D 92303 **(Pages : 3)** **Name**

Reg. No.....

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2015

(CUCBCSS—UG)

Complementary Course

MBY 3C 11—BIOSTATISTICS I

Time : Three Hours Maximum : 80 Marks

Calculator is permitted.

Section A

Answer **all** *questions in* **one word.**
Each question carries $^1/_2$ *marks.*

1. The x co-ordinate of the point of intersection of the less than and more than ogives correspond to
2. Second quartile is same as
3. In a series of values, if one value is zero then GM is
4. In a normal distribution SD = 9, then QD =
5. If A and B are mutually exclusive events then P (A u B) =
6. The mean of t-distribution is
7. The distribution of rare events is

Write True *or* False :

8. Discrete data can be expressed only in Whole numbers.
9. The height of a adult humans can be described by a Poisson distribution.
10. If A and B are disjoint event then P (A n **B) =1.**
11. **If V (** X) = 0 then all values of X are same.
12. The reciprocal of standard error is a measure of reliability or precision of the sample.

(12 x = 6 marks)

Section B

Answer **all** *questions in* **one sentence** *each.*
Each one carries 2 *marks.*

13. Define a continuous random variable.
14. What is 'Central Tendency' ?
15. What is conditional probability ?

Turn over

16. What is meant by Biological variability ?

17. Distinguish between population and sample.

18. Give *two* physical situations illustrating a Poisson random variable.

19. What is meant by classification ?

20. What do you understand by a ratio-scale of measurement ?

21. Define F-statistic.

22. State addition theorems of probability for two events.

(**10** x 2 = 20 marks)

Section C

Answer any **six** *questions.*
Each one carries 5 *marks.*

23. Briefly explain the construction of a frequency curve with an example.

24. If the probability of male birth is 0.5, find the probability that in a family of four children, there will be at least two boys.

25. The following data give the amount of creatinine in mg per 100 ml in a 24 hour urine specimen for 25 males :

1.51, 1.35, 1.58, 1.54, 1.45, 1.40, 1.31, 1.48, 1.36, 1.46, 1.43, 1.42, 1.39, 1.37, 1.33, 1.51, 1.34, 1.35, 1.41, 1.42, 1.46, 1.52, 1.37, 1.57, 1.50.

Tabulate the data in appropriate class intervals of size 0.05 mg and present in the form of a histogram.

26. Give classical definition of probability and state its limitations.

27. The probability that India wins a cricket test match against England is given as $^2/_3$. If India and England play three test matches, what is the probability that :

(i) India will lose all the three test matches?

(ii) India will win at least one test match?

28. What is a normal probability distribution ? What are the important properties of normal

29. Define *t* and F-statistic and state two properties of each.

30. State the scope of Biostatistics in different disciplines of Biological Science.

(6 x 5 = 30 marks)

Section D

Answer any two questions.
Each one carries 12 *marks.*

31. (a) What is a measure of dispersion ?

(b) Blood serum cholesterol levels of 10 subjects are given below :

240, 260, 250, 245, 255, 248, 252, 260, 240, 250.

Calculate Mean, Standard Deviation and Coefficient of variation.

32. (a) Define Poisson distribution.

(b) The following table gives the number of squares with x yeast cells out of 400 squares. Fit a Poisson distribution and find the theoretical frequencies :

No. of cells (x)	*0*	1	2	3	4	5
No. of squares	105	143	98	42	8	4

33. (a) What are the characteristic of a good measure of central tendency.

(b) Find Median from the following frequency distribution :

Urea (in mg)	16-20	20-24	24-28	28-32	32-36
No. of patients	20	30	11		

(c) The pulse rate of healthy males follows a normal distribution with a mean of 72/min and a s.d. of 3.5/min. Find the percentage of men have the pulse rate above 79/min in the normal population.

(3 + 4 + 5 = 12 marks)

[2 x 12 = 24 marks]