

S.S.R. DEGREE COLLEGE, (AUTONOMOUS)
NIZAMABAD (C.C:5029)
I SEMESTER INTERNAL ASSESSMENT I EXAMINATIONS
STATISTICS QUESTION BANK

I. Multiple Choice Questions

1. How many measures in central tendency? (D)
a) 2 b) 3 c) 4 d) 5
2. Mean is affected by_____ values? (B)
a) Two b) Extreme c) Single d) None
3. Mode is most _____ value? (A)
a) Repeated b) Occurred c) Single d) None
4. $\mu_1 =$ _____? (A)
a) 0 b) 1 c) 2 d) 3
5. $\mu_1^1 =$ _____? (A)
a) Mean b) 1 c) 2 d) None
6. Which measure is best in measure of dispersion (A)
a) σ b) M.D c) Range d) Q.D
7. Range = _____ (D)
a) Max value b) Min value c) 0 d) Max – min value
8. Limits of pearson skewness (A)
a) ± 1 b) ± 3 c) ± 2 d) 1
9. Limits of bowley's skewness (B)
a) ± 1 b) ± 3 c) ± 2 d) None
10. If $\beta_2 = 3$, then the Curve is _____ (C)
a) Platykurtic b) Leptokurtic c) Normal d) None
11. Experiment is of _____ types (C)
a) 4 b) 3 c) 2 d) 5
12. The result of an experiment is called _____ (B)
a) Trial b) Outcome c) Event d) None

13. The Probability of sample space is _____ (C)
 a) 4 b) 0 c) 1 d) 2
14. $P(\emptyset) =$ _____ (B)
 a) 4 b) 0 c) 1 d) 2
15. $P(E_i)$ _____ 0 (B)
 a) \leq b) \geq c) $=$ d) None
16. $P(A \cup B) = P(A) + P(B)$, then A,B are mutually _____ events (C)
 a) Conditional b) Independent c) Disjoint d) Joint
17. Probability, $P =$ _____ (A)
 a) $\frac{m}{n}$ b) m c) n d) None
18. If $(A \cup B \cup C) = S$, then it is called _____ event (C)
 a) Simple b) Disjoint c) Exhaustive d) None
19. If A,B are independent events, then $P(A \cap B) =$ _____ (D)
 a) $P(A)$ b) $P(B)$ c) $P(A \cup B)$ d) $P(A) \cdot P(B)$
20. Quartile deviation, Q.D = _____ (C)
 a) $Q_3 + Q_1$ b) $Q_3 - Q_1$ c) $\frac{Q_3 - Q_1}{2}$ d) None

II. Fill in the blanks.

- Which is the ideal measure of central tendency **Mean**.
- Arithmetic mean, $\bar{x} = \frac{1}{n} \sum x_i$.
- Median for grouped data, median = $l + \left(\frac{\frac{N}{2} - c}{f} \right) \times h$
- Geometric mean for ungrouped data $n\sqrt{x_1 x_2 \dots x_n}$.
- In quartile deviation Q_2 is nothing but **Median**.
- The first non-central moment gives us **Mean**.
- Quartiles are not Equidistant from median is Skewness.
- Absolute measure of skewness, $S_k = \frac{\text{mean} - \text{mode}}{\sigma}$.
- Bowley's co-efficient of skewness, $S_k = \frac{Q_3 + Q_1 - 2Q_2}{Q_3 - Q_1}$.
- If $\beta_2 > 1$, then the Curve is **leptokurtic**.

