

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2011 – 12)

SUBJECT CODE: 11BI/PE/BS14

M. Sc. DEGREE EXAMINATION, NOVEMBER 2011
BIOINFORMATICS
FIRST SEMESTER

COURSE : ELECTIVE
PAPER : BIOSTATISTICS
TIME : 3 HOURS

MAX. MARKS: 100

SECTION – A

ANSWER ANY TEN OF THE FOLLOWING QUESTIONS (10 x 10 = 100)

1. a) The following are the weights in kg of 50 college students. Construct a frequency table.

42	42	46	54	41	37	54	44	38	45
47	50	58	49	51	42	46	37	42	39
54	39	51	58	47	51	43	48	49	48
49	41	41	40	58	49	49	59	57	52
56	38	45	52	46	40	51	41	51	41

- b) State the essential characteristics of a good table.
2. a) The arithmetic mean calculated from the following frequency distribution is known to be 67.5 inches. Find the missing frequency.

Ht	60-62	63-65	66-68	69-71	72-74
frequency	15	54	x	81	24

- b) The mean and SD of the weights of 20 fishes was found to be 10 g and 2 gm respectively. At the time of repeating the experiment it was discovered that one item was incorrectly input as 8 instead of 12. Calculate the corrected mean and SD.
3. Calculate the quartile deviation and coefficient variation of the following

Length	Number
126-130	31
131-135	44
136-140	48
141-145	51
146-150	60
151-155	55
156-160	43
161-165	28

4. Find the Pearsons coefficient of skewness for the following

Size	3-7	8-12	13-17	18-22	23-27	28-32	33-37	38-42
Frequency	2	108	580	175	80	32	18	5

5. a) Obtain the two regression lines from the following data

$$N = 20, \sum x = 80, \sum y = 40.$$

- b) Given

	x	y
AM	6	8
SD	5	40/3

And coefficient of correlation between x and y is $8/15$.

Find regression coefficient of y on x and x on y.

6. Explain in short any five applications of biostatistics in bioinformatics.
7. a) The probability that a man aged 35 yrs will die before reaching the age of 40 may be taken as 0.018. Out of a group of 400 men now aged 35 years of age, what is the probability that 2 men will die in the next five years ($e^{-7} = 0.00091$, $e^{-2} = 0.8187$)
b) give the general characteristics of the normal distribution.
8. a) A sample of 400 trees is found to have a mean height of 171.38 inches. Can it be reasonably regarded that the sample from a larger population of mean height 171.17 inches and SD 3.3 inches?
b) Explain the Hardy Weinberg principle.
9. a) A coin was tossed 900 times and head appeared 490 times. Does the result support the hypothesis that the coin is unbiased?
b) Explain the principle behind the semi markov process.
10. Time taken by workers in performing a job is given below. Test whether there is any significant difference between the variance of time distribution.

20	16	26	27	23	22	
27	33	42	35	32	34	38

11. The following is the data collected on two characteristics:

	Smokers	Non smokers
Literate	83	57
Illiterate	45	68

Are the two aspects related?

12. A variable trial was conducted on wheat with 4 varieties. The plan of the experiment and the per plot yield are given below. Analyse the data using ANOVA.

Strains/Blocks	1	2	3	4	5
A	32	34	34	35	36
B	33	33	36	37	34
C	30	35	35	32	35
D	29	22	30	28	28
