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Paper Code :MMIT-107

C (SVSU:2022-23/R)

Enrollment No.

M.Sc. Medical Imaging Technology (MMIT) Ist Year**Subject: Biostatistics****Subject Code: MMIT-107****Time: 3 Hours****M.M. 70****Note: All questions are compulsory. Make diagrams wherever required.****Q1. Long answer type questions. Attempt any three.****(10x3=30)**

- a. A study was conducted to know the additional benefit of NaHCO₃ with epidural anaesthesia. Following are the time (hrs) with epidural anaesthesia agent in two different study groups:

Group A: 5.5 4.0 5.5 4.0 3.5 4.0 4.5 3.5

4.5

Group B(with NaHCO₃): 6.5 8.0 10.0 8.5 5.0 8.0 10.0 8.0 10.0

(Critical Value of t with 16 degree and .05 level of significance is 2.12)

- b. Write a note on Probability and Non Probability Sampling Methods?

- c. The respiratory rates recorded per minute for the same group of 50 inpatients of a certain public hospital are given below.

Respiratory rate: 14-16 17-19 20-22 23-25 26-28 29-31
No. of patients: 10 12 16 6 4 2

Calculate SD and CV

- d. Write a note on Binomial Distribution in detail?
e. Discuss different types of data presentation methods?

Q2. Short answer type questions. Attempt any five.**(5x5=25)**

- a. Twelve subjects were under study to assess the effect of diet control and exercise on serum cholesterol level. Serum Cholesterol level was examined and provided after the experiment as well as before experiment

Sample No.	Serum Cholesterol		Change
	Before	After	
1	12	12	12
2	244.25±10.27	224.08±7.88	20.17±6.67

(Critical Value of t is 3.11 at .01 level of significance and 11 degree of freedom)

- b. Define Role of Biostatistics in Medical?
c. Systematic Sampling
d. Measure of Dispersion
e. Kruskal- Wallis Test
f. Systolic blood pressure of a population is 120 mm of Hg. With SD of 15 mm of Hg, calculate the minimum size of samples to verify this if allowable error ($L=\pm 1$ at 5% risk)
g. The average rainfall in mm in a city is given below-
700,754,634,800,850,380,768,566,677,788,342,338,986.
Calculate mean and mode.

Q 3. Very short answer type questions. Attempt any five.**(1x5=5)**

- a. Sampling Frame
b. Sequential Sampling
c. Yate's Correction for Continuity
d. Validity
e. Incidence
f. Power of a test
g. Histogram

Q 4. Multiple choice questions. Attempt all.**(1x10=10)**

- a. For the chi square test to be effective, the expected value for each cell in the contingency table has to be at least:

(i) 2 (ii) 3 (iii) 5 (iv) 10

- b. If SD is 2 and sample size is 4, then Standard Error(SE) is:
 (i) 2 (ii) 1 (iii) 0 (iv) 3
- c. The mean $\pm$ 3 standard deviation covers of the area under the curve
 (i) 99.7% (ii) 95% (iii) 66.7% (iv) 97%
- d. The mode or model value of the distribution is that value of the variate for which frequency is:
 (i) Minimum (ii) Maximum (iii) Odd number (iv) Even number
- e. When a test actually measures what it purports to measure, we say that it has good:
 (i) Validity (ii) Variance (iii) Correlation (iv) Reliability
- f. The frequency distribution of the hourly wages rate of 100 employees of a paper mill is as follows:

Wage rate (Rs.)	54----56	56----58	58----60	60----62	62----64
Number of workers :	20	20	20	20	20

 The median wage rate is:
 (i) Rs.59 (ii) Rs.57 (iii) Rs.56 (iv) Rs.5
- g. Which ONE of the following is the main problem with using non-probability sampling techniques?
 (i) The expense (ii) The results are never representative
 (iii) Human judgement error (iv) Informants can refuse to participate
- h. The selection of cricket team for the world cup is called:
 (i) Random sampling (ii) Systematic sampling
 (iii) Purposive sampling (iv) Cluster sampling
- i. The characteristics or quantity that may vary from one individual to another is called
 (i) Statistic Group (ii) Variable (iii) Dynamic Group (iv) Dynamism
- j. The Student's t test is:
 (i) a parametric test (ii) a nonparametric test
 (ii) a test for comparing median (iv) a test for comparing variances