

2022

## APPLIED STATISTICS IN PHYSICAL EDUCATION AND SPORTS

Paper : 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. (a) Write the usefulness and limitations of statistics.  
 (b) What are Parametric and Non-parametric statistics?  
 (c) State the Merits of Mean as a measure of central tendency. 8+4+3

*Or,*

- (a) What is frequency distribution?  
 (b) Following data are the scores of 1-min. sit-up test, performed by 25 M.P.Ed applicants in an entrance test. Construct a frequency distribution table that has five classes.

18	20	21	27	29	30	39	32	21
19	30	32	19	34	44	33	54	51
24	29	18	37	38	49	18		

- (c) Following is the distribution of marks obtained by 50 students in an examination. Calculate the average marks and variability.

<b>Marks</b>	0-10	10-20	20-30	30-40	40-50	50-60
<b>No. of Students</b>	4	6	16	13	7	4

2+5+8

2. (a) What is kurtosis? What are its types?  
 (b) Show the sample space for tossing three fair coin flips.  
 (c) Calculate Karl Pearson's coefficient of skewness from the following data.

<b>Marks</b>	5-15	15-25	25-35	35-45	45-55	55-65	65-75
<b>No. of Students</b>	5	6	9	8	11	7	4

5+2+8

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Or,

- (a) Write the properties of the Normal Probability Curve.
- (b) Calculate z-score and t-score of 45 and 62 of a distribution, when mean and standard deviation of the said distribution are 54 and 2.50 respectively.
- (c) What is level of significance? 5+6+4

3. (a) What is coefficient of correlation?  
 (b) Explain different types of correlation with examples.  
 (c) If the Rank correlation coefficient  $\rho$  (rho) is 0.8 and  $\sum D^2 = 33$ , then find 'N'.  
 (d) Interpret the result of a calculated t-score of 5.25, when tabulated t-value is 2.059 at 0.05 level of significance with 25 degrees of freedom. 2+6+5+2

Or,

- (a) What is Rank correlation?
- (b) Find the Rank correlation coefficients from following 10 marks of two tests.

Marks in Test I	70	68	67	55	60	60	75	63	60	72
Marks in Test II	65	65	80	60	68	58	75	62	60	70

- (c) What is regression and what are its types? 3+8+4

4. Answer *any two* questions : 7½×2

- (a) What is  $\chi^2$  (Chi-square) test?
- (b) Explain ANOVA.
- (c) Explain the use of Student's t-test.
- (d) The data on anxiety obtained on athletes in individual, dual and team sports are given in the following table. Apply one-way ANOVA to find in which sport the anxiety level is higher. Discuss the findings at 5% level.

Individual Sport	Dual Sport	Team Sport	Individual Sport	Dual Sport	Team Sport
22	25	20	21	22	21
21	20	19	24	20	24
21	19	22	22	19	19
23	20	19	23	22	22
22	16	21	20	22	20
23	18	19	22	19	19
21	21	22	21	20	21
24	16	19	21	20	21
22	17	20	26	21	22
19	19	24	24	19	20

5. Choose and write the correct answer from the following (*any ten*) : 1×10
- (a) Class intervals of the type 30–40, 40–50, 50–60, 60–70 represents
- (i) Inclusive type (ii) Exclusive type  
(iii) Open-end type (iv) None.
- (b) Data that can be classified according to 1st, 2nd and 3rd are measured on what scale?
- (i) Nominal (ii) Ratio  
(iii) Ordinal (iv) Interval
- (c) If z-score is -4, what will be the t-score?
- (i) 15 (ii) - 10  
(iii) 10 (iv) Cannot be determined
- (d) What is the value of the mode when all values in the data set are different?
- (i) 0 (ii) 1  
(iii) There is no mode. (iv) Each value represents a mode.
- (e) In one-tailed hypothesis, the critical region is
- (i) divided in both the tails in 1 : 4 proportion  
(ii) lying in right tail only  
(iii) lying in left tail only  
(iv) divided in both the tails.
- (f) If agility of 29 footballers and 31 cricketers is to be compared using t-test, what would be its degrees of freedom?
- (i) 60 (ii) 59  
(iii) 58 (iv) 57
- (g) If we compare the fitness ability of volleyball players and basketball players, then which type of t-test could be used for analysis?
- (i) One sample t-test (ii) Paired t-test  
(iii) Independent sample t-test (iv) Dependent sample t-test
- (h) What is the  $Q_2$  value of the numbers 4, 8, 7, 2, 2?
- (i) 7 (ii) 4.6  
(iii) 4 (iv) 2
- (i) The first quartile divides a frequency distribution in the ratio
- (i) 4 : 1 (ii) 1 : 4  
(iii) 3 : 1 (iv) 1 : 3

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