

KATHMANDU UNIVERSITY  
End Semester Examination  
February, 2025

Marks Scored:

Level : B.Tech.

Year : III

Exam Roll No. :

Registration No.:

18 FEB 2025

Time: 30 mins.

Course : BIOT 313

Semester : II

F. M. : 10

Date :

SECTION "A"

[20 Q. × 0.5 = 10 marks]

**Choose and encircle the most appropriate option from each set of choices**

1. What is the best one sentence summary of a paper on beta clamp phylogeny?
  - a. We have analyzed the phylogeny of beta clamp using Neighborhood Joining algorithm in MEGA software
  - b. Analysis of the phylogeny of beta clamp shows that PCNA is archaea form the most diverse group
  - c. Analysis of 100 bacteria, 100 archaea and 100 eukaryotes of diverse phylum gives the best result of evolutionary history
  - d. Evolutionary history and origins of beta clamp was studied using highly complex maximum likelihood algorithm
2. Which of the following comes last in the introduction section
  - a. A brief summary of the method, result and discussion.
  - b. Defining of the research territory
  - c. Occupying of the niche
  - d. Establishing niche within the research territory
3. According to the "Scientist's Guide to Writing" what does credibility in research methods include
  - a. Enough information so that the experiment can be repeated
  - b. Information describing the details of temperature and location of the experiment
  - c. Information similar to methods of other research papers in the field
  - d. The most stringent of all research methods found in the literature
4. What is the common goal of self, friendly and formal revisions?
  - a. To enhance cooperation between scientists
  - b. To establish connection between writer and reviewer
  - c. To select papers that should be published in a given journal
  - d. To improve the content of the paper
5. For which of the following editorial decisions can you **NOT** resubmit a paper
  - a. Reject with DWOP
  - b. Reject
  - c. Major revisions asked
  - d. Minor revisions asked
6. What about monograph is **NOT** true?
  - a. Monographs were more popular in the past than now
  - b. For writing a monograph the author can submit a proposal to the publishing house
  - c. Darwin's origin of species is an example of scientific monograph
  - d. Monograph writing cannot be broken down into smaller papers

7. The null hypothesis for a study is:  $H_0$  : As a result of 300 mg/day of the ABC drug, there will be no significant difference in depression, which is tested against the alternative hypothesis:  $H_A$  : As a result of 300 mg/day of the ABC drug, there will be a significant difference in depression. This is an example of
  - a. One tailed test
  - b. Two tailed test
  - c. Both one tailed and two tailed test
  - d. Neither one tailed test nor two tailed test
  
8. All these are true about non malficience principle **EXCEPT**:
  - a. Includes an obligation not to inflict harm intentionally
  - b. Includes informed consent and truth telling
  - c. Physicians must refrain from providing ineffective treatments or acting with malice toward patients
  - d. Offers little useful guidance to physicians because many beneficial therapies also have serious risks
  
9. Which of the following is **NOT** a criticism of qualitative research
  - a. The studies are not generalizable
  - b. There is chance of biasness
  - c. The approach is too rigid and inflexible
  - d. The analysis is too subjective and impressionistic
  
10. Few years ago a large tuberculosis prevelance survey was carried out in Nepal. Samples were selected from different locations around Nepal as shown by dark regions in Nepal. Which of the following would be the best sampling technique given this information:
  - a. Cluster non random sampling
  - b. Cluster random sampling
  - c. Stratified non random sampling
  - d. Stratified random sampling



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11. Content validity:
- a. Is a type of construct validity where definitional domains are confirmed
  - b. Is a type of internal validity
  - c. Is a type of construct validity where face value is checked
  - d. Is a type of external validity where the possibility of generalization is checked
12. There are a number of threats to construct validity. The inability to properly define the construct falls under
- a. Inadequate preoperational explication of the constructs
  - b. Mono operation bias
  - c. Mono method bias
  - d. Interaction of different treatments
13. Which of the following statements is **TRUE** about Likert scale construction?
- a. Likert scale can be multidimensional
  - b. The potential items can be from a scale of 1 to 5 or 1 to 7 Agree-Disagree response scale
  - c. Judges of the scale rate the items for their beliefs in the items
  - d. Judges can only be experts familiar with the objects
14. Which of the following statements is **FALSE**?
- a. Visual presentations are possible in focus groups
  - b. In electronic questionnaires on the spot adjustment is not possible
  - c. To participate in focus groups reading and writing is required
  - d. In personal interview the quality of the response can be judged
15. Interviewers should not
- a. Locate and enlist cooperation of respondents
  - b. Motivate respondents to do a good job
  - c. Ask questions that they think is suitable
  - d. Clarify any concerns or questions
16. Nepal suffered a devastating earthquake in 2015. To study the effects of the earthquake which of the following designs is most appropriate

- a. **R X O**                      **N O X O**
- R**                      **O**                      **N O**                      **O**
- b. \_\_\_\_\_
- c. **X O**
- d. **N O**                      **O**
- \_\_\_\_\_

17. Factorial designs are often considered signal enhancing designs because:
- They can monitor the interaction effects between treatments
  - They are able to show the null effect of the treatments
  - They can isolate the effect of treatment on the outcome
  - They contain bare minimum confounding factors
18. What makes a research design quasi?
- The use of both randomization and non randomization in sampling
  - The use of randomization in sampling
  - Experimental designs with no observations
  - The use of non randomization in sampling
19. How can you **NOT** improve both type I and type II error rates
- By increasing the sample size
  - By improving the significance level of the study
  - By increasing the effect size of the study
  - By increasing both the sample size and effect size of the study
20. Which of the following equations evaluates inferential statistics for regression point displacement analysis?

