M. SC. BIOINFORMATICS SEM.-I (C.B.C.S.) (2013 COURSE) / ADVANCED DIPLOMA IN BIOINFORMATICS SEM.-I (C.B.C.S.) (2013 COURSE) : WINTER - 2017
SUBJECT : BIOSTATISTICS

Day : Wednesday

Date : 08/11/2017

W-2017-1011

Time : 10.60 AM TO11.30 AM

Max. Marks : 60

N.B.

1) Answer any **THREE** questions from Section – I and any **THREE** questions from Section – II.
2) Answers to both the sections should be written in **SEPARATE** answer book.
3) Use of scientific calculator is allowed.

SECTION – I

Q.1 In an ENT medical camp patients were treated for common. Eye , Nose and throat related problems. Draw a properly labeled BAR charts to represent the data so that it is convenient for the supervising doctor to include in his report. **(10)**

	Eye problems	Nose Problems	Throat Problems
Male	75	20	5
Female	80	30	15

Q.2 Define or explain **any five** of the following terms/concepts: **(10)**

a) Variance   b) Bi-variance distribution

c) Scatter diagram   d) Sample

e) Growth curve   f) Standard-Error

g) Co-variance

Q.3 In an ICU a high BP patient was monitored for 13 hours. Calculate r(coefficient of correlation), b(slope) and c(intercept) from the data. **(10)**

Hours (time) in ICU	1	3	5	7	9	11	13
BP (High)	170	165	163	155	157	143	140

Q.4 When would you use simple random sampling and stratified random sample. Differentiate between the two methods. **(10)**

SECTION – II

Q.5 Use Chi-square test to test association between feed back and background of patients collected at a hospital regarding quality of services. **(10)**

	Good	Fair	Poor
Rural	10	20	15
Semi-urban	10	20	15
Urban	20	40	30

Given table value of Chi-square at 0.05 probability and 4 df is 9.487.

Q.6 Discuss a situation each, when you use following tests: **(10)**
t-test (dependant), t-test(paired), Chi-square test, F-test, Man –Whitney- U – Test.

Q.7 Relationships between age (in months) and Body-weight of infants were **(10)** found to have the following equations in different geographic conditions. Results are based on first three data of first four months.

	Kolkata	Meerut	Chennai
Intercept (a)	2.5	3.0	2.7
Slope	0.52	0.63	0.45
Correlation coefficient	0.65	0.97	0.98

a) Write the linear regression equations clearly in proper notation.
b) What was the weight at birth in each case and which city showed the best weight?
c) Predict the weight of infants after 5 months for each city and compare.
d) Which city shows the maximum dispersion (variations) amongst the three?

Q.8 Write short notes on **ANY TWO:** **(10)**
a) Random variables
b) Hidden Markov Model
c) Gaussian distribution
d) Replications and randomizations in designed experiments

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