D 51536 (Pages 3) Name

Reg. No.....

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2013

(UG–CCSS)

Microbiology

Complementary Course

MB 3C 11—BIOSTATISTICS – I

rime : Three Hours Maximum : 30 Weightage

I. Objective type questions. Answer all *twelve* questions :

1 _____ is not an example of Primary data.

(a) A Direct Personal Interviews. (b) Questionnaires.

(c) Schedules. (d) Gazette Publications.

2 The _____ of a Histogram is proportional to frequency.

(a) Height. (b) Width.

(c) Area. (d) None of the above.

3 _____ is a measure of Central tendency that can be found using ogives.

(a) Mean. (b) Median.

(c) Mode. (d) GM.

4 The Standard Deviation is _____

(a) Square Root of Variance. (b) A Measure of dispersion.

(c) Known as Standard Error. (d) All of these.

5 _____ is a measure of Central Tendency used for calculating the rate of population growth.

(a) Mean. (b) Median.

(c) G.M. (d) H.M.

6 _____ is not a type of random sampling.

(a) Simple Random sampling. (b) Cluster Sampling.

(c) Convenience Sampling. (d) Quota Sampling.

7 If A and B are two events such that P (A) = P (B) = 1/3 and P (A $\cap$ B) ='A then P(A/B) = _____

(b) Y.

(c) 7/12. (d) 2/3.

Turn over

8 The probability of getting the number "4" when an unbiased die is _____

(a) $\frac{1}{2}$. (b) 1/3.

(c) $\frac{1}{4}$ (d) $\frac{1}{6}$.

9 We have computed the probability of an event to be 0.01. Which of the following statements is correct ?

(a) The event is unlikely to occur.

(b) We would expect the event to occur about 10 percent of the time.

(c) The event cannot occur.

(d) All of the above.

10 In a hospital, the number of births, X occurring at night is 900 per year while the total number of births in a year is 30000. Then X can be assumed to have _____ distribution.

(a) Poisson. (b) Binomial.

(c) Normal. (d) Chi-square.

11 The range of x^2 distribution is _____

(a) $-\infty < x^2 < \infty$. (b) $0 < x^2 < \infty$.

(c) $-\infty < x^2 < 0$. (d) None of these.

12 For a Normal distribution :

(a) Mean > Median > Mode. (b) Mean < Median < Mode.

(c) Mean = Median = Mode. (d) None of the above.

(12 x $\frac{1}{4}$ = 3 weightage)

II. Short answer type questions. Answer all *nine* questions :

13 Distinguish between discrete and continuous data. Give examples.

14 Define Sampling. State any two advantages of sampling over census.

15 Write any four desirable characteristics of a good measure of Central Tendency.

16 Define : (i) Mean ; (ii) Variance ; (iii) S.D for the observations $x_1, x_2, x_3 \ldots x_n$?

17 What is the Addition theorem of probability for any two events A and B ? Deduce the case when A and B are mutually exclusive.

18 The average pulse rate of 40 males was found to be 78 and that of a group of 60 females was 69. Find the combined mean pulse rate of the 100 patients.

19 Two coins are tossed simultaneously. What is the probability of getting : (i) Two heads ; (ii) Two tails ; (iii) At least one head.

20 Define a Binomial distribution. Write an instance where this distribution arises.

21 State any *four* properties of the Normal Curve.

(9 x 1 = 9 weightage)

III. Short Essay *or* Paragraph Questions. Answer any *five* questions from seven :

22 Construct a Histogram for the given data :

Class	0 – 10	10 – 20	20 – 30	30 – 50	50 – 70
Frequency ...	6	11	18	9	4

23 (i) Distinguish between Parameter and Statistics.

(ii) Give examples for each.

24 Define any *four* common measures of dispersion used.

25 The blood serum cholesterol levels of 10 patients are given below. Calculate the S.D. and C.V.

220 230 240 250 260 270 280 255 265 290

26 Define a Chi-square distribution. What is its mean and variance ? What is the relation between a chi-square variate and a Normal Variate ?

27 (i) Define Normal distribution $N(\mu, \sigma)$ and Standard Normal Distribution.

(ii) What is the transformation used for converting a Normal variate to a Standard Normal Variate ?

28 (i) Define a t-distribution.

(ii) State two important applications of t-distribution.

(5 x 2 = 10 weightage)

W. Essay questions. Answer any *two* questions from three :

29 Calculate the Mean deviation about the Median for the given data :

Class :	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
Frequency :	4	8	12	15	12	6	3

30 (i) Define the terms : (a) Random Experiment ; **(b)** Sample Space ; (c) Event. Cite examples for each.

(ii) Give the mathematical definition of probability.

31 Fit a Binomial distribution to the given data assuming that the nature of the coin is not known.

No. of heads	0	1	2	3	4	5	6	7
Frequencies	7	6	19	35	30	23	7	1

(2 x 4 = 8 weightage)