**Q1) What is the value of correct to two decimal places?**

a)

b)

c

d)

Correct Answer: Option (b)

Explanation: is a mathematical constant that represents the ratio of the circumference of a circle to its diameter. It is an irrational number, which means it cannot be expressed as a simple fraction or a terminating decimal. The value of pi correct to two decimal places is . This means that the value of pi is between and . The decimal places beyond go on infinitely, and is often approximated as

Thus, the correct answer is option (b)

Difficulty Level- Easy

Bloom’s Taxonomy- Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q2) Which of the following is the largest number?**

a)

b)

c)

d)

Correct Answer: Option (d)

Explanation: To determine which of the given numbers is the largest, we need to compare their magnitudes or absolute values. The magnitude or absolute value of a number is its distance from zero on a number line, regardless of its sign.

In this case,

The absolute value of is

The absolute value of is

The absolute value of is

The absolute value of is .

Now we need to take the signs of the numbers into account. A positive number is greater than a negative number of the same absolute value. The largest number is , because it is greater than and

Thus, the correct answer is option (d)

Difficulty Level- Easy

Bloom’s Taxonomy- Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q3) What is the least common multiple of and ?**

a)

b)

c)

d)

Correct Answer: Option (c)

Explanation: The least common multiple (LCM) of two numbers is the smallest number that is a multiple of both of them.

The multiples of are

The multiples of are

From this list, we can see that the smallest number that is a multiple of both and is

Thus, the correct answer is option (c)

Difficulty Level- Easy

Bloom’s Taxonomy- Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q4) Which of the following is a not perfect square?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: A perfect square is a number that is the square of an integer. It is also the product of an integer multiplied by itself.

We can check each of the given numbers to see which ones are perfect squares:

The number is a perfect square because it is equal to .

The number is a perfect square because it is equal to .

The number is a perfect square because it is equal to

The is not a perfect square because it cannot be written as the product of an integer multiplied by itself.

Thus, the correct answer is option (b)

Difficulty Level- Easy

Bloom’s Taxonomy- Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q5) What is the absolute value of ?**

a)

b)

c)

d) None of the above

Correct Answer: Option (c)

Explanation: The absolute value of a number is its distance from zero on the number line, regardless of its sign. It is always a non-negative value. The given number is , which means it is located units to the left of zero on the number line. The absolute value of -10 is the distance from, which is units. Therefore, the absolute value of is

Thus, the correct answer is option (c)

Difficulty Level- Easy

Bloom’s Taxonomy- Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q6) What is the value of (3 factorial)?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: Factorial is a mathematical function denoted by an exclamation mark. The factorial of a positive integer is the product of all positive integers up to and including n.

The given number 3! (read as "3 factorial") is calculated as:

So, the value of is

Thus, the correct answer is option (b)

Difficulty Level- Easy

Bloom’s Taxonomy- Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q7) What is the value of ?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: The logarithm is a mathematical function that represents the power to which a base must be raised to produce a given number.

We can rewrite as

We can solve for x by taking the logarithm of both sides using the same base (10):

Therefore, the value of is

Thus, the correct answer is option (b)

Difficulty Level- Easy

Bloom’s Taxonomy- Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q10) Which of the following is a real number?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: A real number is any number that can be expressed as a finite or infinite decimal. It includes all rational and irrational numbers. Real numbers are numbers that can be expressed on a number line, without using imaginary or complex numbers. is a real number because it can be located on the number line.

Thus, the correct answer is option (b)

Difficulty Level- Easy

Bloom’s Taxonomy- Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q11) What is the value of the expression ?**

a

b)

c)

d)

Correct Answer: Option (b)

Explanation: The expression represents the absolute value of the difference between 5 and 9. The absolute value is the distance of a number from zero on a number line, regardless of whether the number is positive or negative.

We have:

Since is negative, we can rewrite the expression as:

The value of the expression is

Thus, the correct answer is option (b)

Difficulty Level- Easy

Bloom’s Taxonomy- Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q12) What is the sum of the first positive even integers?**

a) 200

b) 210

c) 400

d) 420

Correct Answer: Option (d)

Explanation: The first 20 even integers are:

The formula for the sum of an arithmetic sequence is

where S is the sum of the sequence, n is the number of terms in the sequence, a is the first term, and l is the last term.

The sum of the first positive even integers is

Thus, the correct answer is option (d)

Difficulty Level- Easy

Bloom’s Taxonomy- Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q13) Answer the following question with reference to the audio.**

[**https://drive.google.com/file/d/1nG0OAMtOt4UVxGNSChkHtVb2vwCkA2H-/view?usp=share\_link**](https://drive.google.com/file/d/1nG0OAMtOt4UVxGNSChkHtVb2vwCkA2H-/view?usp=share_link)

**Type: Audio**

**Which of the following is a rational number?**

a)

b)

c)

d)

Correct Answer: Option (c)

Explanation: A rational number is a number that can be expressed as the ratio of two integers. It can be written in the form , where and are integers and q is not equal to 0.

can be expressed as which is the ratio of the integers and

Therefore is a rational number

Thus, the correct answer is option (c)

Difficulty Level- Easy

Bloom’s Taxonomy- Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q14) What is the product of and the square root of ?**

a) 3

b) 6

c) 9

d) 18

Correct Answer: Option (b)

Explanation: The square root of is , because multiplied by itself equals .

The product of the number with is

The product of and the square root of is

Thus, the correct answer is option (b)

Difficulty Level- Easy

Bloom’s Taxonomy- Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q15) What is the value of in the equation ?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: The given equation is

Now solve for x, we need to isolate on one side and the number on the other side

Therefore the given equation can be written as

This simplifies to:

Next, we can divide both sides of the equation by 2:

Thus, the correct answer is option (a)

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate **$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q16) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1ZZi0-RlLJiU-vk5OL\_uHCJ5J\_bzCVbfF/view?usp=share\_link**](https://drive.google.com/file/d/1ZZi0-RlLJiU-vk5OL_uHCJ5J_bzCVbfF/view?usp=share_link)

**Type: Audio**

**What is the range of the following set of numbers: 2, 4, 6, 8, 10?**

a)

b)

c) 6

d) 8

Correct Answer: Option (a)

Explanation: In mathematics, range refers to the difference between the largest and smallest values in a set of numbers. It is a measure of the spread or dispersion of the values in the set. Range is often used to describe the variability of data and is commonly used in statistical analysis.

The largest number in the set is

The smallest number is .

Therefore, the range is:

Thus, the correct answer is option (a)

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q17) What is the value of**

a)

b)

c)-

d) Undefined

Correct Answer: Option (b)

Explanation: The tangent function (tan) is a trigonometric function that relates the ratio of the opposite side to the adjacent side of a right triangle We know that radians is equivalent to degrees.

we can use the trigonometric identity:

The value of is Thus, the correct answer is option (b)

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q18) What is the value of**

a)

b)

c)

d) Undefined

Correct Answer: Option (c)

Explanation: is the natural logarithm, which is the logarithm with base . is a mathematical constant approximately equal to

We know that the inverse property of logarithm is

Applying the inverse property of logarithms, we get:

The value of is

Thus, the correct answer is option (c)

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q19) What is the value of ?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: is defined as the imaginary unit, which is the square root of -1.We know that is equal to

The given term can be written as

The value of is

Thus, the correct answer is option (b)

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q20) What is the slope of the line passing through the points ) and**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: The given points are ) and )

The equation of the slope is

Substituting the given values, we get:

Therefore, the slope of the line passing through the points and is

Thus, the correct answer is option (b)

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q21) What is the value of ?**a)

b)

c)   
d)

Correct Answer: Option (c)  
Explanation: The given expression is

We can use the formula for the product of two binomials with conjugate radicals to simplify the given expression

From the expression and . So, we have:

Therefore, the value of is

Thus, the correct answer is (c)

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

**Q22) The sum of two irrational numbers is:**a) always an irrational number  
b) always a rational number  
c) sometimes a rational number  
d) none of the above

Correct Answer: Option (c)  
Explanation: The sum of two irrational numbers can be either rational or irrational, depending on the numbers being added.

For example, the sum of and is 0, which is a rational number.

And which is a irrational number.

If we add two irrational numbers that are not conjugates of each other (i.e., they do not have the same irrational part), then the sum will be irrational. However, if we add two irrational numbers that are conjugates of each other (i.e., they have the same irrational part but opposite signs), then the sum will be rational.  
Thus, the correct answer is option (c)

Difficulty Level- Easy

Bloom’s Taxonomy – Remember

$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

**Q23) What is the value of** 0.6 **recurring as a fraction?**a)

b)   
c)

d)   
Correct Answer: Option (c)  
Explanation: Let recurring.

Then, multiplying both sides by we get:

Subtracting from both sides, we get:

Simplifying the fraction by dividing both the numerator and denominator by their greatest common factor, we get:

Therefore, the value of recurring as a fraction is .

