MASTER OF PHYSICAL EDUCATION EXAMINATION, 2024

(1st Year, 2nd Semester)

APPLIED STATISTICS IN PHYSICAL EDUCATION AND SPORTS

PAPER - MPCC - 201

Time : Three hours | Full Marks : 70

GROUP: - A

Answer any three questions: 15X 3 =45

1. Why Standard Deviation is the best measure of variability? Calculate first quartile (Q1) and Standard Deviation from the following frequency distribution.

Class	50 – 54	55 – 59	60 – 64	65 – 69	70 – 74	75 – 79	80 - 84
Frequency (f)	4	6	9	11	8	4	3

5+ (4+6)=15

2. What is normal curve? Write down the properties and characteristics of normal curve. If the distribution of score X is normal with Mean 54 and SD 12, find the percentage of score lying above 74 (Critical value of Z is 47.72). 2+8+5=15

3. What is meant by parametric test? Mention the uses of t-test.
The following data were collected from two separate groups of 90 Boys and 70 Girls, on an attitude scale.

Group	Mean	SD
Boys	24.3	4.9
Girls	20.7	3.8

(a)Test the significance of the difference between the mean of two groups at the .05 level of significance.

(b) What does the result of the experiment say? (Table value at .05 level significance is1.96) 3+4+8=15

4. Mention the different statistical measures applied in physical education research. Explain the coefficient of correlation with its magnitude. Calculate the coefficient of correlation for the following table by Pearson Product Moment Method and interpret the calculated value.

X	24	32	40	48	56	64	72
Y	12	18	24	30	36	42	48

3+4+8=15

5. What is one-way and two-way ANOVA? Write down the application of ANOVA in research, Yoga, aerobics and weight training were randomly assigned to the individuals (having high blood pressure) to lower the blood pressure. After four weeks, the reduction in blood pressure has been presented below. Now test whether there is significant difference in mean reduction of blood pressure among the three treatments. (f (2, 12),0.05 = 3.8853)

Yoga	10	12	9	15	13
Aerobics	6	8	3	0	2
Weight Training	5	9	12	8	4

3+3+9=15

GROUP: - B

Write notes on any two of the following: 7.5x2=15

6. Different forms of graphical representation of data
7. Standard scores
8. Standard error of mean
9. Divergence from the normality

GROUP: - C

Choose the correct option form the following (any ten): 1x 10 = 10

i. What is the purpose of using a t-test in physical education research?

a) To compare the means of two groups
b) To measure the spread of a data set
c) To predict future outcomes
d) To test the correlation between two variables

ii. Which of the following is a non-parametric test often used in physical education studies?

a) ANOVA
b) Chi-square test
c) Pearson correlation
d) Regression analysis

iii. Which type of graph is most appropriate for displaying the distribution of scores in a fitness test?

a) Line graph
b) Bar chart
c) Histogram
d) Pie chart

iv. In physical education research, what does a p-value less than 0.05 typically indicate?

a) The data is normally distributed.
b) The results are not statistically significant.
c) There is a significant difference or relationship.
d) The sample size is too small.

v. What does a high standard deviation indicate about the scores in a physical education test?

a) The scores are closely clustered around the mean.
b) There is a high level of consistency among scores.
c) The scores are widely spread out from the mean.
d) The scores are negatively skewed.

vi. What is the primary use of a scatter plot in physical education research?

a) To show the frequency distribution of a single variable
b) To compare the means of two or more groups
c) To display the relationship between two quantitative variables
d) To illustrate proportions of categories in a data set

vii. Which of the following best describes a Type I error in the context of hypothesis testing in physical education?

a) Failing to reject a true null hypothesis
b) Rejecting a true null hypothesis
c) Failing to reject a false null hypothesis
d) Accepting a false null hypothesis

viii. If a physical education researcher wants to examine the effect of two different training programs on performance, which statistical method should be used?

a) Paired t-test
b) Independent t-test
c) Two-way ANOVA
d) Chi-square test