D 72429 (Pages : 3) Name

Reg. No. . . . . .

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2014

(UG-CCSS)

Complementary Course—Microbiology

MB 3C 11—BIOSTATISTICS—I

Time : Three Hours Maximum : 30 Weightage

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

1 Which of the following terms describe data originally collected at an earlier time by some other person for some other purpose :

(a) Primary data. (b) Secondary data.

(c) Experimental data. (d) Field notes.

2 An example of a continuous type random variable is _____

(a) Age of a patient.

(b) Birth weight of a newborn baby.

(c) Number of children in a family.

(d) None of the above.

3 A graphical representation of cumulative frequencies is called :

(a) Ogive. (b) Frequency polygon.

(c) Histogram. (d) Frequency graph.

4 "Testing the blood of a patient for Diabetes" is a situation where———— can be used.

(a) Only sampling. (b) Only census.

(c) Both census and sampling. (d) Neither census nor sampling.

5 _____ is a measure of Central Tendency which is not affected by extreme values.

(a) Mean. (b) Median.

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

6 The difference between the largest and the smallest data values is the :

(a) Variance. (b) Inter-quartile range.

(c) Range. (d) Coefficient of variation.

7 Two events A and B that cannot occur simultaneously are called :

(a) Independent events. (b) Exhaustive events.

(c) Mutually exclusive events. (d) None of these.

Turn over

8 Among the following, ———— is the only distribution with mean greater than variance.

(a) Poisson. (b) Binomial.

(c) Normal. (d) None of these.

9 The sum of squares of deviations of observations is minimum when taken from :

(a) Mean. (b) Median.

(c) Mode. (d) GM.

10 _____ is used for testing the equality of variances of two normal populations.

(a) t-test. (b) x^2 test.

(c) Normal test. (d) F-test.

11 A Normal population is completely specified if its mean and _____ are known.

(a) Range. (b) Variance.

(c) Curve. (d) None of these.

12 The pdf of a distribution is $f(x) = e^{-2}2^x/x!$. Its means is _____

(a) 4. (b) 1.

(c) 3. (d) 2.

(12 x ¼ = 3 weightage)

II. Short Answer Type Questions. Answer all *nine* questions :

13 What is meant by ordinal scale of data ? Which are the measures of central tendency used for this type of data ?

14 Define (i) Class Interval ; (ii) Class Mark ; (iii) Class Limits.

15 What do you mean by variability or dispersion of data? Give any two commonly used measures of variability ?

16 Define a Random Experiment.

17 If A and B are mutually exclusive events with P(A) = 0.2 and P(B) = 0.5, find

(i) P(A $\cap$ B) ; (ii) P(A $\cup$ B) ; (iii) $P(A^c)$; (iv) $P(A^c \cap B^c)$.

18 A bag contains 25 balls numbered 1 to 25. One ball is drawn at random. Find the probability that the number on the ball will be a multiple of 5.

19 Define a Bernoulli distribution. What is its mean and variance ?

20 If X is a Poisson variate such that 3P(X = 2) = 2P (X = 1), find (a) P (X = 0) ; (b) P (X = 3).

21 Comment on the following : The mean of a Binomial distribution is 3 and variance 4.

(9 x 1 = 9 weightage)

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

22 How do you construct a less than ogive ? How is it useful in finding (i) Median ; (ii) Quartiles ?

23 (i) Distinguish between Probability (random) Sampling and Non-probability sampling. Which of these come under the scope of Statistics ?

(ii) Give any *one* type of random sampling.

24. Calculate the mean, median and mode for the given data :—

No. of children	0	1	2	3	4
No. of households	5	7	10	8	5

25 (i) What are quartiles ? Give the formula for calculating the first and third quartiles for a continuous distribution.

(ii) Define Quartile Deviation.

26 Two dice are thrown simultaneously. Find the probability that (i) The sum of faces is at least 6 ; (ii) the sum of faces is either 7 or 9.

27 (i) Write down the pdf of a Chi square distribution. What is its mean and variance ?

(ii) Write down the relation between a Normal Variate and a Chi- squareVariate.

28 Define an F distribution. What are its applications in Statistics ?

(5 x 2 = 10 weightage)

IV. Essay Questions. Answer any *two* questions :

29 Calculate (i) Variance ; (ii) S.D. ; (iii) Coefficient of variation for the given data :

Class	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	8	12	16	20	14	10

30 (i) Distinguish between Mutually exclusive and Exhaustive events. Give examples.

(ii) What is meant by conditional probability of A given B ? What is the condition for independence of two events A and B ?

31 Fit a Poisson distribution to the given data :

x	0	1	2	3	4	5	6	7	8
	56	156	132	92	37	22	4	0	

(2 x 4 = 8 weightage)