Thus, the correct answer is option (c)

Difficulty Level- Easy

Bloom’s Taxonomy – Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q24) Which of the following statements is true about a rational number?**a) It can be expressed as a terminating or repeating decimal.  
b) It can be expressed as an irrational number.  
c) It cannot be expressed as a ratio of two integers.  
d) It is always a positive integer.  
Correct Answer: Option (a)  
Explanation: A rational number is defined as a number that can be expressed as the ratio of two integers, where the denominator is not zero. Since a rational number can be expressed as a ratio of two integers, it can also be expressed as a fraction. A rational number can be expressed as a decimal. When a rational number is expressed as a decimal, it can either terminate (i.e., have a finite number of digits after the decimal point) or repeat (i.e., have a block of one or more digits that repeat indefinitely)

Thus, the correct answer is option (a)

Difficulty Level- Hard

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q25) What is the value of ?**a)

b) c)

d)

Correct Answer: Option (d)  
Explanation: The given expression is

Use the distributive property of multiplication:

Simplifying, we get:

Since substitute in the expression

Therefore, the value of is

Thus, the correct answer is option (d).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q26) What is the value of tan 60°?**  
a)   
b)   
c)   
d)   
Correct Answer: Option (d)

Explanation: We know that

First, we need to find the values of and

and

Now, we can substitute these values into the formula for tangent:

Therefore, the value of is

Thus, the correct answer is option (d).  
Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q27) What is the value of**   
a) 0  
b) ½  
c) 1  
d) 2  
Correct Answer: Option (c)  
Explanation: The given expression is

We know that and

Substitute the values,

The value of is   
Thus, the correct answer is option (c).  
Difficulty Level-  Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q28) What is the value of the discriminant of the quadratic equation ?**  
a) b)

c)   
d)   
Correct Answer: Option (b)  
Explanation: The discriminant of a quadratic equation is .

The given quadratic equation is .In this ,

Substitute the values in the formula we get

Thus, the correct answer is option (b)  
Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q29) What is the value of ?**  
a)   
b  
c)  
d)   
Correct Answer: Option (c)  
Explanation: Using the logarithm rule that states we know that

We can write 16 as a power of 4 as follows:

Therefore, we can say that:

Using the logarithmic identity that states that the logarithm of a power is equal to the product of the exponent and the logarithm of the base, we can simplify this expression as follows:

Since the base 4 raised to the power of 1 gives us 4, we can say that:

Substituting this value in the above expression, we get:

Therefore, the value of log₄16 is 2.

Thus, the correct answer is option (c).  
Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q30) What is the value of ?**

a)   
b)   
c)

d)

Correct Answer: Option (c)  
Explanation: Factorial notation represents the product of all positive integers up to a given number.

can be written as

can be written as

Sub the values,

Thus, the correct answer is option (c).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q31) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1IJ7OLr9Zz7kxBbX\_IVRlzzZsjjFaL1Tj/view?usp=share\_link**](https://drive.google.com/file/d/1IJ7OLr9Zz7kxBbX_IVRlzzZsjjFaL1Tj/view?usp=share_link)

**Type: Audio**

**Which of the following is not a prime number?**  
a  
b)   
c)   
d)   
Explanation: A prime number is a positive integer greater than that has no positive divisors other than and itself. The only even prime number is , and it has no factors other than and . The prime factors of are and 11, while the prime factors of are and . However, is not a prime number as it is divisible by . Thus, the correct answer is option (d).  
Difficulty Level- Easy

Bloom’s Taxonomy - Understand  
**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q32) What is the value of ?**a)

b)   
c)   
d)   
Correct Answer: Option (d)   
Explanation: Logarithm is the inverse operation of exponentiation. The logarithm with base is called the common logarithm and is denoted by

The value of is the exponent to which must be raised to get .

Since , the value of is equal to.   
Thus, the correct answer is option (d).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q33)** What is the value of the square root of ?

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: The square root function is the inverse of the square function, which squares a number (i.e., multiplies a number by itself). The square function is written as x², and the square root function is written as √x. The given number is

The value of is

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q34) What is the value of ?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: To solve this expression, we need to use the order of operations, which is also known as PEMDAS (parentheses, exponents, multiplication and division, addition and subtraction).

So, we have:

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q35) What is the value of ?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: The logarithm of a number is the exponent to which a specified base must be raised in order to obtain that number. In this case, we are looking for the logarithm of 100 with base 10

So, we can write:

for x by finding the exponent that gives us 100 when 10 is raised to that exponent. We can see that

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q36) What is the value of ?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: To solve this expression, we can simplify the numerator first:

2³ = 2 x 2 x 2 = 8

4² = 4 x 4 = 16

Now we can substitute these values into the expression and simplify further:

The value of is

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q37) What is the value of ?**

a)

b)

c)

d)

Correct Answer: Option (d)

Explanation: The factorial of a positive integer n is the product of all positive integers up to and including n. The notation "4!" is called factorial notation and it represents the product of all positive integers from 1 to 4.

The value of Is 24

Thus, the correct answer is option (d).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q38) What is the value of the expression when ?**

a)

b)

c)

d)

Correct Answer: Option (c)

Explanation: The given expression is

Sub

Therefore, the value of the expression when is

Thus, the correct answer is option (c).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

Q39) What is the value of ?

a)

b)

c)

d) 1

Correct Answer: Option (c)

Explanation: We can simplify the expression by finding a common denominator of 8.

Then the given expression is rewrite as

Now simplify the given fraction number we get

Therefore, the value of is .

Thus, the correct answer is option (c).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q40) What is the value of of ?**

a

b)

c)

d)

Correct Answer: Option (b)

Explanation: To find of , we can use the following formula:

We can simplify this by first dividing by :

Now we can substitute this into the formula:

Therefore, of is equal to .

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q41) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1nS4zL3USI-bYxf9\_RWct6bNIBsoPdUtu/view?usp=share\_link**](https://drive.google.com/file/d/1nS4zL3USI-bYxf9_RWct6bNIBsoPdUtu/view?usp=share_link)

**Type: Audio**

**What is an algebraic expression?**

a) A statement that shows the equality of two expressions

b) A statement that shows the inequality of two expressions

c) A combination of constants, variables, and arithmetic operations

d) A statement that involves trigonometric functions

Correct Answer: Option (c)

Explanation: An algebraic expression is a combination of numbers, variables, and arithmetic operations. It can include variables, constants, and coefficients, as well as addition, subtraction, multiplication, and division. It may also include exponents and radicals. Algebraic expressions are used to represent real-world situations in mathematical terms and are essential in solving problems in algebra.

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q42) What is the difference between an equation and an expression?**

a) Equations involve variables and constants, while expressions do not.

b) Equations represent a relationship between two expressions, while expressions are not.

c) Equations have an equal sign, while expressions do not.

d) Equations can be solved for a specific value, while expressions cannot.

Correct Answer: Option (b)

Explanation: An expression is a mathematical phrase that may contain variables, constants, and arithmetic operations, but it does not have an equal sign. For example, is an expression. an equation is a statement that asserts the equality of two expressions. It has an equal sign between two expressions. For example, is an equation. Equations are used to represent a relationship between two expressions or to find the value of a variable. In contrast, expressions are used to represent a quantity or a mathematical relationship without stating any equality or inequality.

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q43) What is a quadratic equation?**

a) An equation with one variable and the highest exponent is 2

b) An equation with two variables

c) An equation with three variables

d) An equation with four variables

Correct Answer: Option (a)

Explanation: A quadratic equation is a second-degree polynomial equation of one variable, which can be written in the form of , where a, b, and c are constants, and is the variable. Quadratic equations are used to model many real-life situations, such as projectile motion, maximum and minimum values, and optimization problems. They are also used extensively in engineering, physics, and other sciences to solve various problems

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q44) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/18Iaaj\_8GxfRwV-kOiFc4fW4dRz6nA8F5/view?usp=share\_link**](https://drive.google.com/file/d/18Iaaj_8GxfRwV-kOiFc4fW4dRz6nA8F5/view?usp=share_link)

**Type: Audio**

**What is the degree of a polynomial?**

a) The highest exponent of the variable in the polynomial

b) The sum of the exponents of the variables in the polynomial

c) The lowest exponent of the variable in the polynomial

d) The number of terms in the polynomial

Correct Answer: Option (a)

Explanation: The degree of a polynomial is the highest exponent of the variable in the polynomial. It is determined by looking at the term in the polynomial with the highest power of the variable. The degree of a polynomial is important in many areas of mathematics, such as calculus, where it is used to determine the behaviour of the polynomial as x approaches positive or negative infinity. For example, the polynomial has a degree of , because the term with the highest power of is .

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q45) What is a linear equation?**

a) An equation with one variable and the highest exponent is 2

b) An equation with two variables

c) An equation with three variables

d) An equation with a constant term and a variable with exponent 1

Correct Answer: Option (d)

Explanation: A linear equation is an equation that can be written in the form , where is a variable, a and b are constants, and a is not equal to 0. In other words, it is an equation that has a constant term and a variable with exponent 1. For example, the equation is a linear equation, because it has a constant term and a variable term with exponent .

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q46) What is a system of equations?**

[**https://drive.google.com/file/d/1Dc9jUlMAO-TaMi8-5tSqhGPg7NBKFT94/view?usp=share\_link**](https://drive.google.com/file/d/1Dc9jUlMAO-TaMi8-5tSqhGPg7NBKFT94/view?usp=share_link)

**Type: Audio**

a) A set of equations with one variable

b) A set of equations with two variables

c) A set of equations with three variables

d) A set of equations with four variables

Correct Answer: Option (b)

Explanation: A system of equations is a set of two or more equations that contain the same variables. In a system of equations, the variables have the same value in each equation, and the goal is to find the values of the variables that satisfy all the equations simultaneously. A system of equations can have one or more solutions, depending on the number of variables and equations involved.

