

Course No: BIPH4029  
Course Title: Scientific Research  
Methods & Applied Statistics  
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Time: 2 hours  
Using Calculator (No)

University of Palestine  
  
Final Exam  
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Total Grade: 100

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Using Dictionary (No)

**Question One: Select the correct answer from the four alternative for each statement (20 Marks)**

- To measure the magnitude of diabetes mellitus in a given population, which of the following rates could be used:**
  - Incidence Rate
  - Prevalence Rate
  - Both A & B
  - None of above
- With cluster sampling, the best results occur when elements within clusters are:**
  - Internally Homogeneous.
  - Internally Heterogeneous .
  - Relatives.
  - None of above.
- The probability of finding a difference with our sample compared to population, and there really isn't one known as:**
  - Selection Bias
  - Information Bias
  - Alpha
  - Beta
- Which of the following is not considered as a disadvantage of Correlational studies:**
  - Inability to link exposure with disease in particular individuals.
  - Expensive and need long time.
  - Inability to control the effects of potential confounding factors.
  - Data represent average exposure rather than linear association.
- Which of the following indices is considered as an indirect health index:**
  - Birth Rate
  - Health services
  - Weight/Height
  - Crude Death Rate
- In which of the following study, the investigator does not need to differentiate between dependent and independent variables:**
  - Cross-sectional study
  - Case-control Study
  - Cohort Study
  - None of above
- The study which aims to determine the frequency with which something occurs or with which it is associated with something else known as:**

- A) Exploratory Research
  - B) Descriptive Research
  - C) Diagnostic Research
  - D) Hypothesis-testing Research.
8. **By the following measures, the confounder factor can be isolated during study design except:**
- A) Matching
  - B) Stratification by three cross-tabulation
  - C) Randomization
  - D) Restriction
9. **Which of the following is not a systematic error:**
- A) Recall Bias
  - B) Refuse or not response to participate.
  - C) Misclassification Bias.
  - D) Small Sample Size.
10. **Which of the following could answer the research questions in specific groups:**
- A) Goal of study
  - B) Importance of study
  - C) Justification of study
  - D) Specific objectives of study

**Question Two: Answer the following questions:**

**(30 Marks)**

1. **Define the following terms:**
  - a. Sampling Fraction
  - b. Confirmed Case
  - c. Probability Sampling
  - d. Point Prevalence
  - e. Confounder Factor
2. **Justify the following statements:**
  - a. Case fatality rate measures the severity of diseases, while Cause specific Mortality rate does not do the same.
  - b. Demographic gap occurs in developing countries as Palestine.
  - c. Cohort study could be a prospective or a retrospective study.
3. **Enumerate the criteria which confirmed that the association reaches the level of causation.**
4. **What is the difference between Hypothesis-generating study & Hypothesis-testing study according to types and aim of study ?**
5. **A study is to be done to determine effect of two medications (X and Y) on serum calcium level. From previous studies using those drugs, standard deviation of serum calcium level of 2 and 3 g/dl were obtained respectively. A confidence level of 95% and a power of 80% is required to detect a mean difference between the two groups of 0.5 g/dl. How many subjects should be include in each group? (Use the following table to obtain the value of F).**

**Table of F**

		Power (%)			
		50	80	90	95
Level of Significance	0.1	2.7	6.2	8.6	10.8
	0.05	3.8	7.8	10.5	13
	0.01	6.6	11.7	14.9	17.8

**Question Three: Answer the following questions:**

(50 Marks)

The following attached study is an article from **The Journal of Clinical Endocrinology & Metabolism (*J ClinEndocrinolMetab*)**. After reading the **context, objective, design& method, results, conclusion&introduction** of the study in detail and depth, Answer the following questions:

- A) Is the **title** of the study complete and suitable for the topic of study?(**Please justify your answer**).
- B) Specify the **population** and **the sample** of the study by showing the difference between the **population** of study and study **sample**?
- C) What is the difference between the **objective** of the study, **Importance** of the study and **justification** of the study? (**Please determine the paragraphs which related for each term**).
- D) Determine the **dependent variable** and the **independent variables** in this study.
- E) Determine the **paragraph** which indicates that the researchers have achieved the **main objective** of the study.
- F) What is the type of **study design**? & what is the type of **sampling design**?
- G) Briefly , Enumerate the **advantages and disadvantages** of this type of study design.
- H) Determine the **tool and technique** of data collection in this study showing the **difference** between tool and technique.
- I) How can you **document** this study in your research report **context** and in **reference list**, if you use some results from it? (**Please implement it**).
- J) Write your **conclusion** about the **results and recommendations** of this study as you understand.