



PQ-9534

Seat No. _____

Third Year B. Physiotherapy Examination

July – 2018

Biostatistics & Research Methodology

Time : 2 Hours]

[Total Marks : 50

- Instructions :
- (1) All questions are compulsory
 - (2) Figures in parenthesis to the right show the full marks of each question.

- 1 Write comprehensive notes on any TWO of the following : **10+10=20**
 - (a) Define Sampling. What are the different methods of sampling in biostatistics? Discuss each method giving example.
 - (b) Enumerate various epidemiological research methods. Describe Randomized Controlled Trial.
 - (c) Describe Graphical methods for presentation of Quantitative data.

- 2 Calculate any TWO of the following: **5+5=10**
 - (a) A study was carried out by a postgraduate student to know the association between age of mother and congenital malformations. It was seen that, out of the 500 children born to women > 35 years, 50 had congenital malformations, while out of 1000 women < 35 years, there were 50 children born with congenital malformations. Interpret this data using χ^2 test. Write your inference in simple language.
($\chi^2 = 3.84$ at $df = 1$ and $p = 0.05$ level)
 - (b) Find the Mean and Standard Deviation (SD) of the following data of patients treated for cervical spondylosis. Also find the limits of 95% individual observation and 95% confidence limit within which population mean would lie.

Duration of Treatment	No. of patients
0-7 days	08
8-14 days	13
15-21 days	14
22-28 days	09
29-35 days	06

- (c) Systolic blood pressure (SBP) of 9 individuals who had been recumbent for 5 minutes was taken. Then 2 ml of 0.5% solution of hypotensive drug was given and blood pressure recorded again. Did the injection of drug lower the blood pressure?

Sr. No.	SBP before injection	SBP after Injection
1	122	120
2	121	118
3	120	116
4	116	110
5	126	122
6	130	130
7	120	116
8	126	124
9	128	124

[At degree of freedom (df) 8; 5 % significant limit, table value of t is 2.31]

- 3 Write in two-three sentences any FIVE of the **2+2+2+2+2=10** following :
- Pie diagram
 - Characteristics of normal curve
 - Relative risk
 - Null hypothesis
 - Mode
 - Perfect Positive Correlation

4 Write most appropriate single answer in below mentioned 10

MCQs : (1 mark each)

- (1) Incidence rate refers to :
 - (a) Only old cases
 - (b) Both old and new cases
 - (c) Only new cases
 - (d) none of the above
- (2) Which of the following research methods studies have only people who are initially free of the disease of interest?
 - (a) A case control study
 - (b) A case series study
 - (c) A prevalence survey
 - (d) A cohort study
- (3) Commonly used measures of central tendency are all of the following except :
 - (a) Mean
 - (b) Mode
 - (c) Standard deviation
 - (d) Median
- (4) A normal distribution curve depends on
 - (a) Mean and Sample size
 - (b) Range and Sample size
 - (c) Mean and Standard deviation
 - (d) Mean and median
- (5) In a 3×3 contingency tables, the number of degrees of freedom equals to :
 - (a) 2
 - (b) 4
 - (c) 6
 - (d) 9
- (6) Appropriate statistical method to compare two means is
 - (a) Chi-square test
 - (b) Student's t test
 - (c) Correlation Coefficient
 - (d) Mann-Whitney test
- (7) Mean weight of 100 children was 12 kg. The standard deviation was 3. Calculate the percentage coefficient of variance.
 - (a) 20%
 - (b) 25%
 - (c) 33%
 - (d) 35%
- (8) The incidence of malaria in an area is 20, 20, 50, 56, 60, 500, 678, 898, 345 and 456. Which of these methods is the best to calculate the average incidence ?
 - (a) Arithmetic mean
 - (b) Geometric mean
 - (c) Median
 - (d) Mode

- (9) What is true among given data 20, 31, 31, 31, 25, 28, 35, 38, 31 ?
- (a) Mean is 31 (b) Range is 20-38
(c) Median is 15 (d) Mode is 15
- (10) Type I error is
- (a) Accepting a null hypothesis when false
(b) Accepting a null hypothesis
(c) Rejecting a null hypothesis when true
(d) Rejecting a null hypothesis
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