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q47) What is a linear inequality?**

a) An inequality with one variable and the highest exponent is 2

b) An inequality with two variables

c) An inequality with three variables

d) An inequality with a constant term and a variable with exponent 1

Correct Answer: Option (d)

Explanation: A linear inequality is an inequality that involves a linear expression, which is an expression of the form, where is the variable, is the coefficient, and is a constant term. In other words, it is an inequality in which the highest exponent of the variable is 1. The solution to a linear inequality is a range of values for the variable that satisfies the inequality

Thus, the correct answer is option (d).

Difficulty Level- Hard

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q48) What is the degree of the polynomial ?**

a) 1

b) 2

c) 3

d) 4

Correct Answer: Option (c)

Explanation: The degree of a polynomial is the highest exponent of the variable in the polynomial. In the given polynomial,

The first term is has an exponent of ,

The second term is -2x^2, which has an exponent of 2.

The third term is 3x, which has an exponent of 1

Therefore the term has the highest component and the degree of the polynomial is .

Thus, the correct answer is option (c).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q49) What is the solution to the equation?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: The given equation is

To solve for x, we need to get all x terms one side and constant term on other side.

The solution of the equation  **is**

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q50) What is the slope-intercept form of the equation**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: The given equation

The given equation is in the form , where m is the slope and b is the y-intercept.

We need to solve for y.

The slope intercept form of an equation is

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q51) Which of the following is a quadratic function?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: A quadratic function is a function of the form where a, b, and c are constants and a ≠ 0.

From the given equation the options is in the form of That is where .

Therefore is a quadratic equation.

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

**Q52) Which of the following is a linear equation in one variable?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: A linear equation in one variable is an equation of the form y = mx + b, where m and b are constants and x is the variable. From the given options, only option (b) is a linear equation in one variable because it can be rearranged to solve for y in terms of x:

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q53) Which of the following is a polynomial of degree four?**

a)

b)

c)

d)

Correct Answer: Option (c)

Explanation: A polynomial of degree four is a polynomial function of the form where a, b, c, d, and e are constants and a is not equal to zero. From the given options, only option (c) is a polynomial of degree four because it has a term with , making it a fourth-degree polynomial.

Thus, the correct answer is option (c).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q54) What is the slope of a line perpendicular to a line with slope ?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: When two lines are perpendicular to each other, their slopes are negative reciprocals of each other. If the slope of one line is m, then the slope of the line perpendicular to it is

Given that the slope of the line is 2, the slope of the line perpendicular to it is:

The slope of a line perpendicular to a line with slope is

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q55) Which of the following is the equation of a circle with center and radius ?**

a)

b)

c)

d)

Correct Answer: Option (c)

Explanation: The equation of a circle with centre and radius is given by the formula:

In this case, the centre is and the radius is , so the equation of the circle is:

Simplifying this equation gives:

The required equation of the circle is with and the radius .

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q56) Which of the following is not an algebraic expression?**

a)

b)

c

d)

Correct Answer: Option (b)

Explanation: An algebraic expression is a mathematical phrase that can contain variables, numbers, and operators such as addition, subtraction, multiplication, and division. Option b) is not an algebraic expression, as it is a simple arithmetic expression that contains only numbers and an operator. It can be simplified to , which is a constant

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q57) What is a solution of a system of equations?**

a) A set of values that satisfies all the equations in the system

b) A set of values that satisfies one of the equations in the system

c) A set of values that does not satisfy any of the equations in the system

d) A set of values that satisfies some but not all of the equations in the system

Correct Answer: Option (a)

Explanation: A system of equations is a set of two or more equations that are solved simultaneously to find the values of the variables that satisfy all the equations in the system. A solution of a system of equations is a set of values that satisfy all the equations in the system simultaneously. In other words, a solution is a set of values for the variables in the system that make all the equations in the system true.

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q58) Which property of real numbers states that adding any two numbers together will give you the same result as if you added them in a different order?**

a) Associative property

b) Commutative property

c) Distributive property

d) Identity property

Correct Answer: Option (b)

Explanation: The property of real numbers that states that adding any two numbers together will give you the same result as if you added them in a different order is called the commutative property of addition. The commutative property of addition can be easily illustrated using the number line. If we start at any point on the number line and move a certain distance to the right (or left), and then move another distance to the right (or left), we end up at the same point regardless of the order in which we made the moves.

In other words, if a and b are any two real numbers, then .

Thus, the correct answer is option (b).

Difficulty Level- HArd

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q59) Which of the following is an example of a quadratic equation?**

a)

b)

c)

d)

Correct Answer: Option (c)

Explanation: A quadratic equation is a polynomial equation of the second degree, which means the highest power of the variable in the equation is two. From the given options, only option (c) is an example of a quadratic equation, as the highest power of is two (x²).

Thus, the correct answer is option (c).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q60) Which property of exponents states that when you multiply two numbers with the same base, you can add their exponents?**

a) Product property

b) Quotient property

c) Power property

d) Zero property

Correct Answer: Option (a)

Explanation: The property of exponents that states that when you multiply two numbers with the same base, you can add their exponents is called the product property.

Mathematically, it can be expressed as:

Here, is the base, and and are the exponents.

The product property of exponents is useful in simplifying expressions involving exponents and in solving equations with exponents.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q61) Which of the following is a linear function?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: A linear function is a function that can be represented by a straight line on a graph. Its general form is , where m is the slope and b is the y-intercept. From the given equation Option (b) is a linear function because it has the form where and . It can be represented as a straight line on a graph.

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q62) Which property of exponents states that when you divide two numbers with the same base, you can subtract their exponents?**

a) Product property

b) Quotient property

c) Power property

d) Zero property

Correct Answer: Option (b)

Explanation: The property of exponents that states when you divide two numbers with the same base, you can subtract their exponents is called the Quotient Property of Exponents.

Formally, if and are non-zero real numbers, and n and m are integers, then:

When you divide two numbers with the same base, you can subtract the exponent of the denominator from the exponent of the numerator to find the exponent of the resulting quotient

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q63) Which of the following is a quadratic function?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: A quadratic function is a polynomial function of degree 2. It is in the form

where a, b, and c are constants and a is not equal to 0.

From the given options, the quadratic function is (option b). This function is of degree 2 and is in the standard form of a quadratic function.

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q64) Which of the following is a quadratic equation?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: A quadratic equation is an equation in the form of

Where a, b, and c are constants and is the variable with an exponent of

The equation in option (b) is of this form and this function has the degree of 2

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q65) What is the slope of a horizontal line?**

a

b)

c) Undefined

d) Infinite

Correct Answer: Option (a)

Explanation: The slope of a line represents the steepness of the line. It is the ratio of the change in the y-coordinates to the change in the x-coordinates between any two points on the line.

A horizontal line is a line that runs parallel to the x-axis and has no vertical change. Therefore, the change in the y-coordinates is zero, while the change in the x-coordinates may be any non-zero value.

Using the slope formula:

In the case of a horizontal line, the change in y-coordinates is and the change in x-coordinates is some non-zero value.

Therefore, we have,

Any number divided by a non-zero value is .

Therefore, the slope of a horizontal line is

.Thus, the correct answer is option (a).

Difficulty Level- Hard

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q66) Which of the following is the identity element for addition?**

a)

b)

c)

d) Undefined

Correct Answer: Option (a)

Explanation: The identity element for addition is a number that when added to any other number, leaves that number unchanged. It is the additive equivalent of the number "1" in multiplication. Since adding 0 to any number leaves that number unchanged.

For example,

Therefore the identity element for addition is

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q67) Which of the following is the formula for the Pythagorean theorem?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: The correct formula for the Pythagorean theorem is where a and b are the lengths of the legs of a right triangle, and c is the length of the hypotenuse (the side opposite the right angle). This formula shows the relationship between the three sides of a right triangle.

The Pythagorean Theorem can be used to find the length of any side of a right triangle if the lengths of the other two sides are known. It can also be used to determine if a triangle is a right triangle, since only right triangles satisfy this equation.

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q68) What is the solution to the equation ?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: The given equation is

To solve this equation, we need to isolate the variable on one side of the equation.

The solution for the equation **is**

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q69) Which of the following is the inverse function of ?**

a

b)

c)

d)

Correct Answer: Option (a)

Explanation: The given function is

To find the inverse of a function, we need to switch the roles of and and solve for y.

Starting with , we have:

Switching x and y:

Solving for y:

Therefore, the inverse of is .

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q70) Which of the following is the commutative property of multiplication?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: The commutative property of multiplication states that the order of the factors does not affect the product. In commutative when you multiply two numbers, you will get the same result regardless of the order in which you multiply them.

The commutative property of multiplication is best illustrated with an example: Let's take two numbers, and . Using the commutative property of multiplication, we can see that:

which is true, and both result in .

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q71) Which of the following is the associative property of addition?**

a)

b)

c)

d)

Correct Answer: Option (c)

Explanation: The associative property of addition states that the grouping of numbers being added does not affect the sum. In other words, when you add three or more numbers, you can regroup them in any way using parentheses, and the sum will remain the same.

The associative property of addition is best illustrated with an example: Let's take three numbers, and . Using the associative property of addition, we can see that:

Which is true, and both expressions result in .

Thus, the correct answer is option (c).

Difficulty Level- Easy

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q72) Which of the following is the distributive property?**

a)

b)

c)

d)

Correct Answer: Option (c)

Explanation: The distributive property is a fundamental property in mathematics that describes the relationship between multiplication and addition. It states that multiplying a number by the sum of two numbers is the same as multiplying the number by each of the two numbers separately and then adding the products together. The distributive property is given as

Thus, the correct answer is option (c).

