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Sr. No. of Question Paper : 2091 **GC-3** **Your Roll No.....**

Unique Paper Code : 32583901

Name of the Paper : Methods in Epidemiological Data Analysis (SEC)

Name of the Course : **B.Sc (H) Biomedical Sciences (CBCS)**

Semester : III

Duration : 3 Hours

Maximum Marks : 50

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Question no. 1 is compulsory.
3. Attempt total of 5 questions.
4. Answer different parts of the same question together.
5. Use of non-programmable calculator is allowed.
6. Probability distribution tables would be provided.

1. (a) Define the following (Any five) (2×5=10)

(i) Data

(ii) Variable

(iii) Population

(iv) Median

(v) Fertility rate

(vi) Cumulative frequency

P.T.O.

- (b) What can be the different sources of error in any statistical data? Explain with example. (4)
- (c) Differentiate between ratio and proportion with an example. (2)
- (d) At an NCRP centre, over a period of 2 years, 45367 cancer cases and 9876 deaths were reported due to cancer. Comment on the annual incidence and mortality rates? (2)
2. (a) Suppose you conducted a drug trial on a group of animals and you hypothesized that the animals receiving the drug would show increased heart rates compared to those that did not receive the drug. You conduct the study and collect the following data:

	Heart Rate Increased	No Heart Rate Increase	Total
Treated	36	14	50
Not treated	30	25	55
Total	66	39	105

- Using Chi square test, comment on the validity of the proposed hypothesis. (6)
- (b) What is skewness? Give the mathematical formula for skewness. (2)
3. The weight of individuals in a population was surveyed and gave the following data

Weight (kg)	No of Individuals
30-39	11
40-49	46
50-59	70
60-69	45
70-79	16
80-89	1

- (a) What is the mode for the data? (1)
- (b) Calculate mean and standard deviation? (3)

(c) Standard deviation of grouped data is an approximation. Comment. (1)

(d) Calculate probability and cumulative probability? (3)

4. (a) What does NCRP stand for? What are the different kinds of records maintained for NCRP? What are the applications of data and records maintained through NCRP? (4)

(b) The test used to detect Typhoid disease at a hospital centre yielded following results

Test Result	Disease	
	Yes	No
Positive	536	15
Negative	140	495

(i) What is the probability for a diseased person getting a positive test? (1)

(ii) What is the probability for a negative test for a diseased individual? (1)

(iii) Comment on the specificity and sensitivity of the test. (2)

5. (a) If there is a 10 percent chance that a person in Delhi suffers from Dengue, then if 10 people are chosen at random what is the chance that

(i) More than 8 would be affected? (2)

(ii) Between 4 to 6 would be affected? (2)

(b) What is Coefficient of Variation (CV)? Compute for the following data sets and comment on the significance for the data (4)

	Sample 1	Sample 2
Age	30 years	6 years
Average weight	75 kg	32 kg
Standard deviation	6kg	6 kg

6. Suppose you are in charge of conducting a survey on Diabetes.
- (a) How would you decide your target population? (1.5)
- (b) What would be the ethical issues involved? (1.5)
- (c) Design a model questionnaire for the same and highlight the information you would gather after completion of survey. (5)