
           Make appropriate conclusions.

Year	Delhi	Chandigarh
2006	37	23
2007	36	27
2008	35	28
2009	33	25
2010	30	22
2011	28	20
2012	25	20

2A)   For the infant mortality data given in question 1B, calculate the mean infant mortality for both Delhi   (5)
           and Chandigarh. Based on your results, make appropriate conclusions.

2B)   Tubert-Bitter et al. found that the number of serious gastrointestinal reactions reported to the British   (5)
           Committee on Safety of Medicine was 538 for 9,160,000 prescriptions of the anti-inflammatory drug
           piroxicam. This corresponds to a rate of .058 gastrointestinal reactions per 1000 prescriptions written.
           Let X denote number of gastrointestinal reactions per 1000 prescriptions. Using a Poisson model for
           probability, with $\lambda = 0.06$, find the probability of

           i) Exactly one gastrointestinal reaction in 1000 prescriptions
           ii) Exactly two gastrointestinal reactions in 1000 prescriptions
           iii) No gastrointestinal reactions in 1000 prescriptions
           iv) At least one gastrointestinal reaction in 1000 prescriptions
           v) At most two gastrointestinal reaction in 1000 prescriptions

X	0	1	2
$P(X \leq x)$	0.942	0.998	1

(1+1+1+1+1 = 5 marks)

SECTION-B

3) **Short answer type questions:**

3A)   i) It is believed that there is a high risk for HIV transmission from HIV+ mother to the new-born in first (5)
18 months of life. Towards, Dr Roy observed 127 HIV+ mothers who have just delivered a baby and
after 18 months, it is seen that 25 babies are HIV+. What's the sample size here? When can sample
size be more than the size of the population? Justify.

ii) "The average height of an Indian woman is 5 feet 3 inches." Identify the variable of interest used in
this statement. What is the nature of the variable and its scale of measurement?

3B)   The partial relative frequency distribution is given,   (5)

Class	Relative Frequency
A	0.22
B	0.18
C	0.40
D	X

i) Find X.
ii) The total sample size is 120. What is the frequency of class D?
iii) Show the frequency distribution.

3C)   Differentiate between simple random sampling and stratified sampling. Give a suitable example.   (5)

3D)   What are the different types of error in statistical hypothesis testing? Explain giving suitable   (5)
examples.

3E)   Briefly describe the different steps involved in a research process.   (5)

3F)   What are the different types of reports? List the general outline for each one of them.   (5)

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