

MCQ BINOMIAL AND HYPERGEOMETRIC DISTRIBUTIONS

MCQ 8.1

A Bernoulli trial has:

- (a) At least two outcomes (b) At most two outcomes
(c) Two outcomes (d) Fewer than two outcomes

MCQ 8.2

The two mutually exclusive outcomes in a Bernoulli trial are usually called:

- (a) Success and failure (b) Variable and constant
(c) Mean and variance (d) With and without replacement

MCQ 8.3

Nature of the binomial random variable X is:

- (a) Quantitative (b) Qualitative (c) Discrete (d) Continuous

MCQ 8.4

In a binomial probability distribution, the sum of probability of failure and probability of success is always:

- (a) Zero (b) Less than 0.5 (c) Greater than 0.5 (d) One

MCQ 8.5

In a binomial experiment, the successive trials are:

- (a) Dependent (b) Independent (c) Mutually exclusive (d) Fixed

MCQ 8.6

The parameters of the binomial distribution are:

- (a) n and p (b) p and q (c) np and nq (d) np and npq

MCQ 8.7

The range of binomial distribution is:

- (a) 0 to n (b) 0 to ∞ (c) -1 to +1 (d) 0 to 1

MCQ 8.8

The mean and standard deviation of the binomial probability distribution are respectively:

- (a) np and npq (b) np and \sqrt{npq} (c) np and nq (d) n and p

MCQ 8.9

In a binomial experiment with three trials, the variable can take:

- (a) 2 values (b) 3 values (c) 4 values (d) 5 values

MCQ 8.10

The shape of the binomial probability distribution depends upon the values of its:

- (a) Mean (b) Variance (c) Parameters (d) Quartiles

MCQ 8.11

In binomial distribution the numbers of trials are:

- (a) Very large (b) Very small (c) Fixed (d) Not fixed

MCQ 8.12

In a binomial probability distribution, relation between mean and variance is:

- (a) Mean < Variance (b) Mean = Variance
(c) Mean > Variance (d) Difficult to tell

MCQ 8.13

In binomial distribution when $n = 1$, then it becomes:

- (a) Hypergeometric distribution (b) Normal distribution
 (c) Uniform distribution (d) **Bernoulli distribution**

MCQ 8.14

The mean of a binomial distribution depends on:

- (a) Number of trials (b) Probability of success
 (c) Probability of failure (d) **Number of trials and probability of success**

MCQ 8.15

The variance of a binomial distribution depends on:

- (a) Number of trials (b) Probability of success
 (c) Probability of failure (d) **All of the above**

MCQ 8.16

Which of the following is not property of a binomial experiment?

- (a) Probability of success remains constant
 (b) n is fixed
 (c) **Successive trials are dependent**
 (d) It has two parameters

MCQ 8.17

The binomial probability distribution is symmetrical when:

- (a) **$p = q$** (b) $p < q$ (c) $p > q$ (d) $np > npq$

MCQ 8.18

The binomial distribution is negatively skewed if:

- (a) $p < 1/2$ (b) $p = 1/2$ (c) **$p > 1/2$** (d) $p = 1$

MCQ 8.19

In a binomial probability distribution, the skewness is positive for:

- (a) **$p < 1/2$** (b) $p = 1/4$ (c) $np = npq$ (d) $np = nq$

MCQ 8.20

Which of the following statements is false?

- (a) Expected value of a constant
 (b) **In a binomial distribution the standard deviation is always less than its variance**
 (c) In a binomial distribution the mean is always greater than its variance
 (d) In binomial experiment the probability of success remains constant from trial to trial

MCQ 8.21

If a binomial probability distribution has parameters $(n, p) = (5, 0.6)$, the probability of $x = 3.5$ is:

- (a) **0** (b) 1 (c) 0.6 (d) 0.4

MCQ 8.22

In a binomial experiment $n = 4$, $P(x=2) = 216/625$ and $P(x=3) = 216/625$. $P(x=-2)$ is:

