

D 71696

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Name.....

Reg. No.....

**THIRD SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2019**

(CUCBCSS—UG)

Microbiology

MBY 3C 11—BIOSTATISTICS—I

(2014 Admissions)

Time : Three Hours

Maximum : 64 Marks

**Part A**

*Answer all questions.*

*Each question carries ½ marks.*

Fill in the blanks (Questions 1-4) :

1. The average which is useful for measuring relative growth of population is \_\_\_\_\_
2. The list, map, device or other acceptable material from which sample is drawn from a population is known as \_\_\_\_\_
3. \_\_\_\_\_ scales are used for labeling variables without any quantitative value.
4. Mean deviation is minimum when calculated from \_\_\_\_\_

Choose the correct answer (Questions 5-8) :

5. The probability of impossible event is :  
(a) 0. (b) 1.  
(c) 0.5. (d) Any value between 0 and 1.
6. If the mean of Poisson distribution is 30, then variance is :  
(a) 60. (b) 15.  
(c) 30. (d) All of the above.
7. Variance of chi-square distribution with 16 degrees of freedom is  
(a) 16. (b) 8.  
(c) 4. (d) 32.
8. Which of the following is a relative measure of dispersion ?  
(a) Standard deviation. (b) Co-efficient of quartile deviation.  
(c) Range. (d) Mean deviation.

**Turn over**

State True or false (Question 9-12) :

9. Median is the suitable average for dealing with ordinal data.
10. Probability of getting a spade from a pack of 52 cards is  $\frac{1}{13}$ .
11. Students t distribution is a skewed distribution.
12. Poisson random variable assumes only non negative integer values.

(12 × ½ = 6 marks)

### Part B (Short Answer Type Questions)

*Answer all questions.  
Each question carries 2 marks.*

13. Define : (i) random experiment and (ii) event giving an example.
14. Write down the binomial distribution for which mean and variance are respectively 4 and 3.
15. Define : (i) parameter and (ii) statistic. Give examples.
16. Give the p.d.f. of chi-square distribution with n degrees of freedom.
17. Define standard normal random variable and its distribution.
18. If the probability of a defective bolt is 0.10, what is the mean and variance for the distribution of defective bolts in a total of 400 ?
19. Define conditional probability and state multiplication theorem for independent events.
20. Find mean deviation about median of the observations 18, 9, 20, 16, 11.
21. Give some practical situations where Poisson distribution is applicable.
22. A problem in Mathematics is given to two students A and B whose chances of solving it are  $\frac{1}{4}$  and  $\frac{1}{5}$ . What is the probability that the problem is solved if they try independently ?

(10 × 2 = 20 marks)

### Part C (Short essay)

*Answer any six questions.  
Each question carries 3 marks.*

23. Calculate median mark from the following frequency distribution :

Marks	0-20	20-40	40-60	60-80	80-100
No. of Students	8	16	24	12	40

24. Define : (i) F statistic and (ii) F distribution.

25. Represent the following data by means of a histogram :

FBS level (mg/dL)	80-100	100-120	120-140	140-180	180-200	200-220
No.of persons	45	38	48	42	18	12

26. Calculate quartile deviation and its coefficient from the following data :

40, 55, 45, 25, 60, 30, 100.

27. One bag contains 4 green balls and 2 blue balls. Another bag contains 3 green balls and 5 blue balls. If one ball is drawn from each bag, find the probability that one is green and one is blue.

28. State addition theorems on probability. Illustrate the theorem for mutually exclusive events.

29. Describe briefly the advantages of sampling method over census.

30. Explain the merits of standard deviation as a measure of dispersion.

(6 × 3 = 18 marks)

#### Part D (Essay)

*Answer any two questions.*

*Each question carries 10 marks.*

31. (i) Explain different types of data and scales of measurements. Give examples.

(ii) Describe chief characteristics of normal distribution.

(6 + 4 = 10 marks)

32. (i) Define geometric mean. Under what circumstances would you use geometric mean ?

(ii) In a cricket match, the runs scored by batsman X and batsman Y in nine innings are given below :

Batsman X	60	80	40	90	70	50	65	45	100
Batsman Y	65	35	45	55	60	100	50	30	80

Examine who is more consistent in scoring runs.

(2 + 8 = 10 marks)

33. (i) Define t distribution. Give its applications in statistical theory.

(ii) Explain the graphical method of locating median from a frequency distribution.

(iii) State the difference between absolute and relative measures of dispersion. Give examples.

(4 + 3 + 3 = 10 marks)

[2 × 10 = 20 marks]