ESSIS Research Methods – Quiz Questions

1. What is not one of the main goals of Science?
   a) existence of cause and effect between events
   b) gathering information by deduction
   c) gathering information by induction
   d) explanation of events by metaphysics
   e) None of the above
2. -------- is defined as a mental image that summarizes a series of observations, emotions, and ideas.
   a) law
   b) theory
   c) concept
   d) paradigm
   e) construct
3. What are the main characteristics of a good hypothesis? Tick as many as applicable.
   a) should be based on a theoretical foundation
   b) should be testable
   c) hould be stated clearly
   d) should be defined operationally
   e) should describe the relationship between variables
4. Which one is the research hypothesis (H_1) below?
   a) There exists no relationship between education and income.
   b) Life expectancy (in years) for men and women is equal to each other.
   c) Public universities are more popular than private universities.
   d) Physical exercise has no effect on obesity.
   e) None of the above.
5. Which statement below is correct?
   a) Smoking is the necessary cause of lung cancer.
   b) Smoking is the sufficient cause of lung cancer.
   c) Smoking is the necessary and sufficient cause of lung cancer.
   d) The existence of correlation between smoking and lung cancer is the necessary but not sufficient condition to claim causality between the two variables.
   e) None of the above.
6. Inductive reasoning goes from broader generalizations to specific observations
   a) True
   b) False
7. Which of the followings are some type of research? Tick as many as applicable.
   a) Exploratory
   b) Descriptive
   c) Explanatory
   d) Qualitative
   e) Quantitative
8. Exploratory research leads to biased analysis, is useless in decision making and generates qualitative information
   a) True
   b) False
9. In qualitative research, statistics or other computational techniques are applied
   a) True
   b) False

10. An independent variable is a variable which is influened by another variable
    a) True
    b) False
11. A commonly used measure in descriptive statistics is the *standard deviation*. What information does this measure provide about a population variable?
    a) It indicates where we can find the central value for the population variable.
    b) It indicates the degree of variation or dispersion in the population variable.
    c) It indicates whether the population variable is approximately normally distributed or not.
12. Suppose that a particular question in a questionnaire is a closed question with the response options on the Likert scale 1-5. It is quite common to use the arithmetic mean as the central tendency measure for such a response scale. However, some researchers argue that the arithmetic mean is unsuitable for summarizing survey answers on the Likert scale. What could be the general problem with using the arithmetic mean in this scenario?
    a) There are likely some outliers that will make the arithmetic mean misleading.
    b) The arithmetic mean will not say anything about to what extent the study participants agreed or disagreed with each other.
    c) Since the Likert scale can be interpreted as an ordinal scale, the arithmetic mean will not give a meaningful estimate of the central tendency.
13. We wish to generate a random representative sample from a population. Is it appropriate to use a *systematic* sampling to this end?
    a) Yes, since systematic sampling is based on using a random starting point for the sampling procedure.
    b) No, since systematic sampling is a biased sampling procedure that tends to exclude certain strata (subgroups) in the population.
14. Based on observations of how long time it takes for a pizzeria to deliver a pizza after it has been ordered, it is found that the pizza delivery time is a normally distributed variable with the population mean $\mu = 20$ minutes and the standard deviation $\sigma = 2$ minutes. What is the probability that a certain pizza will be delivered within 16-18 minutes?
    a) 34.1 %
    b) 47.7 %
    c) 13.6 %
15. What is the purpose of using a significance level when conducting hypothesis testing?
    a) The significance level denotes the accepted risk of incorrectly rejecting the null hypothesis (a so-called Type I error).
    b) The significance level denotes the accepted risk of incorrectly retaining the null hypothesis (a so-called Type II error).
16. What is scholarly communication? (please check all that apply)
    a) the system through which research results can be disseminated to the scholarly community
    b) storing research results in a database
    c) attending to a scientific conference
    d) developing and promoting a web site for a publishing house
    e) the publication of scientific papers
17. An institutional repository is a collection of research results.
    a) True
    b) False
18. Which statements about peer review in scientific communication are true?
    a) Peer reviewers are senior scientists who also work in the area
    b) Peer reviewers are staff members of the publishing company
    c) Peer reviewers comment on the originality of the research.
    d) Papers rejected by reviewers are not published
    e) Peer reviewers comment on the popularity of the scientists conducting a study

19. What is Gold open access? (please check all that apply)
    a) a paper published in an open access journal is freely available to the public only after a small period of embargo
    b) the publication of paper in an open access journal where the publishing fees are charged to the research institution and not to the author
    c) the publication of paper in an open access journal where the editor has set the article processing charges to the minimum value
    d) the publication of a paper in an open access journal is accepted only on the condition that the paper has already been published in an institutional repository or a website
    e) a paper is freely available to the public immediately after publication in an open access journal