MCQ 7.1
If in a table all possible values of a random variable are given their corresponding probabilities, then this table is called as:
(a) Probability density function   (b) Distribution function   (c) **Probability distribution**   (d) Continuous distribution

MCQ 7.2
A variable that can assume any possible value between two points is called:
(a) Discrete random variable   (b) **Continuous random variable**
(c) Discrete sample space   (d) Random variable

MCQ 7.3
A formula or equation used to represent the probability distribution of a continuous random variable is called:
(a) Probability distribution   (b) Distribution function   (c) **Probability density function**   (d) Mathematical expectation

MCQ 7.4
If X is a discrete random variable and f(x) is the probability of X, then the expected value of this random variable is equal to:
(a) \[ \sum f(x) \]   (b) \[ \sum [x+f(x)] \]   (c) \[ \sum f(x)+x \]   (d) \[ \sum xf(x) \]

MCQ 7.5
Given \( E(X) = 5 \) and \( E(Y) = -2 \), then \( E(X - Y) \) is:
(a) 3   (b) 5   (c) **7**   (d) -2

MCQ 7.6
Given \( x = 2 \) and \( f(x) = 0.5 \). If \( y = 2x - 3 \), then \( f(y) \) is equal to:
(a) 1   (b) **0.5**   (c) -2   (d) 0

MCQ 7.7
Which of the following is not possible in probability distribution?
(a) \( p(x) \geq 0 \)   (b) \( \sum p(x) = 1 \)   (c) \( \sum xp(x) = 2 \)   (d) \( p(x) = -0.5 \)

MCQ 7.8
If C is a constant (non-random variable), then \( E(C) \) is:
(a) 0   (b) 1   (c) cf(c)   (d) **c**

MCQ 7.9
A discrete probability distribution may be represented by:
(a) Table   (b) Graph   (c) Mathematical equation   (d) **All of the above**

MCQ 7.10
A probability density function be represented by:
(a) Table   (b) Graph   (c) Mathematical equation   (d) **Both (b) and (c)**

MCQ 7.11
If C is a constant in a continuous probability distribution, then \( p(x = C) \) is always equal to:
(a) Zero   (b) One   (c) Negative   (d) Impossible

MCQ 7.12
\( E[X - E(X)] \) is equal to:
(a) \( E(X) \)   (b) \( \text{Var}(X) \)   (c) **0**   (d) \( E(X) - X \)
MCQ 7.13
E[X - E(X)]^2 is:
(a) E(X)  (b) E(X^2)  (c) Var(X)  (d) S.D(X)

MCQ 7.14
If the random variable takes negative values, then the negative values will have:
(a) Positive probabilities  (b) Negative probabilities  (c) Constant probabilities  (d) Difficult to tell

MCQ 7.15
If we have f(x) = 2x, 0 ≤ x ≤ 1, then f(x) is a:
(a) Probability distribution  (b) Probability density function  (c) Distribution function  (d) Continuous random variable

MCQ 7.16
Numbers selected by a random process and are equally distributed in a table are called:
(a) Attributes  (b) Random variables  (c) Random numbers  (d) Quantitative variables

MCQ 7.17
\[ \int_{-\infty}^{\infty} f(x)dx \] is always equal to:
(a) Zero  (b) One  (c) E(X)  (d) f(x) + 1

MCQ 7.18
A listing of all the outcomes of an experiment and the probability associated with each outcome is called:
(a) Probability distribution  (b) Probability density function  (c) Attributes  (d) Distribution function

MCQ 7.19
A quantity resulting from an experiment that, by chance, can assume different values is called:
(a) Random experiment  (b) Random sample  (c) Random variable  (d) Random process

MCQ 7.20
Which one is not an example of random experiment?
(a) A coin is tossed and the outcome is either a head or a tail
(b) A six-sided die is rolled
(c) Some number of persons will be admitted to a hospital emergency room during any hour.
(d) All medical insurance claims received by a company in a given year.