- (a) $216/625$ (b) 1 (c) **0.6** (d) Difficult to tell

MCQ 8.23

If $n = 6$ and $p = 0.9$ then the value of $P(x=7)$ is:

- (a) **Zero** (b) Less than zero (c) More than zero (d) One

MCQ 8.24

In a binomial probability distribution, coefficient of skewness = $(q - p)/\sqrt{npq} = 0$, it means that the distribution is:

- (a) Symmetrical** (b) Skewed to the left (c) Skewed to the right (d) Highly skewed

MCQ 8.25

For a binomial distribution with $n = 10$, $p = 0.5$, the probability of zero or more successes is:

- (a) 1** (b) 0.5 (c) 0.25 (d) 0.75

MCQ 8.26

In a binomial distribution, the mean, median and mode coincide when:

- (a) $p < 1/2$ (b) $p > 1/2$ (c) $p \neq 1/2$ **(d) $p = 1/2$**

MCQ 8.27

In which distribution, the probability success remains constant from trial to trial?

- (a) Hypergeometric distribution **(b) Binomial distribution**
(c) Sampling distribution (d) Frequency distribution

MCQ 8.28

In a binomial experiment when $n = 5$, the maximum number of successes will be:

- (a) 0 (b) 2.5 (c) 4 **(d) 5**

MCQ 8.29

In a binomial experiment when $n = 10$, the minimum number of successes will be:

- (a) 0** (b) 5 (c) 10 (d) 11

MCQ 8.30

If $n = 10$ and $p = 0.6$, then $P(x \geq 0)$ is:

- (a) 0.5 (b) 0.6 **(c) 1.0** (d) 1.2

MCQ 8.31

A random variable X has a binomial distribution with $n = 4$, the standard deviation of X is:

- (a) $4pq$ **(b) $2\sqrt{pq}$** (c) $4p$ (d) $4(q+p)$

MCQ 8.32

In a multiple choice test there are five possible answers to each of 20 questions. If a candidate guesses the correct answer each time, the mean number of correct answers is:

- (a) 4** (b) 5 (c) $1/5$ (d) 20

MCQ 8.33

If three coins are tossed, the probability of two heads is:

- (a) $1/8$ **(b) $3/8$** (c) $2/3$ (d) 0

MCQ 8.34

Random variable x has binomial distribution with $n = 8$ and $p = 1/2$. The most probable value of X is:

- (a) 2 (b) 3 **(c) 4** (d) 5

MCQ 8.35

The value of second moment about the mean in a binomial distribution is 36. The value of the standard deviation of a binomial distribution is:

- (a) 36 **(b) 6** (c) $1/36$ (d) $1/6$

MCQ 8.36

For a binomial probability distribution, the expected frequency of x successes in N experiments is:

- (a) $\frac{\binom{k}{x} \binom{N-k}{n-x}}{\binom{N}{n}}$ (b) $p^x(1-p)^{1-x}$
 (c) $N \binom{n}{x} p^x q^{n-x}$ (d) $\binom{n}{x} p^x(1-p)^{n-x}$

MCQ 8.37

In a binomial frequency distribution $100 (1/5 + 4/5)^5$. The parameters n and p are respectively:

- (a) (5, 1/5) (b) (1/5, 4/5) (c) (100, 4/5) **(d) (5, 4/5)**

MCQ 8.38

For a binomial frequency distribution $100 (1/5 + 4/5)^5$, the mean is:

- (a) 1/5 (b) 4/5 (c) 5 **(d) 4**

MCQ 8.39

For a binomial distribution $(1/3 + 2/3)^{18}$, the standard deviation of the binomial distribution will be:

- (a) 2** (b) 4 (c) 6 (d) 12

MCQ 8.40

The hypergeometric distribution has:

- (a) One parameter (b) Two parameters **(c) Three parameters** (d) Four parameters

MCQ 8.41

The parameters of the hypergeometric distribution are:

- (a) N, n, p (b) N, n, np **(c) N, n, k** (d) n and p

MCQ 8.42

Nature of the Hypergeometric random variable is:

