**Due: Feburary 21, 2018**

ASSIGNMENT #2

BIOSTATISTCS

**Name:**

**ID#:**

**BIOSTATISTICS ASSIGNMENT 2**

*Office: Public Health and Primary Care Unit, Faculty of Medical Sciences, EWMSC*

***Due: March 7, 2022***

**Instructions:**

**Please answer all questions.**

**Show your working where appropriate.**

**Section 1: Multiple Choice 10marks**

**This section consist of 11 questions are multiple choice. Circle/highlight the letter corresponding to the MOST appropriate answer.**

1. **The sample mean, is called a \_\_\_\_\_\_\_\_ of the population mean, µ .**
2. Point estimate
3. Confidence level
4. Margin of error
5. Interval estimate
6. **Which statement is true about p and ?**
7. They are both parameters.
8. They are both statistics.
9. *p* is a parameter and is a statistic.
10. is a parameter and *p* is a statistic.
11. **The probability that a bomb dropped from a place will strike the intended target is 60%. What is the mean and variance if 10 bombs were dropped?**
12. O,4, 0.16
13. 4, 1.6
14. 6, 2.4
15. 0.6, 0.24
16. **he YOUWE News periodically conducts a survey of the student body to determine attitude around certain campus issues of interest. The paper publishes the student first name and picture along with quotes of their responses. A reporter “roaming” the campus selects students “haphazardly.” to interview. One day the YouWe reporter interviews five (5) students and asks them if there are adequate lockers on the campus; four (4) of the students say, “no.”  
    Consider the assumptions for establishing a confidence interval of a proportion. Which statement is violated for the scenario presented.?**
17. The data are a simple random sample (SRS) from the population of interest.
18. The population is at least ten times as large as the sample.
19. We are interested in inference about a proportion.
20. More than one condition is violated.
21. **Other things being equal, the margin of error of a confidence interval increases as**
22. the sample size increases.
23. the sample mean increases.
24. the population standard deviation increases.
25. the confidence level decreases.
26. **If ‘m’ is the mean of a Poisson distribution, then the variance is:**
27. *m*2
28. *m*/2
29. *m*
30. *m*/2
31. **Which of the following statements is not true?**
32. If the probability of an event occurring is 0, then it is impossible for that event to occur.
33. If P(A) = 0, then the probability of the complement of A is 1.
34. If the probability of an event occurring is 1.5, then it is certain that event will occur.
35. Probability can never be a negative value.
36. **What characteristic of a random variable is described by the expected value?**

A. Standard deviation

B. Mean

C. Most likely value

D. Maximum value

1. **Suppose that in a large population, the proportion that is left-handed is p = 0.10. Suppose n = 20 people will be randomly selected and X = number of people in the sample who are left-handed. What probability model should be used to find the probability that X = 3?**

A. Binomial

B. Normal

C. Uniform

D. Poisson

1. **Suppose that a quiz consists of 20 True-False questions. A student has not studied for the exam and just randomly guesses at all answers (with True and False equally likely). How would you find the probability that the student will get 8 or fewer answers correct?**

A. Find the probability that *X* = 8 in a binomial distribution with *n* = 20 and *p* = 0.5.

B. Find the area under the curve between 0 and 8 in a uniform distribution that goes from 0 to 20.

C. Find the probability that *X* = 8 for a normal distribution with mean=10 and standard deviation=5.

D. Find the cumulative probability for 8 in a binomial distribution with *n* = 20 and *p* = 0.5.

**Section 2. Short Answer Questions 60marks**

**This section are based on questions from your text.**

1. **Many graduate students heading to the US take the GRE Test. The mean for the verbal section of the test was 425 with a standard deviation of 110.**(Layout your work, provide a sketch of the curve, label the scale properly for both the random variable X and the standard normal Z, show the area on the sketch being calculated.)
2. What percentage of students would be expected to score below 300? (**4mark**)
3. What percentage of students would be expected to score at least 550?(**5mark**)
4. What percentage of students would be expected to score between 300 and 550? (**5mark**)

**Questions 13-15 are taken from your textbook Triola et al. *Biostatistics for the Biological and Health Sciences (2nd edition).* Provide your calculations.**

1. Chap 5-1: # 10, 12 and 16 [4, 2, 9 marks]
2. Chap 5-3: #16 [9 marks]
3. Chap 6-2: #6, 8, 10, 12 and 22 [3, 3, 2, 6 marks]
4. Chap 6-4: # 10 [8 marks]