Difficulty Level- Easy

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q73) Which of the following is the identity element for multiplication?**

a)

b)

c)

d) Undefined

Correct Answer: Option (b)

Explanation: In mathematics, the identity element is a special element in a set with respect to a particular operation that leaves other elements unchanged when combined with them using that operation. For multiplication, the identity element is a number that, when multiplied by any other number, does not change the value of that number.

is the identity element for multiplication because any number multiplied by 1 results in the original number. This is true for all real numbers, rational numbers, irrational numbers, and complex numbers.

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q74) What is the sum of the roots of the equation ?**

a

b.

c.

d.

Correct answer: Option (b)

Explanation: The given equation is a quadratic equation of the form

where a = 1, b = 3, and c = 2. We need to find the sum of the roots of this equation.

The sum of the roots of a quadratic equation of the form can be found using the following formula:

Plugging in the values for and from the given equation, we get:

So, the sum of the roots of the equation is .

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q75) What is the discriminant of the quadratic equation ?**

a)

b)

c)

d)

Correct answer: Option (b)

Explanation: The discriminant of a quadratic equation of the form

is given by the formula:

Plugging in the values for a, b, and c from the given equation we get:

Substituting these values into the discriminant formula, we get:

So, the discriminant of the quadratic equation is

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q76) What is the slope of the line passing through the points and ?**

a) 2

b) 3

c)

d)

Correct answer: Option (c)

Explanation: The slope of a line passing through two points, denoted as and can be calculated using the formula:

Given the points and , we can plug in the values into the formula to calculate the slope.

So, the slope of the line passing through the points and is

.Thus, the correct answer is option (c).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q77) Which of the following is the quadratic formula?**

a)

b)

c)

d)

Correct answer: Option (a)

Explanation: The quadratic formula is

This formula is used to find the solutions or roots of a quadratic equation in the form , where a, b, and c are constants, and . The quadratic formula is derived from completing the square and provides the exact solutions for any quadratic equation.

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q78) What is the value of the expression when ?**

a)

b)

c)

d)

Correct answer: Option (a)

Explanation: The given expression is

Substitute into the expression:

Perform the arithmetic inside the parentheses first:

So, the value of the expression when is

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q79) What is the simplified form of the expression ?**

a)

b)

c)

d)

Correct answer: Option (a)

Explanation: The given expression is

The given expression can be rewrite as

Then simplify we get,

The simplified form of expression  **is**

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q80) Solve the equation**

a)

b)

c)

d)

Correct answer: Option (b)

Explanation: The given equation is

To solve the quadratic equation 3x^2 + 5x - 2 = 0, we can use the quadratic formula:

where a, b, and c are the coefficients of , and the constant term in the equation, respectively.

In our given equation, , and

Plugging these values into the quadratic formula, we get:

Case 1: Positive square root:

Case 2: Negative square root:

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q81) What is the derivative of ?**

a) 6x + 2

b) 6x - 2

c)

d)

Correct answer: Option (a)

Explanation: The given function is

We can use the power rule and the constant rule of differentiation.

The power rule states that for a function of the form , where n is a constant, the derivative is given by

Applying the power rule to the first term we get:

Applying the power rule to the second term 2x, we get:

The derivative of a constant term is always zero, as the derivative of a constant is always zero.

Putting it all together, we get the derivative of f(x) as:

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q82) What is the limit of as approaches ?**

a)

b)

c)

d) undefined

Correct answer: Option (d)

Explanation: The given expression is

To find the limit of as approaches , we can directly substitute into the expression and see what value we get.

Sub in x = 2:

We can see that when approaches , the denominator ) becomes zero, which would result in division by zero.

When , the numerator is also zero, so we have a situation of , which is an indeterminate form.

Therefore, the numerator and the denominator is , which means that the overall fraction is undefined.

Thus, the correct answer is option (d).

Difficulty Level- Hard

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q83) What is the second derivative of ?**

a)

b)

c)

d)

Correct answer: Option (a)

Explanation: The given function is

To find the second derivative of , we can apply the power rule of differentiation multiple times.

The power rule states that for a function of the form where is a constant, the derivative is given by

Taking the first derivative of with respect to :

Now, we can take the derivative of to find the second derivative:

Thus, the correct answer is option (a).

Difficulty Level- Hard

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q84) What is the area under the curve represented by a definite integral?**

a) The slope of the curve

b) The limit of the curve as x approaches a particular value

c) The average value of the curve d) The accumulated total of the curve between two points

Correct Answer: Option (d)

Explanation: A definite integral represents the accumulated total or the area under the curve of a function between two specified points on the x-axis. It calculates the total area between the curve and the x-axis within the given interval. The area could be positive or negative depending on whether the function is above or below the x-axis within the given interval.

Thus, the correct answer is option (d).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q85) What is the area between the curve and the x-axis from to ?**

a) 2

b)

c)

d)

Correct answer: Option (c)

Explanation: The given function is , and the interval of interest is from to

Using the power rule of integration, which states that the integral of is

where C is the constant of integration,

Now, we can evaluate the definite integral by plugging in the limits of integration:

Thus, the correct answer is option (c).

Difficulty Level- Hard

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q86) What is the value of the definite integral ?**

a)

b)

c)

d)

Correct answer: Option (b)

Explanation: Evaluate the antiderivative of

The antiderivative of is since the derivative of is by the fundamental theorem of calculus.

The given limits is

is equal to , since is the cosine of the right angle, which is

is equal to , since is the cosine of degrees, which is

So, the value of the definite integral is

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q88) What is the derivative of**  at **?**a)   
b) c) d)

Correct Answer: Option (b)   
Explanation: Given the function we can find its derivative using the power rule for derivatives.

According to the power rule, the derivative of (where n is a constant) is given by

In the case of we can apply the power rule with which gives us:

Sub x = 2. To do this,:

So, the derivative of at is .

Thus, the correct answer is option (b)

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q89) What is the indefinite integral of**a)   
b) c) d)

Correct Answer: Option (a)

Explanation: The given function is

To find the antiderivative of , we need to apply the power rule for integration, which states that the integral of is

where n is a constant not equal to -1.

Using this rule, we can integrate each term of f(x) separately:

Adding these results together, we get:

where C is the sum of the constants of integration C1, C2, and C3.

Thus, the correct answer is option (a)

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q90) What is the area bounded by the curve and the between and ?**a)   
b)   
c)  
d)

Correct Answer: Option (c)   
Explanation: The area bounded by the curve and the x-axis can be calculated as the definite integral of with respect to from to :

Applying the power rule, we get:

where C is the constant of integration.

Now we can evaluate the definite integral by substituting the limits of integration:

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q91) What is the derivative** of at **?**a)   
b)   
c)   
d)

Correct Answer: Option (c)   
Explanation: The derivative of is simply , as the derivative of is

Where is 1.

The derivative of is , as it is a standard result that the derivative of is

Where is

Using these results, we can find the derivative of f(x) as follows:

Sub

Thus, the correct answer is option (c)

Difficulty Level- Hard

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q92) What is the derivative of ?**a)   
b)   
c)

d)

Correct Answer: Option (a)

Explanation: The given expression is

Using this rule, we can find the derivative of each term separately:

The derivative of is

The derivative of is:

The derivative of is:

The derivative of is , as constants do not affect the rate of change.

Adding up all the derivatives, we get:

The derivative of the function is

Thus, the correct answer is option (a)

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q93) What is the first derivative test used for?**

a) To find the absolute maximum and minimum of a function

b) To find the critical points of a function

c) To find the inflection points of a function

d) To find the average rate of change of a function

Correct Answer: Option (b)

Explanation: The first derivative test is used to find the critical points of a function, which are the points where the derivative is zero or undefined. The test involves analysing the sign of the derivative in the intervals between critical points to determine whether the function is increasing or decreasing in those intervals.

Thus, the correct answer is option (b)

Difficulty Level- Easy

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q94) What is the derivative of** at **?**a)

b)

c)   
d)

Correct Answer: Option (a)

Explanation: According to the chain rule, if and , then the derivative of with respect to can be expressed as:

In this case, we can consider and Therefore:

where

Now, we can use the chain rule to find the derivative of f(x):

since the derivative of is

Substituting we get:

Substitute x=0 into the above equation:

Thus, the correct answer is option (a)

Difficulty Level- HArd

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**  
**Q95) What is the derivative of ?**

a)

b)

c)

d)

Correct Answer Option (a)

Explanation: According to the chain rule, if and , then the derivative of with respect to can be expressed as:

In this case, we can consider and Therefore:

where

Now, we can use the chain rule to find the derivative of

since the derivative of is

Substituting , we get:

Thus, the correct answer is option (a)

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**  
**Q96) What is the derivative of**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: According to the chain rule, if and , then the derivative of with respect to can be expressed as:

We can consider and . Therefore:

, where

Now, we can use the chain rule to find the derivative of

since the derivative of is

Substituting , we get:

Thus, the correct answer is option (a)

Difficulty Level- Hard

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q97) What is the product rule in calculus?**

a) A rule for finding the derivative of the sum of two functions

b) A rule for finding the derivative of the product of two functions

c) A rule for finding the derivative of a function raised to a power

d) A rule for finding the derivative of the inverse of a function

Correct Answer: Option (b)

Explanation: The product rule states that the derivative of the product of two functions and is equal to the derivative of times plus times the derivative of . In mathematical notation, this is written as:

where and represent the derivatives of) and respectively. The product rule is a fundamental rule in calculus and is used frequently in applications such as optimization problems, related rates, and integration by parts.