11. If $\beta_2 < 1$, then the Curve is **Platy kurtic**
12. For any two events A & B, $P(\bar{A} \cap B) = P(B) - P(A \cap B)$.
13. Addition theorem, $P(A \cup B) = P(A) + P(B) - P(A \cap B)$.
14. Conditional probability, $P(A/B) = \frac{P(A \cap B)}{P(B)}$.
15. The triplet (S,B,P) is called **Probability space**.
16. $P(\bar{A}) = 1 - P(A)$
17. Boole's inequality, $P(\cap_{i=1}^4 A_i) \geq \sum P(A_i) - (n - 1)$.
18. Boole's inequality, $P(\cap_{i=1}^4 A_i) \leq \sum P(A_i)$
19. $P(A \cap \bar{B}/C) + P(A \cap B/C) = P(A/C)$.
20. If two coins are tossed, find the probability of getting at least on head is **3/4**.

III. Descriptive questions.

1. What is a measure of central tendency? And state the formula's for all measures of central tendency?

Ans: measures of central tendency is gives an idea about the control part of the distribution
measures of central tendency are i) mean. li) median iii) mode iv) G.M V) H.M

i) Arithmetic mean $(\bar{x}) = \frac{1}{N} \sum f_i x_i$.

ii) Median = $l + \left(\frac{\frac{N}{2} - C}{f} \right) x h$.

iii) Mode = $l + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2} \right) x h$.

iv) G.M = $\text{Anti log} \left[\frac{1}{N} \sum f_i \log x_i \right]$

v) H = $\frac{1}{\frac{1}{N} \sum \left(\frac{f_i}{x_i^l} \right)}$

2. What is measures of dispersion? Describe the measures?

Ans: Dispersion means scatteredness. Measures of dispersion study about the homogeneity or heterogeneity of the distribution the following are the measures.

i) Range ii) Quartile deviation iii) mean deviation iv) standard deviation

i) Range = Max. value – Min. value.

ii) Q.D = $\frac{Q_3 - Q_1}{2}$.

$$\text{iii) M.D} = \frac{1}{N} \sum f_i |x_i - A|$$

$$\text{iv) S.D} = \sqrt{\frac{1}{N} \sum f_i (x_i - \bar{x})^2}$$

3. Define moments? And express their inter relationships?

Ans: moments are statistical Averages. They are two types i) Non – Central moments, ii) Central moments.

i) Non – Central moments: The r^{th} moments about any point A and called Non- Central moments.

These are denoted by μ_r^1 and is given by

$$\mu_r^1 = \frac{1}{N} \sum_{i=1}^n f_i (x_i - A)^r$$

Central moments: The r^{th} moment about mean are called central moments. These are denoted by

μ_r^{\square} and is given by

$$\mu_r = \frac{1}{N} \sum_{i=1}^n f_i (x_i - \bar{x})^r .$$

4. Define Axiomatic definition of probability?

Ans: let (S, B, P) be a probability space. A function P defined on σ – field β satisfying the following axioms

i) $P(\epsilon_i) > 0$, (Positivity)

ii) $P(S) = 1$ (Certainty)

iii) $P(\cup_{i=1}^n \epsilon_i) = \sum_{i=1}^n P(\epsilon_i)$ (additivity)

The probability P satisfying the axioms positivity, certainty and additivity is called axiomatic probability.

5. If two dice are thrown, what is the probability that the sum is either 10 or 11?

Ans: If two dice are thrown, then the total number of outcomes $n(s) = 36$.

let event A be getting sum is 10.

Favorable outcomes are $\{ (4,6), (5,5), (6,4) \}$

$$\therefore n(A) = 3$$

let B be the event getting Sum is 11.

favorable outcomes are $\{ (5,6), (6,5) \}$ $\therefore n(B) = 2$

$$A \cap B = \emptyset$$

$$\therefore P(A) = \frac{n(A)}{n(S)} = \frac{3}{36}, \quad P(B) = \frac{n(B)}{n(S)} = \frac{2}{36}$$

$$\therefore P(\text{Getting the sum is either 10 or 11}) = P(A \cup B)$$

$$\therefore P(A \cup B) = P(A) + P(B) - P(A \cap B).$$

$$= \frac{3}{36} + \frac{2}{36} - 0$$

$$P(A \cap B) = \frac{5}{36}$$