

**BACHELOR OF PHYSIOTHERAPY  
FOURTH SEMESTER  
BIOSTATISTICS  
BPT - 404**

**SET  
B**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 min.

**( Objective )**

Marks: 20

*Choose the correct answer from the following:*

**1×20=20**

- In a discrete probability distribution, the sum of all probabilities is always?  
a. 1  
b. Infinite  
c. 0  
d. None of these
- When A and B are two independent events then  $P(AB)$   
a.  $P(\overline{AB})$   
b.  $P(A \cup B)$   
c.  $P(A) \cdot P(B)$   
d. None of these
- Which of the following is Graphical representation\_  
a. Frequency distribution table  
b. Scatter diagram  
c. Cumulative Frequency Curve  
d. None of these
- The pie graph formula is\_  
a.  $\frac{\text{Given data/ Total value of data}}{360^\circ}$   
b.  $\frac{\text{Given data/ Total value of data}}{100^\circ}$   
c.  $\frac{\text{Given data/ Total value of data}}{100}$   
d. None of these
- Pearson's correlation coefficient lies in between\_  
a.  $0 < r < 1$   
b.  $-1 < r < 0$   
c.  $-1 < r < 1$   
d. None of these
- When rolling a fair six-sided die, what is the probability of obtaining an even number?  
a.  $1/6$   
b.  $1/3$   
c.  $1/2$   
d.  $2/3$
- When a dice is thrown, the chance of getting an odd number is\_  
a. 0.3  
b. 0.5  
c. 0.6  
d. None of these
- If the number of rows is 3 and column is 4 for a test then degrees of freedom is\_\_  
a. 12  
b. 6  
c. 3  
d. None of these
- Test of Goodness of fit is conducted by using\_  
a. Chi-square test  
b. t-test  
c. F-test  
d. None of these

10. When the changes of two variable moves in opposite direction, the variables are said to be
- |                          |                          |
|--------------------------|--------------------------|
| a. Positively correlated | b. Negatively correlated |
| c. No correlation        | d. None of these         |
11. The population Mean is
- |               |                  |
|---------------|------------------|
| a. Statistics | b. Parameter     |
| c. Variable   | d. None of these |
12. The scatter within a distribution that is high on each side indicates \_\_\_\_\_
- |                            |                      |
|----------------------------|----------------------|
| a. High uniformity of data | b. Outliers of data  |
| c. Low uniformity of data  | d. None of the above |
13. Any measure indicating the centre of a set of data, arranged in an increasing or decreasing order of magnitude, is called a measure of:
- |                                 |                 |
|---------------------------------|-----------------|
| a. Kurtosis                     | b. Skewness     |
| c. Measures of central tendency | d. All of these |
14. Which one is the median of the distribution 2, 20, 7, 11, 5, 4, 8, 9, 12, 16, 23, 10
- |      |                  |
|------|------------------|
| a. 6 | b. 9.5           |
| c. 3 | d. None of these |
15. An example of the application of range in a real-world scenario would be \_\_\_\_
- |                                |                      |
|--------------------------------|----------------------|
| a. Fluctuation in share prices | b. Weather forecasts |
| c. Quality control             | d. All of the above  |
16. The coefficient of variation is a percentage expression for \_\_\_\_\_.
- |                       |                       |
|-----------------------|-----------------------|
| a. Standard Deviation | b. Quartile Deviation |
| c. Mean Deviation     | d. None of these      |
17. \_\_\_\_\_ and \_\_\_\_\_ are types of measures of dispersion.
- |                   |                       |
|-------------------|-----------------------|
| a. Nominal, Real  | b. Nominal, Relative  |
| c. Real, Relative | d. Absolute, Relative |
18. If  $A = \{1, 3, 4, 6, 7\}$  and  $B = \{2, 5, 8, 9\}$  and  $S = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ . Which one is the complementary of event A.
- |               |                  |
|---------------|------------------|
| a. A          | b. B             |
| c. $A \cup B$ | d. None of these |
19. What does probability mean?
- |  |  |
|--|--|
| a. The total number of possible outcomes in an event | b. The ratio of favorable outcomes to all outcomes |
| c. The chance of an event happening                  | d. None of these                                   |
20. Probability of an event lies in between \_\_\_\_
- |                  |                  |
|------------------|------------------|
| a. 0 to 1        | b. -1 to 0       |
| c. 1 to $\infty$ | d. None of these |



**( Descriptive )**

Time : 2 hrs. 30 min.

Marks : 50

*[ Answer question no.1 & any four (4) from the rest ]*

1. Describe different measures central tendency and different uses of it. 8+2=10

2. a. Distinguish between measures of central tendency. 5+5=10

- b. A survey has been conducted by a group of students on 20 households in a locality as shown in the following frequency distribution table. Find the mode for the given data.

Size of Family	1-3	3-5	5-7	7-9	9-11
No. of Families	7	8	2	2	1

3. a. For the distribution of X, mean=160cm, Variance= 9 sq.cm. For the distribution of Y, Mean= 55Kg, Standard Deviation= 4kg. Compare the dispersion of X and Y. 5+5=10

- b. Calculate the range and coefficient of range for the following data values.

45, 55, 63, 76, 67, 84, 75, 48, 62, 65

4. a. Discuss general principles of Graphic Presentation. 4+6=10

- b. A teachers survey her class on the basis of their favourite Sports. Draw a Pie graph for the following data.

Football	Hockey	Crick et	Basketball	Badminton	Table Tennis
10	5	15	10	14	6

5. a. What do you mean by Mutually Exclusive and Exhaustive events in probability. 5+5=10

- b. A box contains 6 black, 7 red and 5 green balls. Three balls are drawn from this box one after the other without replacement. What is the probability that the three balls are
- All black balls
  - Of different colours

6. a. What do you mean by positive and negative correlation ? 3+7=10  
Explain with examples.
- b. Find the correlation coefficient between height and weight of the following data and interpret the result.

Height (CM)	152	165	140	141	166	149
Weight (KG)	45	56	60	47	75	58

7. a. When Spearman Rank Correlation Coefficient is used? 2+8=10
- b. A random sample of recent repair jobs was selected and estimated cost and actual cost were recorded. Calculate the value of Spearman's Rank Correlation Coefficient and interpret the result from the table given below

Estimated Cost	300	450	800	250	500	975	475	400
Actual Cost	273	486	734	297	631	872	396	457

8. a. What do you mean by categorical variable? 2+8=10
- b. Weight of 10 students is as follows

S. No.	1	2	3	4	5	6	7	8	9	10
Weight (kg)	38	40	45	53	47	43	55	48	52	49

Can we say that the variance of the distribution of weight of all students from which the above sample of 10 students was drawn is equal to 20 kgs? Test this at 5% and 1% level of significance? (The tabulated Chi-square for 9 df at 0.05 and 0.01 level of significance are respectively 16.919 and 21.666)

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