Thus, the correct answer is option (b)

Difficulty Level- Easy

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q98) What is the chain rule in calculus?**

a) A rule for finding the derivative of the sum of two functions

b) A rule for finding the derivative of the product of two functions

c) A1` rule for finding the derivative of a composite function

d) A rule for finding the derivative of the inverse of a function

Correct Answer: Option (c)

Explanation: A composite function is a function that is formed by applying one function to the output of another function. For example, if we have two functions f(x) and g(x), then the composite function is formed by first applying g(x) to x and then applying to the output of

The chain rule allows us to find the derivative of a composite function. It states that if , then the derivative of with respect to x is:

Thus, the correct answer is option (c)

Difficulty Level- Medium

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q99) What is the fundamental theorem of calculus?**

a) A theorem that relates the derivative and integral of a function

b) A theorem that relates the maximum and minimum values of a function

c) A theorem that relates the limit and continuity of a function

d) A theorem that relates the differentiability and continuity of a function

Correct Answer: Option (a)

Explanation: The fundamental theorem of calculus states that if a function is continuous on the interval , then the function given by:

is differentiable on the interval and i.e., the derivative of ) with respect to is equal to the function

The theorem also states that if a function is continuous on the interval , and is any antiderivative of ) on the interval, then:

.Thus, the correct answer is option (a)

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q100) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1jH320tivB36XvgT8zbigJz9gjNF-2nJG/view?usp=share\_link**](https://drive.google.com/file/d/1jH320tivB36XvgT8zbigJz9gjNF-2nJG/view?usp=share_link)

**Type: Audio**

**What is a critical point of a function?**

a) A point where the function is not defined

b) A point where the function is continuous

c) A point where the function has a local maximum or minimum

d) A point where the function has an inflection point

Correct Answer: Option (c)

Explanation: A critical point of a function is a point where the derivative of the function either equals zero or does not exist. Geometrically, the derivative of a function at a critical point is the slope of the tangent line to the function at that point, and when the derivative is zero or undefined, the tangent line is either horizontal or vertical. If the derivative of a function is positive to the left of a critical point and negative to the right, then the critical point is a local maximum.

Thus, the correct answer is option (c)

Difficulty Level- Medium

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q101) What is the mean value theorem?**

a) A theorem that relates the average rate of change of a function to its derivative

b) A theorem that relates the maximum and minimum values of a function to its derivative

c) A theorem that relates the derivative of a function to its integral

d) A theorem that relates the derivative of a function to its average value

Correct Answer: Option (d)

Explanation: A theorem that relates the derivative of a function to its average value. The mean value theorem states that if a function is continuous on a closed interval [a, b] and differentiable on the open interval (a, b), then there exists a point c in (a, b) such that the derivative of the function at c is equal to the average rate of change of the function over [a, b].It is given as

Thus, the correct answer is option (d)

Difficulty Level- Easy

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q102) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/14zmfXrXcvXrQX-0bvNupDegkIHDPyvz9/view?usp=share\_link**](https://drive.google.com/file/d/14zmfXrXcvXrQX-0bvNupDegkIHDPyvz9/view?usp=share_link)

**Type: Audio**

**What is a limit in calculus?**

a) The value of a function at a particular point

b) The maximum or minimum value of a function

c) The rate at which a function is changing at a particular point

d) The value of function with maximum value

Correct Answer: Option (a)

Explanation: A limit in calculus is the value that a function approaches as its input approaches a certain value, usually a point, but may be infinity or negative infinity. Limits are a fundamental concept in calculus that are used to describe the behaviour of a function as its input approaches a certain value. Intuitively, a limit is the value that the function is "heading towards" as the input gets closer and closer to a particular point, without necessarily reaching that point.

Thus, the correct answer is option (a)

Difficulty Level- Medium

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q103) What is the limit of as approaches ?**

a)

b)

c)

d)

Correct Answer: Option (d)

Explanation: Let's apply this approach to the given function:

Applying L'Hôpital's rule by differentiating the numerator and denominator with respect to x gives:

X=2

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q104) Which of the following is the slope of the tangent line to the curve at the point** **()?**

a)

b)

c)

d)

Correct Answer: Option (c)

Explanation: The given the function is  **.**

Taking the derivative of each term separately, we get:

Applying the power rule and constant rule of differentiation, we get:

Now, we can evaluate the derivative at the given point (2,8) by substituting x = 2 into the derivative:

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$Q105) What is the derivative of a constant function in calculus?**

a) 0

b) 1

c) -1

d) Undefined

Correct answer: Option (a)

Explanation: In calculus, the derivative of a function represents the rate of change of the function with respect to its independent variable. For a constant function, the value of the function remains the same regardless of the value of its independent variable. This means that the function does not change, and hence its rate of change, or derivative, is zero.

Thus, the correct answer is option (a).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q106) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1KgQDwmRFivHj1gg-llhoAqJ04KlIRI\_-/view?usp=share\_link**](https://drive.google.com/file/d/1KgQDwmRFivHj1gg-llhoAqJ04KlIRI_-/view?usp=share_link)

**Type: Audio**

**Which of the following is the chain rule used for in calculus?**

a) Finding the derivative of a function composed of two or more functions

b) Evaluating the limit of a function at a specific point

c) Determining the area under a curve

d) Finding the integral of a function

Correct answer: Option (a)

Explanation: The chain rule in calculus is used to find the derivative of a function that is composed of two or more functions. It allows us to compute the rate of change of a composite function by considering the derivatives of its component functions. It is often used in situations where you have a function that is defined as the composition of multiple functions, such as in problems involving functions of functions, exponential functions, logarithmic functions, trigonometric functions, and other types of composite functions.

Thus, the correct answer is option (a)

Difficulty Level- Very Hard

Bloom’s Taxonomy - Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q107) What is the definition of an integral in calculus?**

a) The rate of change of a function with respect to its input value

b) The limit of the change in function value divided by the change in input value

c) The limit of a sum of infinitesimally small quantities

d) The ratio of the change in input value divided by the change in function value

Correct answer: Option (c)

Explanation: The definition of an integral involves the concept of a limit of a sum of infinitesimally small quantities. It is used to find the total or accumulated value of a function over a given range, and it is denoted by the symbol ∫. The integral is also defined as the limit of a sum, where the sum involves infinitely many terms, each representing an infinitesimally small quantity.

Thus, the correct answer is option (c).

Difficulty Level- Very hard

Bloom’s Taxonomy - Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q108) What is the anti-derivative of ?**

a)

b)

c)

d)

Correct answer: Option (a)

Explanation: The given function is

To find the anti-derivative (also known as the indefinite integral) of , we can apply the power rule of integration, which states that for a function of the form , where is a constant,

the anti-derivative is given by , where is the constant of integration.

In this case, we have , which can be written as , where . Applying the power rule of integration, we get:

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q109) What is the derivative of**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: The derivative of is simply This is a fundamental property of the exponential function. The derivative of the exponential function where u is a function of x, is given by f'(x) = . Here, Therefore, u' = 2. Substituting these values in the formula, we get

Therefore, the correct option is (a).

Difficulty Level- Hard

Bloom’s Taxonomy - Evaluate

$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

**Q110) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1UGcXdcj8lAGtRTVxpV20gyEamBIKYn7b/view?usp=share\_link**](https://drive.google.com/file/d/1UGcXdcj8lAGtRTVxpV20gyEamBIKYn7b/view?usp=share_link)

**Type: Audio**

**What is the definition of a local maximum in calculus?**

a) The highest point on a curve

b) The lowest point on a curve

c) A point where the derivative is positive

d) A point where the derivative is negative

Correct Answer: Option (a)

Explanation: In calculus, a local maximum refers to the highest point on a curve within a specific interval. It is a point where the function reaches its highest value compared to the nearby points. Mathematically, a point (x, y) on a curve is considered a local maximum if and only if there exists an open interval around x such that the function values at x are greater than or equal to the function values at all other points within that interval.

Therefore, the correct option is (a).

Difficulty Level- Hard

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q111) What is the definition of the derivative of a function f(x) at a point x=a?**

a) The slope of the tangent line to the graph of f(x) at x=a

b) The value of f(x) at x=a

c) The area under the curve of f(x) from x=0 to x=a

d) The limit of f(x) as x approaches a

Correct Answer: Option (a)

Explanation: The derivative of a function at a point represents the rate of change or slope of the function at that particular point. It can be interpreted as the slope of the tangent line to the graph of the function at that point. Mathematically, the derivative of f(x) at x=a, denoted as f'(a).

Thus the correct option is (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q112)** **Which of the following is the correct definition of a derivative in calculus?**

a) The limit of the change in function value divided by the change in input value

b) The ratio of the change in input value divided by the change in function value

c) The rate of change of function value with respect to input value

d) The rate of change of input value with respect to function value

Correct answer: Option (c)

Explanation: In calculus, the derivative of a function measures the rate of change of the function's value with respect to its input value. It represents how fast the function is changing at a particular point, or the slope of the tangent line to the graph of the function at that point

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q113) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1IEwAt1XBpp5J\_jnClnq9oU\_abyKG2v9a/view?usp=share\_link**](https://drive.google.com/file/d/1IEwAt1XBpp5J_jnClnq9oU_abyKG2v9a/view?usp=share_link)

**Type: Audio**

**What is the purpose of the Mean Value Theorem in calculus?**

a) To find the area under a curve

b) To evaluate limits

c) To find the derivative of a function

d) To guarantee the existence of a point where the derivative is equal to the average rate of change

Correct Answer: Option (d)

Explanation: The Mean Value Theorem states that for a function that is continuous on a closed interval [a, b] and differentiable on the open interval (a, b), there exists at least one point c in (a, b) where the derivative of the function is equal to the average rate of change of the function over the interval [a, b]. In other words, it guarantees the existence of a point where the instantaneous rate of change (represented by the derivative) is equal to the average rate of change of the function over an interval.