a. 
$$Y_i = \beta_0 + \beta_1 X_i + \beta_2 Z_i + \theta_i$$

b. 
$$Y_i = \beta_0 + \beta_1 X_i + \beta_2 Z_i + \theta_i$$

c. 
$$Y_i = \beta_0 + \beta_1 X_{adj} + \beta_2 Z_i + \theta_i$$

d. 
$$Y_i = \beta_0 + \beta_1 Z_{1i} + \beta_2 Z_{2i} + \beta_3 Z_{3i} + \beta_4 Z_{4i} + \theta_i$$

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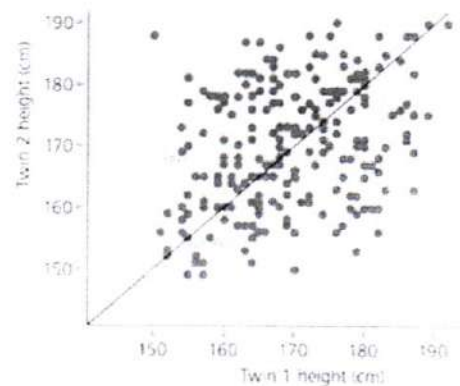
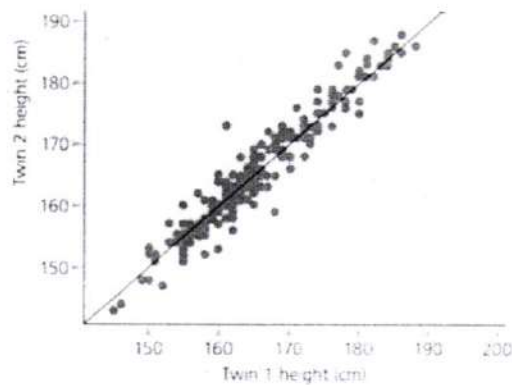
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Course : BIOT 313  
Semester : II  
F. M. : 40

SECTION "B"  
[8 Q. × 2 = 16 marks]

Attempt ANY EIGHT questions.

1. The following figure shows correlation between the height of monozygotic and dizygotic twins. Write a result section for this data. [2]



2. What are concept maps? Illustrate with a figure. [2]
3. What is the author's view on aesthetic beauty of scientific writing? [2]
4. Distinguish deductive reasoning from inductive reasoning? [2]
5. What are causal studies? What is ethnography? [1+1]
6. Describe Stanley Milgram's obedience studies. [2]
7. What is the relationship between qualitative and quantitative data? [2]
8. What are two major approaches to external validity in sampling? [2]
9. Describe how the Thurstone scale, equal appearing intervals, is constructed? [2]
10. Describe one common index. Describe temporal precedence with an example. [1+1]

P.T.O.

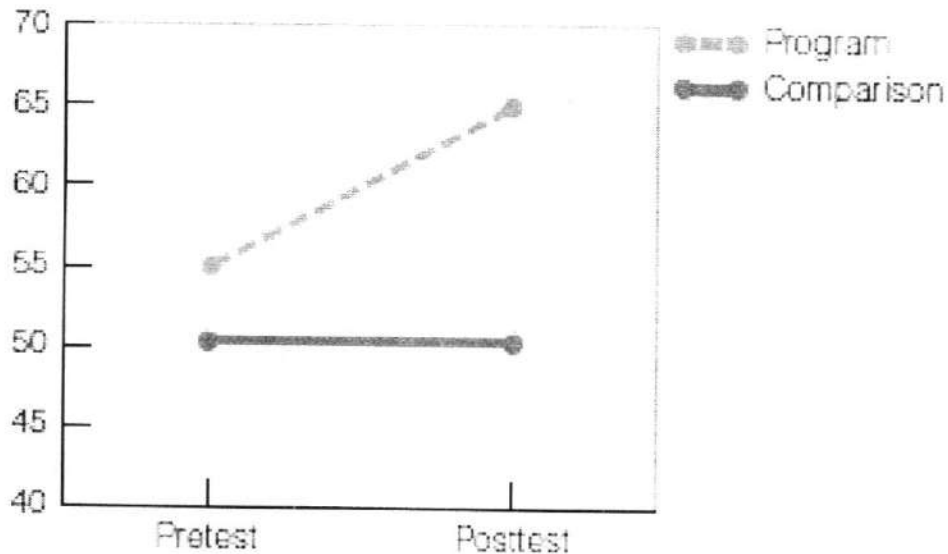
**SECTION "C"**  
[3 Q. × 4 = 12 marks]

Attempt ANY THREE questions.

11. Following chart shows SAT score distribution by sex. Write an abstract for this data in 150 words. [4]



12. Scrub typhus is an impending tropical disease increasing in incidence in Nepal. Design a questionnaire using all the questions types you were taught to survey the disease among health providers across Nepal. [4]
13. Which was the first randomized control experiment? Describe all the social interaction threats to internal validity. [1+3]
14. What is the noise canceling design, the block design? [2]



In this example of the NEGD in the above figure, what are the possible threats to internal validity? [2]

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SECTION "D"  
[2 Q. × 6 = 12 marks]

*Attempt ANY TWO questions.*

15. What was Newton's style of writing? Describe. When writing in a group, what is the function of the lead author? What were the findings of the star formation paper described in the book? [2+2+2]
16. What are the different types of reliability measures? Describe them. What is expert sampling? [5+1]
17. With equations if possible describe what is meant by correlation. How is it different from regression? What is a t-test? Describe. [2+1+3]