Master of Physical Education Examination - 2025

Department of Physical Education

1st Year, 2nd Semester

Subject Code: MPCC-201

Applied Statistics in Physical Education and Sports

Time: Three Hours **Full Marks: 70**

Group - A

Answer the following questions (Any three) **15×3=45**

1. What is statistics? Write down importance of statistics in physical education and sports. Explain the different statistical tools can be used in physical education and sport research with their significance. 2+5+8=15

2. What is correlation? Explain the range of coefficient of correlation. The performance of service and attacking in a volleyball match for 8 volleyball players has been presented in the following table.

Subject No.	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Service Score (x)	13	15	14	12	16	12	12	10
Attacking Score (y)	16	11	10	12	15	14	12	11

Calculate the coefficient of correlation by rank order correlation method and interpret the calculated value. 2+3+10=15

3. What is meant by quartile deviation? Write down the advantages and disadvantages of quartile deviation. Why standard deviation is the most reliable measure of variability? Calculate third quartile (Q3) from the following frequency distribution:

Class	**0-10**	**10-20**	**20-30**	**30-40**	**40-50**
Frequency (f)	5	10	15	20	10

2+4+3+6=15

4. Differentiate between one-tailed test and two-tailed test with examples. Write the application oft-test in brief.

A statistics teacher wants to compare his two classes to see if they perform any difference on the test he gave the semester. Class-A had 25 students with an average score of 70, Standard Deviation of 15. Class-B had 20 students with an average score of 74, Standard Deviation of 25. Using alpha 0.05, did these two classes perform significantly difference on the test? Table value of t at 0.05 level is 2.0167. 3+3+9=15

5. When to use non-parametric test in statistics? Mention different non-parametric statistics along with their uses with suitable examples.

Responses of 48 normal humans and 57 neurotics to an item of a neurotic questionnaire are tabulated as under:

Subjects	**Negative response**	**Positive response**	**Total**
Normal	28	20	48
Neurotic	20	37	57
Total	48	57	105

Find whether or not the test item differentiates significantly the normal humans from the neurotics.

2+5+8=15

Group -B

Write Short Notes on **any two** of the following: **$7^{1}/_{2}$×2=15**

6. Normal probability curve.
7. Concept and application of ANOVA
8. Standard error of mean.
9. Scales of measurement-

Group - C

10. Choose correct answer for each MCQ and write it down on your answer script **(any ten).** **1×10=10**

i) Which of the following is a key assumption of the Chi-square test?

a) Data must be normally distributed

b) Observations must be dependent

c) Expected frequencies should be 5 or more in each cell

d) The sample must be paired

ii) In a negatively skewed distribution:

a) Mean = Median = Mode
b) Mean < Median < Mode
c) Mean > Median > Mode
d) Mean = Mode > Median

iii) What is the skewness value of a perfectly symmetrical distribution?

a) 1
b) 0
c) d - 1
d) Cannot be determined

iv) In a one-way ANOVA, a significant F-ratio indicates that:

a) All group means are equal
b) At least one group mean is significantly different
c) Variance is zero
d) The sample size is too small

v) Which of the following assumptions is NOT required for a t-test?

a) The data are normally distributed
b) The samples are independent
c) The data are measured on a nominal scale
d) The variances are equal (in case of independent t-test)

vi. A mesokurric distribution has a kurtosis value of:

a) Greater than 3
b) Less than 3
c) Equal to 0
d) Equal to 3

vii) The most appropriate measure of variability for ordinal data is:

a) Standard deviation
b) Median
c) Range
d) Interquartile range

viii) What does a p-value less than 0.05 indicate in hypothesis testing?

a) Accept the null hypothesis b) Reject the null hypothesis

c) Data is invalid d) Sampling error occurred

ix) What does standard deviation measure?

a) Average of values b) Spread of values

c) Frequency of data d) Sum of squares

x) BMI is considred as:

a) Nominal data b) Ordinal data

c) Interval data d) Ratio data

xi) The value of multiple correlation is:

a) 0 to 1 b) - 1 to + 1

c) 0 to -1 d) 1

xii) In which of the following situations would a one-tailed test be appropriate?

a) When you want to determine if there is any difference in either direction

b) When you are testing if one group performs significantly better than another

c) When the difference between groups could be positive or negative

d) When the null hypothesis cannot be rejected

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