Thus, the correct answer is option (d).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q114) What is the graph of a function with a positive first derivative and a negative second derivative?**

a) Increasing at an increasing rate

b) Increasing at a decreasing rate

c) Decreasing at an increasing rate

d) Decreasing at a decreasing rate

Correct Answer: Option (b)

Explanation: The first derivative of a function represents its rate of change, while the second derivative represents the rate of change of the rate of change (or the acceleration) of the function.If a function has a positive first derivative, it means that the function is increasing, as the function values are getting larger as the input values increase. If the second derivative of the function is negative, it means that the rate of change of the function is decreasing, or the acceleration is decreasing.

Thus, the correct answer is option (b).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q115) What is the definition of an indefinite integral? `**

a) The limit of a function as it approaches a certain value

b) The area under the curve of the function

c) The average rate of change of the function

d) The antiderivative of a function

Correct Answer: Option (d)

Explanation: In calculus, an indefinite integral, also known as an antiderivative, is a fundamental concept used to find a function whose derivative is equal to a given function. It is denoted by the symbol "∫" followed by the function to be integrated, and does not have upper and lower limits, unlike a definite integral which represents the area under a curve between two specified points.

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

**Q116) Which of the following is used to find the slope of a tangent line to a curve at a given point?**

a) Integral

b) Limit

c) Derivative

d) Function

Correct Answer: Option (c)

Explanation: The derivative is a fundamental concept in calculus that represents the rate of change or the instantaneous slope of a function at a given point. It is used to find the slope of a tangent line to a curve at a particular point. The derivative is found using various techniques, such as the power rule, product rule, quotient rule, and chain rule, among others. It involves taking the limit of the change in the function value divided by the change in the input value as the change approaches zero.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

**Q117) What is the limit of a function used for in calculus?**

a) Finding the rate of change of a function

b) Determining the area under a curve

c) Evaluating the behavior of a function as it approaches a specific value

d) Finding the derivative of a function

Correct Answer: Option (c)

Explanation: The limit of a function is used to describe the behavior of a function as it approaches a specific value or point. It helps to understand how a function behaves when its input value gets arbitrarily close to a particular value.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

**Q118) What is the derivative of ?**a)   
b)   
c)

d)

Correct Answer: Option (a)

Explanation: The given expression is

Using this rule, we can find the derivative of each term separately:

The derivative of is

The derivative of is:

The derivative of is:

The derivative of is , as constants do not affect the rate of change.

Adding up all the derivatives, we get:

The derivative of the function is

Thus, the correct answer is option (a)

Difficulty Level- Medium

Bloom’s Taxonomy - Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q119) What is the purpose of the Intermediate Value Theorem in calculus?**

a) To determine the concavity of a function

b) To find the points of inflection of a function

c) To determine if a function has a local maximum or minimum

d) To guarantee the existence of a root of a function

Correct Answer: Option (d)

Explanation: The Intermediate Value Theorem states that if a continuous function takes on two different values at the endpoints of a closed interval, then it must also take on every value between those two values at some point within that interval. This theorem is used to establish the existence of at least one root (or zero) of a continuous function within a given interval.

Thus, the correct answer is option (d).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

**Q120) What is the relationship between a function and its derivative?**

a) The derivative is the same as the function.

b) The derivative is the integral of the function.

c) The derivative is the rate of change of the function.

d) The derivative is the reciprocal of the function.

Correct Answer: Option (c)

Explanation: The derivative of a function represents the rate of change of the function with respect to its input variable. It provides information about how the function is changing at each point along its domain. The derivative can indicate whether the function is increasing or decreasing, and the rate at which it is changing. Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

**Q121) A coin is tossed** 4 **times. What is the probability of getting exactly** 2 **heads?**a) ½  
b) ¼  
c)   
d)

Correct Answer: Option (c)

Explanation: When a coin is tossed, there are two possible outcomes: heads or tails. Since each toss is independent, the total number of possible outcomes when a coin is tossed 4 times is

We can use the binomial distribution formula to find the probability of getting exactly 2 heads in 4 tosses of a coin:

where is the total number of trials, is the number of successes p is the probability of success on a single trial.

The number of ways to choose k successes from n trials, given by the formula:

Sub values, we get:

Thus, the correct answer is option (c).

Difficulty Level- Easy

Bloom’s Taxonomy – Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q122) A random variable X has the following probability density function:**  for **and otherwise. What is**a)   
b)

c)

d)   
Correct Answer: Option (b)   
Explanation: The given probability density function for the random variable is:

Since the total area under the probability density function must be equal to , we can find the limits of integration for the given probability as follows:

Substituting the given value of we get:

Evaluating the integral, we get:

Therefore, the probability of the random variable taking a value between and is

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q123) Which of the following is a discrete probability distribution?**a) Normal distribution  
b) Poisson distribution  
c) Exponential distribution  
d) Uniform distribution  
Correct Answer: Option (b)

Explanation: Poisson distribution is a discrete probability distribution that describes the probability of a given number of events occurring in a fixed interval of time or space. It is used to model situations where events occur randomly and independently at a constant rate over time or space. Normal distribution, exponential distribution, and uniform distribution are all continuous probability distributions.  
Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q124) Which of the following is not a property of a probability distribution function?**a) The total area under the curve is equal to one.  
b) The function can take negative values.  
c) The function is non-negative everywhere.  
d) The function describes the probability of a range of values for a random variable.

Correct Answer: Option (b)   
Explanation: A probability distribution function is a function that describes the probabilities of the possible outcomes of a random variable. It must satisfy certain properties such as being non-negative everywhere, having a total area under the curve equal to one, and describing the probability of a range of values for the random variable. However, it cannot take negative values since probabilities cannot be negative.  
Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q125) What is the formula for the binomial probability distribution?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: The binomial probability distribution describes the probability of having x successes in n independent trials, where each trial has only two possible outcomes (success or failure) and the probability of success is denoted by p. The formula for the binomial probability distribution is

where is the binomial coefficient and .

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q126) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1LHRmBBkZljXXAaLXvpMkImcX\_\_5A-rG2/view?usp=share\_link**](https://drive.google.com/file/d/1LHRmBBkZljXXAaLXvpMkImcX__5A-rG2/view?usp=share_link)

**Type: Audio**

**Which of the following is a continuous probability distribution?**

a) Poisson distribution

b) Geometric distribution

c) Normal distribution

d) Binomial distribution

Correct Answer: Option (c)

Explanation: A continuous probability distribution is a function that describes the probabilities of all possible outcomes in a continuous range of values for a random variable. This means that the random variable can take on any value within a certain range, as opposed to a discrete probability distribution where the random variable can only take on certain discrete values.

Thus, the correct answer is option (c).

Difficulty Level- Easy

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q127) Which of the following statements is true about the mean and variance of a uniform distribution?**

a) The mean and variance are equal.

b) The mean is twice the variance.

c) The variance is twice the mean.

d) The mean and variance cannot be calculated for a uniform distribution.

Correct Answer: Option (a)

Explanation: In a uniform distribution, all values within a certain range are equally likely to occur. The mean, or expected value, of a uniform distribution is calculated by taking the average of the minimum and maximum values of the range.

For example, if the range is from the mean would be

The variance of a uniform distribution is calculated using the formula .

Since the variance formula involves the difference between the maximum and minimum values squared, and the mean formula involves the average of the maximum and minimum values, the mean and variance of a uniform distribution are always equal.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q128) Which of the following is a parameter of the Poisson distribution?**

a) Mean

b) Variance

c) Standard deviation

d) Probability of success

Correct Answer: Option (a)

Explanation: The Poisson distribution is a discrete probability distribution that describes the probability of a given number of events occurring in a fixed interval of time or space, given that the events occur independently of each other and at a constant rate. The parameter of the Poisson distribution is the mean, denoted by . The mean represents the average number of events that occur in the given interval. It is also equal to the variance of the distribution.

Thus, the correct answer is option (a).

Difficulty Level- Hard

Bloom’s Taxonomy – Remember

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q129) Which of the following is a property of the exponential distribution?**

a) It is a discrete probability distribution.

b) It has a bell-shaped curve.

c) It is a skewed distribution.

d) It is always symmetrical.

Correct Answer: Option (c)

Explanation: The exponential distribution is a continuous probability distribution that is often used to model the time between events that occur at a constant rate, such as the time between earthquakes or the time between customer arrivals at a store. It has a single parameter, λ (lambda), which represents the rate at which the events occur. The exponential distribution is a right-skewed distribution, with a long tail to the right. This means that there is a higher probability of observing small values of x, and a lower probability of observing large values of x.

