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Centre for Translational & Clinical Research
M.Sc. in Clinical Research Semester I
Semester Examination – December 2023

Paper Code – MCR GEC101; Paper Title: Biostatistical Methods in Clinical Research

Time : 1 hour 30 min

Total Marks: 30

Write the roll number at the top immediately on receipt of this question paper. Attempt all questions. All parts of a question must be attempted in continuation. Start answer of a fresh question on a new page. Cite examples whenever necessary

Q.1: Answer the following short questions:

[2x4=8]

- a. Tabulate the following 25 scores (72, 81, 67, 83, 61, 75, 78, 82, 71, 67, 77, 65, 76, 63, 84, 67, 86, 76, 72, 69, 72, 73, 70, 72 and 64) into a frequency distribution using an interval of 5 units with the first interval begin with a score of 60. Represent diagrammatically.
- b. One group of 100 children had a mean height of 60 cm (SD 2.5 cm) and another group of 150 children had a mean height of 62 cm (SD 3 cm). Are these two groups different?
- c. The proportion of blood group B in India is 30 per cent. In a group of 100 students, 25 students had B blood group. What is your conclusion?
- d. Incidence of the influenza epidemic was 5 per 100 in the population. What should be the size of sample to find the incidence in the current epidemic with an allowable error E as 0.01? Use the formula $n=4pq/E^2$.

Q.2. Write short notes on ANY THREE of the following:

[4x3=12 marks]

- a. Different types of data and their hierarchy.
- b. Experimental variability.
- c. Cluster sampling.
- d. Type I and Type II Errors.
- e. Types of positive correlations.

Q.3. Answer any TWO of the following:

[5x2=10 marks]

- a. A teacher divided her class into two sections of 10 pupils each. The first group was given additional assignments and had scores of 42, 53, 47, 38, 46, 51, 62, 60, 45 and 30 at the end of 3 months. The control group was reduced to 8 due to illness and absence and attained scores of 41, 36, 33, 55, 44, 35, 32 and 40. Do the two groups differ on the final test? U critical (8,10)= 17.
- b. APGAR scores were recorded in 32 births where 14 patients were administered an experimental treatment while the 18 patients served as controls. Only 4 births in the experimental group had above median APGAR scores while 12 births in the control group had above median APGAR scores. Did the experimental treatment improve the birth process as measured by the APGAR scores at birth? $p < 0.05$ when $X^2=3.84$ at d.f.=1
- c. In the first trial of digit-symbol-substitution test, 16 participants had a mean performance of 80 with an SD of 8.0. Later another group of 16 subjects underwent 10-trials and had scores of 84 with a SD of 6.0. Do multiple trials improve performance? $p < 0.05$ when $t=2.04$ at d.f.=30.
- d. Find the coefficient of correlation between the 'letter span' and 'digit span' scores in six individuals in the same arranged order 10, 9, 9, 8, 7, 7 (letter) and 9, 8, 7, 7, 8, 6 (digit).