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**Part I. True or False Questions (10 marks)**

**Write true if the statement is correct and false if the statement is not correct on the answer sheet provided (1mark each)**

1. Estimating confidence intervals for population is inferential statistics. T
2. The normal distribution experimental outcomes are continuous.
3. Inferential statistics makes generalization about population based on sample information
4. The number of cars in Ethiopia is discreet variable.
5. Probability value cannot be greater than 1
6. Relative probability estimate the occurrence of events based on past experience.
7. Poisson distribution assumes the occurrence of events in a given interval of time or space.
8. The joint probability of mutually exclusive events is equal zero.
9. Multiplication rule is used to determine the joint probability of mutually exclusive events.
10. Hypothesis cannot be proved but be tested F

**Part II. Matching (10 marks)**

**Match column A with column B. Write the letter of your answer on the answer sheet provided (2mark each)**

| A | B |
|---|---|
| 1. The set of all possible outcomes | A. Normal distribution |
| 2. Number of new accounts per year | B. Posterior probability |
| 3. A particular result of an experiment | C. Outcome |
| 4. Probability revised based on new information | D. Discrete variable |
| 5. The mean, medial and mode are equal | E. Sample space |
| | F. Sample space outcome |
| | G. Continuous variable |

19. The last step in hypothesis teasing is:

a. Setting significance level
b. Determining test statistics
c. Accept or reject the hypothesis
d. Determining decision rule

20. The estimator is population variance is :

A. Sample mean
B. Sample standard deviation
C. Sample proportion
D. Sample variance

**Part IV Work out (15marks)**

**Attempt the following on the attached sheets of paper given**

**Problem-1:** A telephone company's goal is not to have more than one line failures in a particular 1km line. Currently the company is experiencing two (2) line failures in 1km line. Assume Poisson distribution. **(5marks)**

(a.) What is the probability that the company will meet its goal? **(2.5 marks)**

(b.) What is the probability that the company will not meet its goal? **(2.5 marks)**

Part II. Multiple Choice Questions (40marks)

Choose the correct answer and write the letter of your answer on the answer sheet provided (2marks each)

1. Which probability method determined based on what happened is to be repeated over future longer period?
   a. relative frequency
   b. long term frequency
   c. classical
   d. subjective
2. The probability of an event is closer to 1means that the event is:
   a. Never will occur
   b. Highly likely to occur
   c. unlikely to occur
   d. Certain to occur
3. Process that leads to the occurrence of one and only one of the several possible outcomes
   a. Probability b. Event c. Experiment e d. Outcome. None
4. If a newly married couple plans to have four children, then what is the probability that there will be exactly three boys?
   a. 73.5% b. 50% c. 100% d. 12.5%
5. The area under the normal probability distribution curve is:
   a. 50%
   b. 25 %
   c. 75%
   d. 100%
6. Assuming binomial probability, if the probability of success is 0.6 and the sample size is 40 what the mean and standard deviation respectively are_____
   a. 24 & 4.9 b. 24 & 9.6 c. 24 & 3.098 d.16 & 4.9
7. 20 % of college students graduated with distinction, while 12% of them were graduate with distinction and obtained good jobs. What is the probability that a person got a good job if he graduated with great distinction?
   a. 64% b. 60% c. 32% d. 16%
8. The assumption of Poisson probability distribution includes which of the following <u>except</u>
   a. It is continuous
   b. The events are independent
   c. It is discreet
   d. The events are in interval

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9. If events are mutually exclusive their joint probability is

   a. Zero b. greater than one c. one d. Less than one

10. A sample of 800 respondents is taken. Of these, 500 are female; a point estimate for the proportion of male respondents in the population will be:

    a. 62.5% b. 37.5 % c. 40% d. 60%

11. If the P (A) = 0.3 and the P (B/A) =0.8What is the P(AnB)?

    a. 37.5% b. 26.7% c. 24% d. 62.5%

12. Which of the following is (are) the parameter of normal distribution?

    a. Fixed number of trial and probability
    b. Standard deviation only
    c. Mean only
    d. Mean and standard deviation

13. If for a Poison distribution the probability that an item gets defective is 40% and the number of items is 20 what is the standard deviation?

    a. 2.83 b. 4.8 c. 2.19 d. 8

14. For a normally distributed data set with a mean of 70 and standard deviation of 10; about 68% of; the data lies between what two values?

    a. 50 and 90 b. 65 and 80 c. 78 and 68 d. 80 and 90

15. A normal distribution with mean zero and standard deviation 1 is :

    A. Perfect normal distribution
    B. Exponential distribution
    C. Standard normal distribution
    D. Central limit theorem