Thus, the correct answer is option (c).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q130)**

**Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1rNsjpFxt-vth2sFWZLpzs08DBxSXNSTr/view?usp=share\_link**](https://drive.google.com/file/d/1rNsjpFxt-vth2sFWZLpzs08DBxSXNSTr/view?usp=share_link)

**Type: Audio**

**What is the central limit theorem and what is its significance in statistics?**

a) It states that the sample mean follows a normal distribution.

b) It states that the sample variance follows a chi-squared distribution.

c) It states that the sample proportion follows a binomial distribution.

d) It states that as the sample size increases, the sample mean approaches a normal distribution.

Correct Answer: Option (d)

Explanation: The central limit theorem (CLT) is a fundamental concept in statistics that describes the behaviour of the distribution of sample means or sample sums. It states that as the sample size increases, the sampling distribution of the mean approaches a normal distribution, regardless of the shape of the population distribution, as long as the sample size is sufficiently large. This is significant because it allows us to make inferences about population parameters based on sample statistics, assuming that the sample size is large enough.

Thus, the correct answer is option (d).

Difficulty Level- Hard

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q131) Which of the following statements is true regarding the Poisson distribution?**

a) It is a continuous distribution.

b) It is a discrete distribution.

c) It is a symmetric distribution.

d) It is a skewed distribution.

Correct Answer: Option (b).

Explanation: The Poisson distribution is a discrete probability distribution that describes the number of events occurring in a fixed interval of time or space. It is used when the events occur randomly and independently of each other, and the average rate of occurrence is known. The Poisson distribution is characterized by a single parameter, lambda (λ), which represents the average number of events that occur in a fixed interval. The probability of observing exactly k events in that interval is given by the formula:

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q132) In a normal distribution, what percentage of the observations fall within one standard deviation of the mean?**

a) 50%

b) 68%

c) 95%

d) 99.7%

Correct Answer: Option (b)

Explanation: In a normal distribution, approximately of the observations fall within one standard deviation of the mean. This is known as the rule, which states that approximately of the observations fall within one standard deviation of the mean, fall within two standard deviations of the mean, and fall within three standard deviations of the mean.

Thus, the correct answer is option (b).

Difficulty Level- Very Hard

Bloom’s Taxonomy – Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q133) Which of the following statements is true regarding the binomial distribution?**

a) It is a continuous distribution.

b) It is a discrete distribution.

c) It is a symmetric distribution.

d) It is a skewed distribution.

Correct Answer: Option (b)

Explanation: The binomial distribution is a discrete probability distribution that models the number of successes in a fixed number of independent trials. Each trial has only two possible outcomes, success or failure, and the probability of success is constant for each trial. The number of successes in the trials is a discrete random variable, and its probability distribution is known as the binomial distribution.

The probability mass function of the binomial distribution is given by the formula:

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q134) Which of the following is a characteristic of a chi-squared distribution?**

a) It is a continuous distribution.

b) It is a discrete distribution.

c) It is a symmetric distribution.

d) It is a skewed distribution.

Correct Answer: Option (a).

Explanation: The characteristic of a chi-squared distribution is that it is a continuous distribution. The chi-squared distribution is used in statistics to test hypotheses about the variance of a normally distributed population, when the sample size is small. The distribution arises naturally in the context of testing for independence in contingency tables and in the analysis of variance. The chi-squared distribution has one parameter, called the degrees of freedom (df), which determines its shape. As the degrees of freedom increase, the distribution becomes more symmetric and bell-shaped.

Thus, the correct answer is option (a).

Difficulty Level- Very Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q135) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1w5QXGvY6SJnCsW9DWRKyb32HW44RFilf/view?usp=share\_link**](https://drive.google.com/file/d/1w5QXGvY6SJnCsW9DWRKyb32HW44RFilf/view?usp=share_link)

**Type: Audio**

**Which of the following statements is true regarding the geometric distribution?**

a) It is a continuous distribution.

b) It is a discrete distribution.

c) It is a symmetric distribution.

d) It is a skewed distribution.

Correct Answer: Option (a)

Explanation: The geometric distribution is a discrete probability distribution that models the number of trials needed to achieve the first success in a sequence of independent Bernoulli trials, where each trial has a constant probability of success. It is often used to model situations such as the number of attempts needed to get the first correct answer on a multiple-choice test or the number of times a gambler plays a game before winning for the first time.

The geometric distribution is skewed, with a long tail to the right, because the probability of success decreases with each additional trial, and it is not symmetric.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Remember

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q136) The mean and variance of a binomial distribution are:**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: In a binomial distribution, the mean and variance are calculated as follows:

where n is the number of trials, p is the probability of success, and 1-p is the probability of failure. The mean represents the average number of successes in n trials, and is simply the product of the number of trials and the probability of success. The variance represents how spread out the distribution is. It takes into account the fact that not all trials will have the same number of successes.

Thus, the correct answer is option (b).

Difficulty Level: Medium

Bloom’s Taxonomy – Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q137) What is the area under a probability distribution curve called?**

a) Mean

b) Variance

c) Standard Deviation

d) Total Probability

Correct Answer: Option (d)

Explanation: The area under a probability distribution curve is called the total probability. It represents the sum of all probabilities for all possible values of the random variable in the distribution. The total probability is always equal to , since the sum of all possible probabilities must equal .

Thus, the correct answer is option (d).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q138) What is the expected value of a discrete probability distribution?**

a) The most probable outcome

b) The mean of the distribution

c) The mode of the distribution

d) The median of the distribution

Correct Answer: Option (b)

Explanation: The expected value of a discrete probability distribution is the weighted average of all possible outcomes, where the weights are the probabilities of each outcome. It is also known as the mean or the expected mean. To calculate the expected value of a discrete probability distribution, you multiply each possible outcome by its probability and add up the results.

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q139) Which of the following is a characteristic of a Poisson distribution?**

a) The mean is equal to the variance

b) The mean is greater than the variance

c) The mean is less than the variance

d) The mean and variance cannot be calculated for a Poisson distribution

Correct Answer: Option (a)

Explanation: A Poisson distribution is a probability distribution that is used to model the number of times an event occurs in a fixed interval of time or space when the events are rare and independent of each other. The Poisson distribution has only one parameter, denoted by λ (lambda), which represents the average rate at which the events occur in the interval.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Remember

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q140) Which of the following is the formula for calculating the variance of a discrete probability distribution?**

a

b)

c)

d)

Correct Answer: Option (b)

Explanation: Variance is a measure of how spread out the values in a distribution are. For a discrete probability distribution, the variance is calculated by taking the sum of the squared differences between each value (xi) and the mean of the distribution (μ), and then dividing by the number of values minus one (n - 1).The formula for calculating the variance of a discrete probability distribution is

where is each possible value, is the mean, and is the sample size.

Thus, the correct answer is option (a).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q141) Which of the following is a characteristic of a normal distribution?**

a) The mean is equal to the median

b) The mode is always at the peak of the distribution

c) The distribution is symmetrical

d) The variance is always equal to 1

Correct Answer: Option (c)

Explanation: A normal distribution, also known as a Gaussian distribution, is a continuous probability distribution that has a bell-shaped curve. The normal distribution is symmetrical around its mean. This means that the curve is perfectly balanced around the midpoint, with exactly half of the area under the curve on either side of the mean. This symmetry implies that the mean, median, and mode of the distribution are all equal to each other.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q142) Which of the following is the formula for calculating the probability density function of a continuous probability distribution?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: A continuous probability distribution is a probability distribution that takes on an infinite number of values within a given range. Examples of continuous probability distributions include the normal distribution, the uniform distribution, and the exponential distribution.The formula for calculating the probability density function of a continuous probability distribution is

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q143) Which of the following is the formula for calculating the expected value of a discrete probability distribution?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: The expected value of a discrete probability distribution is a measure of the center of the distribution. It represents the long-term average value that we expect to obtain if we repeat an experiment many times. The formula for calculating the expected value of a discrete probability distribution is:

where represents each possible outcome of the random variable , and represents the probability of each outcome.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q144) Which of the following is a characteristic of a binomial distribution?**

a) The mean is equal to the variance

b) The mean is greater than the variance

c) The mean is less than the variance

d) The mean and variance cannot be calculated for a binomial distribution

Correct Answer: Option (c)

Explanation: A binomial distribution is a discrete probability distribution that describes the number of successes in a fixed number of independent trials, where each trial can result in only two possible outcomes, success or failure. It has two parameters: n, the number of trials, and p, the probability of success in each trial. The mean of a binomial distribution is given by while the variance is given by Therefore, the mean and variance of a binomial distribution depend on the values of n and p.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q145) Which of the following is the formula for the mean of a discrete probability distribution?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: A discrete probability distribution is a function that assigns probabilities to a set of possible outcomes. In a discrete probability distribution, the set of possible outcomes is countable, meaning that it consists of a finite or infinite sequence of values.

This formula is represented as

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q146) Which of the following is the formula for calculating the standard deviation of a continuous probability distribution?**

a)

b)

c)

d)

Correct Answer: Option (c)

Explanation: The standard deviation of a continuous probability distribution is a measure of the spread of the distribution. It is calculated by taking the square root of the average of the squared deviations of the values from their mean.

The formula for the standard deviation of a continuous probability distribution involves integrating the squared deviations of the values from their mean, weighted by the probability density function (pdf) of the distribution. The formula is:

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q147) Which of the following is the formula for the cumulative distribution function of a discrete probability distribution?**

a) P(X = x) = f(x)

b) P(X ≤ x) = F(x)

c) P(a ≤ X ≤ b) = ∑f(x)

d) P(X > x)

Correct Answer: Option (b)

Explanation: The CDF is a function that gives the probability that a random variable X is less than or equal to a certain value x. For a discrete probability distribution, the CDF is defined as the sum of the probabilities of all values of X that are less than or equal to x. The CDF is denoted by F(x).

