

(PHDFN)

Term-End Examination

December, 2014

**RFN-001 : RESEARCH METHODS AND
BIOSTATISTICS**

Time : 3 hours

Maximum Marks : 100

Note : Answer five questions in all. Question No.1 is compulsory.

1. (a) Explain the following terms in 2-3 sentences each : 10
- (i) Hypothesis
 - (ii) placebo
 - (iii) Sensitivity
 - (iv) Epidemiology
 - (v) Prevalence
- (b) Give one example for each of the following: 10
- (i) Measure of central tendency
 - (ii) Research tool
 - (iii) Statistical Package
 - (iv) Non-parametric test
 - (v) Graphical presentation of quantitative data
 - (vi) Analytic study
 - (vii) Non -probability sampling
 - (viii) Characteristics of a good research tool
 - (ix) Indicator of Mortality
 - (x) Measure of relationship

2. As part of your Ph.D, you are required to plan a research study in the area of obesity. Formulate a research proposal covering the following aspects :
- (a) Statement of problem (Title of the study) 2
 - (b) Formulation of objectives, hypothesis, if required 5
 - (c) Research design and sample size determination 5
 - (d) Collection of data (tools/techniques/methods) 5
 - (e) Analysis and interpretation of data 3
3. Given here is the data related to the weight (in kgs) of adolescent girls in a private school.
- 51, 52, 52, 57, 61, 58, 64, 54, 59, 60, 54, 55, 60, 54, 55, 58, 63, 58, 57, 58.
- (a) Draw a frequency polygon based on the data. 4
 - (b) Calculate the mean, median, mode and standard deviation of the data. 12
 - (c) Find the 95th percentile and 3rd percentile of the data. 4
4. (a) Briefly discuss the application of the following in epidemiological research : 10
- (i) two - tail and one - tail test
 - (ii) level of significance
 - (iii) power of test

- (b) A study was undertaken to assess the knowledge of men and women regarding HIV/AIDS. The knowledge scores are given herewith : 10

Men : 8, 2, 0, 5, 5, 3, 7, 2, 1, 4, 9, 8, 4, 6, 3.

Women : 7, 3, 6, 5, 9, 9, 1, 8, 7, 5.

Test whether the difference between the mean knowledge score between men and women is significant at 0.05 level. [Given that $t_{0.05}(23) = 2.07$, $t_{0.05}(24) = 2.06$]

5. Explain the following briefly : 5+5+5+5

- (a) Different methods used in probability sampling.
- (b) Types of observations and their uses and limitations.
- (c) Uses and limitations of questionnaire in research.
- (d) Issues in the design and conduct of clinical trials.

6. Write short notes on **any four** of the following :

- (a) Tables commonly used to tabulate data in research. 5+5+5+5
- (b) Variables studied in epidemiological research.
- (c) Uses and limitations of case-control studies.
- (d) Use of attitude scales.
- (e) Graphs for relationship between two variables.