- (a) Continuous **(b) Discrete** (c) Qualitative (d) Quantitative

MCQ 8.43

In hypergeometric distribution, the successive trials are:

- (a) Independent **(b) Dependent** (c) Very large (d) Very small

MCQ 8.44

In a hypergeometric distribution, the probability of success:

- (a) Remains constant from trial to trial
(b) Does not remain constant from trial to trial
 (c) Equal to probability of failure
 (d) Less than probability of failure

MCQ 8.45

If in a hypergeometric distribution N = 10, k = 5 and n = 4; then the probability of failure is:

- (a) 2 **(b) 0.5** (c) 1 (d) 0.25

MCQ 8.46

The rang of hypergeometric distribution is:

- (a) 0 to n (b) 0 to k (c) 0 to N **(d) 0 to n or k (whichever is less)**

MCQ 8.47

The number of trials in hypergeometric distribution is:

- (a) Not fixed **(b) Fixed** (c) Large (d) Small

MCQ 8.48

The probability of a success changes from trial to trial in:

- (a) Binomial distribution
 (b) Hypergeometric distribution
 (c) Normal distribution
 (d) Frequency distribution

MCQ 8.49

The mean of the hypergeometric distribution is:

- (a) $\frac{nk}{N}$ (b) $\frac{Nk}{n}$ (c) $\frac{Nn}{k}$ (d) $\frac{n+k}{N}$

MCQ 8.50

The standard deviation of the hypergeometric distribution is:

- (a) $\frac{nk(k-N)(N-n)}{N^2(N-1)}$ (b) $\sqrt{\frac{nk(N-k)(N-n)}{N^2(N-1)}}$
 (c) $\sqrt{\frac{nk(N-k)(n-N)}{N^2(N-1)}}$ (d) $\sqrt{\frac{nk(N-k) + (N-n)}{N^2(N-1)}}$

MCQ 8.51

In hypergeometric probability distribution, the relation between mean and variance is:

- (a) Mean > variance (b) Mean < Variance (c) Mean = Variance (d) Mean = 2Variance

MCQ 8.52

Which of the following is the property of hypergeometric experiment?

- (a) **p** remains constant from trial to trial
 (b) Successive trials are independent
 (c) Sampling is performed without replacement
 (d) **n** is not fixed

MCQ 8.53

Hypergeometric distribution reduces to binomial distribution when:

- (a) $N = n$ (b) $n \rightarrow \infty$ (c) $N \rightarrow \infty$ (d) $N < n$

MCQ 8.54

In a hypergeometric distribution $N=6$, $n=4$ and $k=3$, then the mean is equal to:

- (a) 2 (b) 4 (c) 6 (d) 24

MCQ 8.55

Given $N = 11$, $n = 5$, $k = 7$; $P(x \geq 1)$ equals:

- (a) 1 (b) 1/66 (c) 65/66 (d) None of the above

MCQ 8.56

Given $N = 12$, $n = 5$, $k = 4$; $P(x \leq 4)$ equals:

- (a) Less than one (b) Exactly one (c) More than one (d) Between 0.5 and 1

1.(c)	2.(a)	3.(c)	4.(d)	5.(b)	6.(a)	7.(a)	8.(b)	9.(c)	10.(c)	11.(c)	12.(c)	13.(d)	14.(d)	15.(d)
16.(c)	17.(a)	18.(c)	19.(a)	20.(b)	21.(a)	22.(c)	23.(a)	24.(a)	25.(a)	26.(d)	27.(b)	28.(d)	29.(a)	30.(c)
31.(b)	32.(a)	33.(b)	34.(c)	35.(b)	36.(c)	37.(d)	38.(d)	39.(a)	40.(c)	41.(c)	42.(b)	43.(b)	44.(b)	45.(b)
46.(d)	47.(b)	48.(b)	49.(a)	50.(b)	51.(a)	52.(c)	53.(c)	54.(a)	55.(a)	56.(b)				