MCQ 7.21
A set of numerical values assigned to a sample space is called:
(a) Random sample  (b) Random variable  (c) Random numbers  (d) Random experiment

MCQ 7.22
A variable which can assume finite or countably infinite number of values is known as:
(a) Continuous  (b) Discrete  (c) Qualitative  (d) None of them

MCQ 7.23
The probability function of a random variable is defined as:

<table>
<thead>
<tr>
<th>x</th>
<th>-1</th>
<th>-2</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>f(x)</td>
<td>k</td>
<td>2k</td>
<td>3k</td>
<td>4k</td>
<td>5k</td>
</tr>
</tbody>
</table>

Then k is equal to:
(a) Zero  (b) 1/4  (c) 1/15  (d) One
MCQ 7.24
If f(x) = 1/10, x = 10, then E(X) is:
(a) Zero  (b) 6/8  (c) 1  (d) -1

MCQ 7.25
If Var(X) = 5 and Var(Y) = 10, then Var(2X + Y) is:
(a) 15  (b) 20  (c) 10  (d) 30

MCQ 7.26
A discrete probability function f(x) is always:
(a) Non-negative  (b) Negative  (c) One  (d) Zero

MCQ 7.27
In a discrete probability distribution the sum of all the probabilities is always equal to:
(a) Zero  (b) One  (c) Minimum  (d) Maximum

MCQ 7.28
The suitable graph of probability function of a discrete random variable is:
(a) Curve  (b) Polygon  (c) Probability histogram  (d) Historgram

MCQ 7.29
The appropriate graph of probability density function is:
(a) Curve  (b) Histogram  (c) Polygon  (d) None of them

MCQ 7.30
A variable which can assume all values in the range of a random variable, is called:
(a) Finite  (b) Infinite  (c) Continuous  (d) Discrete

MCQ 7.31
Total area under the curve of a continuous probability density function is always equal to:
(a) Zero  (b) One  (c) -1  (d) None of them

MCQ 7.32
An expected value of a random variable is equal to its:
(a) Variance  (b) Standard deviation  (c) Mean  (d) Covariance

MCQ 7.33
The probability of a continuous random variable "X" taking any particular value, k is always:
(a) Negative  (b) Zero  (c) One  (d) None of them

MCQ 7.34
Area of a trapezoid is equal to:
Perpendicular × Base
\[ \frac{2}{Sum of parallel sides × Base} \]
(a) \[ \frac{2}{Length × Breadth} \]
(c) \[ \frac{2}{None of them} \]

MCQ 7.35
Var(4X + 8) is:
(a) 12 Var(X)  (b) 4 Var(X)+8  (c) 16 Var(X)  (d) 16 Var(X)+8

MCQ 7.36
Var(X) is equal to:
(a) E(X^2)  (b) [E(X)]^2  (c) E(X^2) - [E(X)]^2  (d) E(X^2) + [E(X)]^2
MCQ 7.37
The expectation of the sum of two random variables X and Y is equal to:
(a) $E(X) E(Y)$  (b) $E(X) + E(Y)$  (c) $E(X \pm Y)$  (d) $E(XY)$

MCQ 7.38
The expectation of the product of two independent variables X and Y is equal to:
(a) $E(X) E(Y)$  (b) $E(X) \pm E(Y)$  (c) $E(X + Y)$  (d) None of the above

MCQ 7.39
When the random variable X and Y are independent, its co-variance is:
(a) One  (b) Negative  (c) Zero  (d) Positive

MCQ 7.40
A discrete probability function $f(x)$ is always non-negative and always lies between:
(a) 0 and $\infty$  (b) 0 and 1  (c) -1 and +1  (d) $-\infty$ and $+\infty$

MCQ 7.41
The probability density function $p(x)$ cannot exceed:
(a) Zero  (b) One  (c) Mean  (d) Infinity

MCQ 7.42
The height of persons in a country is a random variable of the type:
(a) Discrete random variable  (b) Continuous random variable  (c) Both (a) and (b)  (d) Neither (a) and (b)

MCQ 7.43
A random variable is also called:
(a) Chance variable  (b) Stochastic variable  (c) Constant  (d) Both (a) and (b)

MCQ 7.44
The distribution function $F(x)$ is equal to:
(a) $P(X = x)$  (b) $P(X \leq x)$  (c) $P(X \geq x)$  (d) All of the above