MASTER OF PHYSICAL EDUCATION EXAMINATION, 2023

(1st Year, 2nd Semester)

APPLIED STATISTICS IN PHYSICAL EDUCATION AND SPORTS

PAPER - MPCC - 201

Time : Three hours   Full Marks : 70

Mention the Question number clearly before writing the answer.

Group - A

Answer *any three* questions in detail: 15×3=45

1. What is meant by statistics? Explain different types of statistics with suitable example. Write down the need and importance of statistics in physical education and sports.

    2+5+8=15

2. Why Standard Deviation is the most reliable measure of variability? Calculate Median 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+10(5+5)=15

3. What is normal curve? Write down the properties 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

4. What is meant by correlation? Explain the types of correlation and the magnitude of correlation in brief. Calculate the Rank Difference Correlation from the data source.

    In a certain examination 10 students obtained the following marks in Mathematics and Physics. Find Spearman's Rank Correlation Coefficient.

Students Roll No.	1	2	3	4	5	6	7	8	9	10
Marks in Math	90	30	82	45	32	65	40	88	73	65
Marks in Physics	85	42	75	63	45	63	60	90	63	58

    2+5+8=15

5. What are the uses of t-test? The following data were collected from two separate groups of 144 men and 175 women on an attitude scale.

	Mean	SD
Men	22.3	6
Women	28.1	4.5

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

    [Turn over

b) In your own words, what does the result of the experiment say?   3+6+6=15

Group - B

Write short notes on *any two* of the following :   7.5×2=15

6. Type I and Type II error

7. ANOVA and ANCOVA

8. Graphical Representation

9. Do these data suggest an association between disease and exposure?

Disease			
Exposure	Yes	No	Total
Yes	37	13	50
No	17	53	70
Total	34	66	120

Table value of x^2 at .05 level is 3.84.

Group - C

10. Choose correct option from the following *(any ten)* :   1×10=10

i) What will be the 't value' when 'between group variance' and 'within group variance' is 200 and 50 respectively?

    a) 4   b) 2

    c) 16   d) 8

ii) Which alpha level provides the smallest chance of committing a Type I error?

    a) $\alpha = .025$ b) $\alpha = .10$

    c) $\alpha = .05$ d) $\alpha = .01$

iii) Normal Distribution is applied for

    a) Continuous Random Distribution   b) Discrete Random Variable

    c) Irregular Random Variable   d) Uncertain Random Variable

iv) The degree to which numerical data tend to spread about an average value called:

    a) Constant   b) Flatness

    c) Variation   d) Skewness

v) If all the scores on examination cluster around the mean, the dispersion is said to be:

    a) Small   b) Large

    c) Normal   d) Symmetrical

vi) Which of the following is the least affected by outliers?

    a) The range   b) The mean

    c) The median   d) The standard deviation

vii) Which of the following statements would be false about multiple correlations?

    a) It ranges from –1.00 to 1.00 only   b) It ranges from 0 to 1.00 only

    c) It ranges from –σ to +σ only   d) It ranges from –1.00 to 0 only

    Codes:

    A. ii correct only

    B. i, iii, iv correct only

    C. iii, iv correct only

    D. i, ii correct only

viii) Find the median of the call received on 6 consecutive days 11, 13, 17, 13, 23, 19.

    a) 15   b) 23

    c) 25   d) 17

ix) A statistic is :

    a) a sample characteristic   b) a population characteristic

    c) unknown   d) normally distributed

x) The most frequent observation in a data set is called

    a) mode   b) median

    c) range   d) mean

xi) Statistical test of the significance of discrepancy between observed and expected result is provided by:

    a) ANOVA   b) ANCOVA

    c) t-test   d) Chi square test

xii) If x_1, x_2, x_3, ..., x_n are the observations of a given data. Then the mean of the observations will be:

    a) Total number of observations / Sum of observations

    b) Sum of observations / Total number of observations

    c) Sum of observations + Total number of observations

    d) None of the above