MASTER OF SCIENCE (DIETETICS AND FOOD SERVICE MANAGEMENT) (M.Sc. DFSM)

Term-End Examination

December, 2021

MFN-009 : RESEARCH METHODS AND BIOSTATISTICS

Time : 3 hours *Maximum Marks : 100*

Note :

1. *Question no.* ***1*** *is* ***compulsory****.*
2. *Answer* ***five*** *questions in all.*
3. *All questions carry equal marks.*

1. (a) Give one example for each of the following : *5*

(i) Measures of Relative Positions

(ii) Measures of Variability

(iii) Measures of Central Tendency

(iv) Measures of Relationship

(v) Measures of Uncertainty

(b) Present a formula you will use to calculate sample size for your study based on the standard deviation estimated from a pilot study. *2*

(c) Differentiate between an objective and a hypothesis, giving example. *3*

(d) Define epidemiology. List any four purposes/aims of epidemiology. *5*

(e) Give one example for each of the following variables for the health of the community : *5*

(i) Demographic

(ii) Community Infrastructure

(iii) Health-related

(iv) Quantitative

(v) Discrete

2. Present a critical analysis on the design strategies available in epidemiological research. Support your answer by enumerating the different types of studies and their uses, giving appropriate examples and illustration. *20*

3. (a) Discuss the various probability sampling techniques that can be used in research highlighting their strengths and limitations. *10*

(b) What are the characteristics of a good research tool ? Explain briefly. *10*

4. (a) Differentiate between a test and a questionnaire as a research tool. Substantiate your answer highlighting the characteristics, uses and limitations of the two. *10*

(b) What do you understand by the terms "Confidence Interval", "Level of Significance" and "Degree of Freedom" ? Discuss their relevance in research and epidemiology. *10*

5. Tuberculosis has emerged as a major health problem among certain community groups in our country. You as a researcher would like to investigate the prevalence, risk factors and nutritional status of tuberculosis patients and then develop an intervention programme to improve their nutritional status. Plan a suitable study covering the following aspects :

(a) Title of the study *2*

(b) Introduction, statement of the problem and importance of the study *4*

(c) Objectives of the study *3*

(d) Sample, sample size and sampling techniques for identification of subjects *4*

(e) Tools and techniques to collect data *5*

(f) Statistical analysis tools *2*

6. Given below is the nutrition knowledge score of 10 boys and 15 girl students out of 20 :

Boys (n = 10)	Girls (n = 15)
5	2
15	17
9	20
7	7
6	14
18	18
10	6
12	3
0	9
8	13
	4
	15
	10
	6
	12

(a) Compute the mean, mode, median and standard deviation of the data (separate for boys and girls). *3+3+3+2*

(b) Compute the the standard error of the difference between the mean scores (of boys and girls). *4*

(c) Using T-test, determine whether the boys and girls differ in nutrition knowledge. (Test the significance of difference between means) *5*

7. (a) Consider the following bivariate data given herewith :

Infant Outcome	Nutritional Status of Mother	
	Underweight	Overweight
Low Birth Weight	181	36
Normal Weight	1560	651

Based on the data :

(i) Calculate the relative risk of low birth weight babies among underweight mothers. *5*

(ii) Calculate the odds of low birth weight babies being born to underweight mothers as compared to overweight mothers. *5*

(b) "Tables and graphs are commonly used to tabulate data on a large number of subjects." Comment on the statement, highlighting the tabular and graphical presentation of quantitative data using examples. *10*

8. Write short notes on any ***four*** of the following : *5+5+5+5*

(a) Various Types of Observations

(b) Indicators of Morbidity

(c) Assumptions for Analysis of Variance (ANOVA)

(d) Measures for Validity of Diagnostic Test

(e) Uses and Limitations of Rating Scales