

Seat No. : _____

AG-137

April-2015

B.Sc., Sem.-VI

STA-311 : Statistics

(Medical Statistics)

Time : 3 Hours]

[Max. Marks : 70

- Instructions :** (1) Attempt **all** questions.
(2) Each carry equal marks.
(3) Scientific calculator are allowed.

1. (a) Define population growth. Explain exponential and logistic population growth.

OR

Let T be the survival time and it follows exponential distribution with parameter λ . Obtain expression for survival function and hazard rate.

- (b) Explain discrete and continuous time population growth model.

OR

Explain hazard rate and survival function.

2. (a) Write a note on Relative risk.

OR

Explain Epidemiology and also write applications of Epidemiology.

- (b) The epidemiology of preterm delivery was undertaken at Yale-New Haven Hospital in Connecticut during 1977. The table on the following slide contains data for Mother's socioeconomic status (SES) for those with (cases) and without (controls) preterm delivery.

| | Preterm Delivery | |
|--------------|-------------------------|----------------------|
| SES | Yes : Cases | No : Controls |
| Lower | 53 | 58 |
| Upper | 11 | 40 |

- (1) Calculate the OR for Preterm Delivery : Lower SES compared to Upper SES.
- (2) Find the confidence coefficient of OR.
- (3) Calculate the SE of LN (OR).
- (4) Find the lower and upper limits on the LN scale and the original scale.

OR

Why do we use OR instead of RR in case-control studies ?

3. (a) What is clinical trials ? Explain the phases of clinical trials.

OR

Write a short note on Drug Regulatory bodies.

- (b) Explain the case – control studies and longitudinal studies.

OR

Write a short note on history of drug discovery.

4. (a) What is Crossover design ?

OR

Explain Bioequivalence and Bio-availability.

- (b) Explain evidence based medicine.

OR

Write a short note on non-inferiority trial and practice based medical research.

5. Answer the following terms :

- (1) Define : Birth rate.
- (2) Write any two importance of clinical trials.
- (3) Define : Odd ratio.
- (4) Define : Death rate.
- (5) What is the survival function of weibull distribution with parameter λ ?
- (6) What are the different types of clinical trials ?
- (7) What do understand about $OR < 1$?
