

2026

APPLIED STATISTICS IN PHYSICAL EDUCATION AND SPORTS

Course : MPCC-201

Full Marks : 70

*The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. What is Bio-statistics? Write down the difference between Parametric and Non-Parametric statistics. For the following distribution of marks for 100 students, draw an Ogive and find the value of Median.

Marks	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
No. of Students	2	6	12	24	31	10	8	5	2

2+5+8

Or

Give a critical review of the different measures of Central Tendency with examples. What are the different measures of variability and when to use them?

6+9

2. Define Mathematical Probability. What is the chance of getting a king in a draw from a normal pack of 52 cards?

A student obtains 70 marks in Mathematics and 67 marks in Physics. If the Mean and SD for the scores in Mathematics are 60 and 8, and those of Physics are 53 and 7 respectively, then find out in which subject she did better.

4+3+8

Or

What are Skewness and Kurtosis of a normal probability curve? What are the different types of Kurtosis?

Calculate Standard Deviation from the following distribution (symbol " f " denotes Frequency) :

Class	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99
f	1	3	2	4	4	6	10	8	5	4	2	1

4+3+8

3. Marks of 10 students in Mathematics and Statistics are given below. Calculate the Correlation Coefficient (" r " - value). How do you interpret the Coefficient of Correlation?

Mathematics	32	38	48	43	40	22	41	69	35	64
Statistics	30	31	38	43	33	11	27	76	40	59

12+3

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Or

Write the properties of Coefficient of Correlation. What is the significance of Correlation? Discuss the construction of Norms through statistics. 3+4+8

4. Write notes on the following (*any two*) :

$7\frac{1}{2} \times 2$

- (a) Standard Error and Level of Significance
- (b) One Tail test and Two Tail test
- (c) The "t"-test and interpretation of results from it
- (d) Chi Square test.

5. Answer the following MCQs by choosing the correct option and writing it on your answer script (*any ten*) : 1×10

(a) A frequency histogram displays :

- (i) Relative frequencies
- (ii) Cumulative frequencies (Less than or equal to)
- (iii) Cumulative frequencies (Greater than or equal to)
- (iv) Class-wise frequencies.

(b) A frequency polygon means :

- (i) Frequency curve
- (ii) Modification of Ogive
- (iii) A bar diagram
- (iv) A Histogram.

(c) The sum of squares of deviations, when taken from arithmetic mean is :

- (i) Minimum
- (ii) Maximum
- (iii) Zero
- (iv) One.

(d) A negative coefficient of Skewness implied that :

- (i) Mean is greater than Mode
- (ii) Mean is less than Mode
- (iii) Mean is equal to Mode
- (iv) Mean is equal to Median.

(e) The Coefficient of Correlation :

- (i) has no limits
- (ii) less than 1
- (iii) more than 1
- (iv) varies between ± 1 .

(f) What is the probability of getting an even number of dots when a dice is tossed?

- (i) $\frac{1}{3}$
- (ii) $\frac{1}{3}$
- (iii) $\frac{1}{6}$
- (iv) $\frac{1}{4}$.

- (g) For testing $P_1 = P_2$ in a large sample, the proper test is :
- (i) t-test
 - (ii) Z-test
 - (iii) F-test
 - (iv) χ^2 -test.
- (h) The number of degrees of freedom in 3×3 contingency table is :
- (i) 8
 - (ii) 4
 - (iii) 1
 - (iv) 2.
- (i) β_2 is greater than 3, the curve is called :
- (i) Leptokurtic
 - (ii) Mesokurtic
 - (iii) Platykurtic
 - (iv) Symmetrical.
- (j) The main purpose of ANOVA is to test :
- (i) Difference between two means
 - (ii) Difference between three or more means
 - (iii) Relationship between two variables
 - (iv) Difference between Proportions.
- (k) If calculated F -value is found greater than the critical value of F then :
- (i) Null Hypothesis is accepted
 - (ii) Null Hypothesis is rejected
 - (iii) Cannot decide its acceptance or rejection
 - (iv) Increase sample size.
- (l) The formula for converting a raw score X to a Z score is :
- (i) $Z = (X - \text{Mean}) / \text{SD}$
 - (ii) $Z = (X + \text{Mean}) - \text{SD}$
 - (iii) $Z = (X/\text{Mean}) - \text{SD}$
 - (iv) $Z = \text{Mean} / \text{SD}.$
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