

**MPH/MHA 1<sup>st</sup> YEAR BLOCK I EXAMINATION**  
**DDS 518: INTRODUCTORY BIostatISTICS FOR HEALTH ADMINISTRATORS**  
**SEPTEMBER 15, 2021**

**Duration: 180 minutes**

**Maximum Marks: 60**

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**Answer all the questions.**

*Answer the following*

*(1 mark \*10=10 marks)*

- Q1. Median is an appropriate measure of central tendency for skewed data. State whether True or False.
- Q2. List the mean and standard deviation for Poisson distribution.
- Q3. Box plot and histogram are commonly used to understand the distribution of a continuous variable. State whether True or False.
- Q4. Standard deviation= \_\_\_\_\_ of Variance.
- Q5. Clara constructed a pie chart to visualize the weight (in kilograms) of students in her class. Is the visualization appropriate? Justify.
- Q6. What are the parameters of a Standard Normal Distribution?
- Q7. Probability values usually range between \_\_\_\_ and \_\_\_\_.
- Q8. Define coefficient of variation.
- Q9. When do we prefer to use Geometric Mean? Provide an example.
- Q10. An unbiased coin is tossed twice. Define the sample space for this experiment.

*Answer the following*

*(2 marks \*10=20 marks)*

- Q11. Define the terms a) parameter b) statistic.
- Q12. Define classical and relative frequency approaches to probability.
- Q13. In a study of drug-induced anaphylaxis among patients taking rocuronium bromide as part of their anesthesia, a researcher found that on an average, there were 12 incidents per year in an unspecified district. Name the underlying probability distribution. Compute the standard deviation in this case.
- Q14. Define the terms a) discrete random variable and b) continuous random variable
- Q15. Considering two events A and B, state the Additive law of probability.
- Q16. Identify the scale of measurement for the following variables with appropriate justifications
- Temperature (in degree Celsius)
  - Weight (in grams)

Q17. Explain why /why not the following distribution is a probability distribution.

x	P(X = x)
0	0.15
1	-0.20
2	0.30
3	0.20
4	0.15

Q18. When the frequency distribution associated with the continuous variable “Income” is skewed, identify and define the most appropriate

- measure of central tendency.
- measure of dispersion.

Q19. Define the probability mass function of Poisson distribution with suitable notations and definitions.

Q20. Define positive predictive value and negative predictive value.

**Answer the following**

**(5 marks \*6=30 marks)**

Q21. State any five properties of an ideal measure of dispersion.

Q22. Assuming two events A and B, define independent variables. Define P(A and B), P(A or B), marginal and conditional probability in the case of two independent events. **[1+4=5 marks]**

Q23. State the features of the random experiment underlying the Binomial distribution.

Q24. Which of the following events are examples of mutually exclusive events and why? Provide separate justifications for each of the five cases. **[1\*5= 5 marks]**

- Male or female baby in a singleton birth selected at random.
- Blood type ‘B’ and Blood type ‘O’ in a newborn selected at random.
- Diseased or not diseased when diagnosing a patient at random.
- Recovered or not recovered after treating a patient at random.
- Pregnant or not pregnant among women selected at random.

Q25. The following are the ages of patients admitted in a ward: 24, 32, 19, 27, 44, 73, 39, 41, 35. Calculate median, range and Inter-Quartile Range for the above data. **[2+1+2=5 marks]**

Q26. Hospital records reveal that, of patients suffering from a particular disease, 75% die of it. What is the probability that out of the six randomly selected patients, **[2.5+2.5=5 marks]**

- four will recover?
- at least one will recover?