16. Is a sample is take form normal distribution , then the mean of the sampling distribution is;

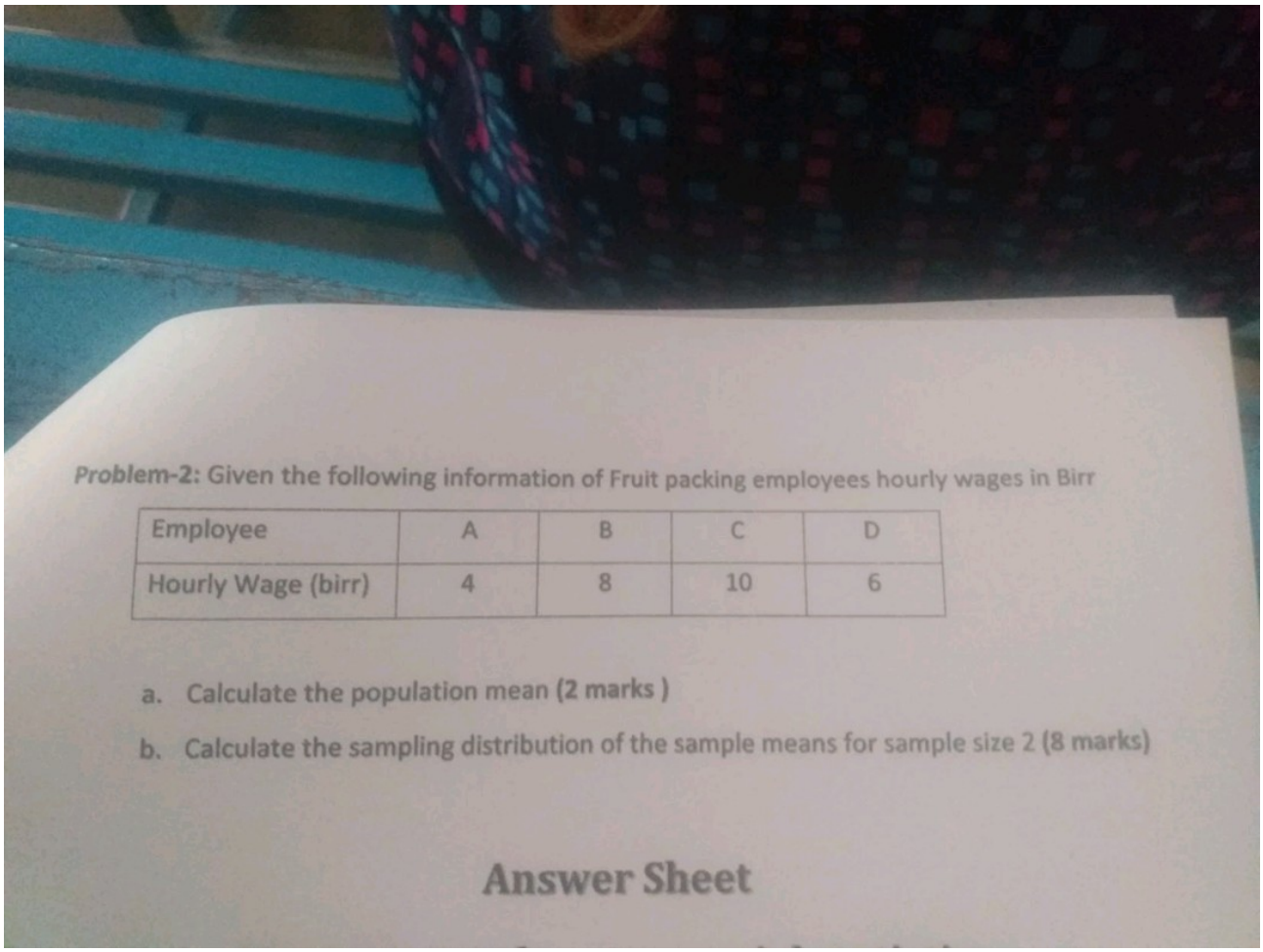
    A. Unimodal B. Bimodal C. Tri modal D. Normal

17. Assuming normal probability distribution with means 120 and standard deviation 5, how many standard devotion is the value 12 from the mean?

    a. -1 .6 b. 1.6 c. 8 d -8

18. Assuming question number 17 above what is the probability that a randomly selected value will be between 10 and 30

    a. 99.75% b. 95.44% c.68.26% d. 100%



***Problem-2:*** Given the following information of Fruit packing employees hourly wages in Birr

| Employee | A | B | C | D |
|---|---|---|---|---|
| Hourly Wage (birr) | 4 | 8 | 10 | 6 |

a. Calculate the population mean **(2 marks )**

b. Calculate the sampling distribution of the sample means for sample size 2 **(8 marks)**

## Answer Sheet