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Set **P**

**B.Sc. – I (Biotechnology) (Semester – I) (CBCS) Examination, 2018**  
**CELL BIOLOGY AND BIOSTATISTICS**  
**Paper – II : Biostatistics**

Day and Date : Monday, 9-4-2018  
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**  
3) **Use of basic calculator is allowed.**  
4) **Use graph paper wherever necessary.**

1. Rewrite the following sentences by using correct alternative :

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- 1) Example of continuous variable is
  - a) Weight of a book
  - b) Number of words in the paragraph
  - c) Number of pages in the book
  - d) Number of books in the library
- 2) In a table the headings of the column are called
  - a) Stubs
  - b) Captions
  - c) Titles
  - d) Source Note
- 3) If the sum of 'n' observations is 525 and their mean 25, then the value of n is
  - a) 21
  - b) 25
  - c) 52.5
  - d) 5.25
- 4) Shirt size of the most of the people in India is No. 40. Which measure of central value does it represent ?
  - a) Mean
  - b) Median
  - c) Mode
  - d) Average
- 5) Relative frequency of the variable is always
  - a) in percentage
  - b) a fraction
  - c) an integer
  - d) an irrational number
- 6) Following is an example of qualitative data
  - a) Height of a house
  - b) Colour of a bike
  - c) Shirt size
  - d) Time to finish the race
- 7) If X = Largest and Y = Smallest value in the data then the coefficient of range is
  - a)  $(X + Y)/(X - Y)$
  - b)  $(X - Y)/X$
  - c)  $(X - Y)/(X + Y)$
  - d)  $X/Y$

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- 8) If the unit of observations is cm the unit of variance of these observations is  
a) cm                      b) m                      c)  $\text{cm}^2$                       d) no unit
- 9) Which of the following is a possible value of the correlation coefficient ?  
a) 1.2                      b)  $-0.9$                       c) 1.01                      d)  $-1.01$
- 10) Let A be event of rolling a die. Let B be event of an even number between 5 to 9, then  $A \cap B$  is  
a) {5, 6}                      b) {6}                      c) {4, 6}                      d) { }
- 11) If A and B are two events, the probability of occurrence of both A and B is given as  
a)  $P(A) + P(B)$       b)  $P(A \cup B)$       c)  $P(A \cap B)$       d)  $P(A) \cdot P(B)$
- 12) A sample is \_\_\_\_\_ of population.  
a) Super set      b) Power set      c) Sub set      d) Complement
- 13) The sum of the probabilities of all sample events in the sample space must be equal to  
a) 0                      b)  $-1$                       c) 1                      d) 0.5
- 14) If the frequency distribution has classes, 30-31, 32-33, 34-35, then lower class boundary of the class 32-33 is  
a) 32                      b) 32.5                      c) 31.5                      d) 31

2. Attempt **any five** of the following :

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- 1) Define 'Class width' and give an example.
- 2) State merits of 'Mode'.
- 3) The marks obtained by 10 students are 58, 70, 67, 49, 73, 64, 57, 66, 71, 75. Calculate the mean marks.
- 4) Compute the coefficient of range for data 42, 55, 79, 16, 55, 69, 13, 26, 95.
- 5) If  $b_{yx} = 0.2$  and the correlation coefficient  $r = 0.6$ , then find  $b_{xy}$ .
- 6) What is the probability of getting "a perfect square number" in single throw with die ?
- 7) If  $P(A) = 0.3$ ,  $P(B) = 0.4$  and  $P(A \cap B) = 0.5$ , find  $P\left(\frac{A}{B}\right)$ .
- 8) If standard deviation of 10 observations is 4.7, find standard error.
- 9) For the data, if standard deviation is 3 and mean is 14 then find the coefficient of variation.



3. A) Attempt **any two** of the following : 10

1) Calculate mode marks from the following data :

<b>Marks</b>	10-20	20-30	30-40	40-50	50-60	60-70
<b>No. of students</b>	5	16	32	13	10	4

2) Write five important applications of Biostatistics in detail.

3) A single card is drawn from a pack of 50 cards, numbered from 1 to 50. Find the probability that it is a multiple of 5 or a multiple of 6.

B) Solve the following : 4

Population of birds on 100 trees are as follows :

<b>No. of birds</b>	0-10	10-20	20-30	30-40	40-50	50-60
<b>No. of trees</b>	9	21	27	18	19	6

Draw a Histogram.

4. Attempt **any two** of the following : 14

1) Draw less than and more than Ogive for the following data :

<b>X</b>	10-20	20-30	30-40	40-50	50-60	60-70	70-80
<b>F</b>	8	10	17	15	11	5	4

2) Find the coefficient of correlation (r) from the following data :

<b>X</b>	4	5	6	7	8	9	10
<b>Y</b>	6	7	8	9	10	11	12

3) Find the standard deviation ( $\sigma$ ) from the following data :

<b>Class</b>	4	6	7	8	9	10	11
<b>Frequency</b>	3	6	9	12	8	5	4

5. Attempt **any two** of the following : 14

1) Find the regression equation X on Y from the following data :

<b>X</b>	5	3	7	4	8	2	10	6	8	7
<b>Y</b>	8	6	8	5	9	6	8	5	11	7

2) A coin is tossed 50 times of which head comes 32 times. Use Chi-square test to test the hypothesis that the coin is normal, having no bias for either head or tail (Table value : 3.84).

3) Find the mean deviation about mean of the following series :

<b>Class</b>	0-5	5-10	10-15	15-20	20-25
<b>Frequency</b>	4	6	20	7	3