The formula for the CDF of a discrete probability distribution is:

where is the probability mass function (PMF) of the discrete probability distribution, which gives the probability that takes on the value .

Thus, the correct answer is option (b).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q161) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1WSBnyAM0wwxj7IY4h71t5gchtpOOP7j9/view?usp=share\_link**](https://drive.google.com/file/d/1WSBnyAM0wwxj7IY4h71t5gchtpOOP7j9/view?usp=share_link)

**Type: Audio**

**What is the primary goal of inferential statistics?**

a) To summarize and describe data

b) To make predictions based on data

c) To draw conclusions about a population from a sample

d) To measure the association between variables

Correct Answer: Option (c)

Explanation: Inferential statistics is a branch of statistics that uses sample data to make inferences about a larger population. The goal of inferential statistics is to use statistical methods to draw conclusions about a population based on a sample of data, and to quantify the uncertainty associated with those conclusions. We can then use inferential statistics to estimate the population mean height based on the sample mean, and to quantify the uncertainty associated with this estimate.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q162) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1mQox961MnESY\_ZZXlTQ6q9bR1SUfFsBB/view?usp=share\_link**](https://drive.google.com/file/d/1mQox961MnESY_ZZXlTQ6q9bR1SUfFsBB/view?usp=share_link)

**Type: Audio**

**Which of the following is an example of a null hypothesis?**

a) There is no relationship between height and weight

b) There is a positive relationship between age and income

c) The mean weight of apples is greater than 1 pound

d) The proportion of men who prefer coffee to tea is 0.5

Correct Answer: Option (a)

Explanation: There is no relationship between height and weight is an example of a null hypothesis because it states that there is no statistically significant relationship between two variables, height and weight. This means that any observed correlation between height and weight is due to chance, sampling error, or other factors that are not related to the variables of interest. The null hypothesis is often denoted by .

Thus, the correct answer is option (a).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q163) Which of the following is the correct interpretation of a p-value?**

a) The probability that the null hypothesis is true

b) The probability that the alternative hypothesis is true

c) The probability of observing a test statistic as extreme as the one obtained, assuming the null hypothesis is true

d) The probability of observing a test statistic as extreme as the one obtained, assuming the alternative hypothesis is true

Correct Answer: Option (c)

Explanation: The probability of observing a test statistic as extreme as the one obtained, assuming the null hypothesis is true." The p-value is a measure of the strength of evidence against the null hypothesis. It represents the probability of observing a test statistic as extreme as the one obtained, assuming the null hypothesis is true.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q164) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1V\_QmPRsa10HusuJg\_uA7SHirNLToFQmR/view?usp=share\_link**](https://drive.google.com/file/d/1V_QmPRsa10HusuJg_uA7SHirNLToFQmR/view?usp=share_link)

**Type: Audio**

**Which of the following is a type of error in hypothesis testing?**

a) Type I error

b) Type II error

c) Both Type I and Type II errors

d) None of the above

Correct Answer: Option (c)

Explanation: In hypothesis testing, we make a decision about the null hypothesis based on the evidence provided by the sample data. We can either reject the null hypothesis or fail to reject it. However, there is always a possibility that the decision we make is incorrect.

There are two types of errors in hypothesis testing:

Type I error: Type I error occurs when we reject the null hypothesis even though it is actually true.

Type II error: Type II error occurs when we fail to reject the null hypothesis even though it is actually false.

Therefore, both Type I and Type II errors are important to consider in hypothesis testing

Thus, the correct answer is option (c).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q165) Which of the following is the correct formula for calculating the standard error of the mean?**

a)

b)

c)

d)

Correct Answer: Option (c)

Explanation: The standard error of the mean (SE) is a measure of the variability of the sample means around the population mean. It indicates how much the sample means are likely to deviate from the true population mean, due to sampling error. The standard error of the mean is also an important component in the calculation of confidence intervals and hypothesis tests for the population mean. The formula can be derived as follows:

Where:

* SE is the standard error of the mean
* σ is the population standard deviation
* n is the sample size

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q166) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1RYmro2hit4aTpKW3ZHGDK\_2EZmtdXTov/view?usp=share\_link**](https://drive.google.com/file/d/1RYmro2hit4aTpKW3ZHGDK_2EZmtdXTov/view?usp=share_link)

**Type: Audio**

**Which of the following is an assumption of the t-test?**

a) The population standard deviation is known

b) The sample size is small

c) The sample is normally distributed

d) The test is one-tailed

Correct Answer: Option (c)

Explanation: The t-test is a statistical test used to determine whether there is a significant difference between the means of two independent groups. One of the most important assumptions is that the sample data is normally distributed. This means that the values in the sample should be distributed symmetrically around the mean, with most values clustered near the middle and fewer values in the tails.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Hard

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q167) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1i5oSHaXUyO8gM2k8Lr-PgWmPkGd2Mkt4/view?usp=share\_link**](https://drive.google.com/file/d/1i5oSHaXUyO8gM2k8Lr-PgWmPkGd2Mkt4/view?usp=share_link)

**Type: Audio**

**Which of the following is a nonparametric test?**

a) test

b) ANOVA

c) Chi-square test

d) F-test

Correct Answer: Option (c)

Explanation: Nonparametric tests do not make any assumptions about the distribution of the data and are used when the data does not meet the assumptions of the parametric tests. The chi-square test is a nonparametric test used to compare the observed frequencies of categorical data with the expected frequencies. It is commonly used in hypothesis testing to determine whether there is a significant association between two categorical variables.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q168) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1zVqVE7HIUrRDXbuWH24GNfwQPEkQWZPc/view?usp=share\_link**](https://drive.google.com/file/d/1zVqVE7HIUrRDXbuWH24GNfwQPEkQWZPc/view?usp=share_link)

**Type: Audio**

**Which of the following is the correct interpretation of a confidence interval?**

a) The range of values within which the true population mean is likely to fall

b) The probability that the null hypothesis is true

c) The probability of observing a test statistic as extreme as the p value

d) The range of values that minimizes the error of estimation.

Correct Answer: Option (a)

Explanation: A confidence interval is a range of values within which the true population parameter, such as the population mean, is likely to fall. The level of confidence, usually expressed as a percentage (e.g., 95%), refers to the probability that the interval contains the true population parameter. The remaining 5% of intervals would not contain the true mean.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q169) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1X3vG5IderbTD8GPhjpopb-V5zLQbchHA/view?usp=share\_link**](https://drive.google.com/file/d/1X3vG5IderbTD8GPhjpopb-V5zLQbchHA/view?usp=share_link)

**Type: Audio**

**What is the difference between descriptive and inferential statistics?**

a) Descriptive statistics summarize data; inferential statistics make predictions based on data. b) Descriptive statistics make predictions based on data; inferential statistics summarize data. c) Descriptive statistics analyze populations; inferential statistics analyze samples.

d) Descriptive statistics analyze samples; inferential statistics analyze populations.

Correct Answer: Option (d)

Explanation: Descriptive statistics refers to methods of summarizing and describing the characteristics of a data set, such as measures of central tendency (e.g., mean, median, mode), measures of variability (e.g., range, standard deviation), and graphical representations (e.g., histograms, box plots). Descriptive statistics are used to provide a snapshot of the data and to identify patterns, trends, and relationships within the sample.

Thus, the correct answer is option (d).

Difficulty Level- Hard

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q170) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1Appecu8JigvQTJeurwBNwx\_KCzeYDd4P/view?usp=share\_link**](https://drive.google.com/file/d/1Appecu8JigvQTJeurwBNwx_KCzeYDd4P/view?usp=share_link)

**Type: Audio**

**What is the difference between a sample and a population?**

a) A sample is a subset of a population; a population is a subset of a sample.

b) A sample is a collection of individuals; a population is a collection of variables.

c) A sample is a subset of a population; a population is the entire group of individuals or variables of interest.

d) A sample and a population are the same thing.

Correct Answer: Option (c)

Explanation: In statistics, a population refers to the entire group of individuals, objects, or variables that we are interested in studying. A sample is a subset of the population. It is a smaller group of individuals, objects, or variables that are selected from the population and are used to make inferences about the population. The main reason for using a sample is that it is often not feasible or practical to study the entire population

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q171) Which of the following is an example of a parameter?**

a) The mean height of a sample of 100 people

b) The proportion of students in a class who have a part-time job

c) The standard deviation of a population of test scores

d) The range of a sample of temperatures recorded over a week

Correct Answer: Option (c)

Explanation: In statistics, a parameter is a numerical characteristic of a population. It is typically denoted using Greek letters (such as μ for the population mean and σ for the population standard deviation). Parameters are often unknown and are usually estimated using sample statistics. The standard deviation of a population of test scores, is an example of a parameter because it describes a characteristic of the entire population of test scores. This parameter tells us how spread out the test scores are in the population

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q172) Which of the following is an example of a statistic?**

a) The mean height of a population of people

b) The proportion of students in a city who have a part-time job

c) The standard deviation of a sample of test scores

d) The range of a population of temperatures recorded over a year

Correct Answer: Option (c)

Explanation: A statistic is a numerical measure calculated from a sample of data. Unlike parameters, which are numerical measures calculated from a population, statistics are calculated from a subset of the population. Statistic is used to estimate the corresponding population parameter. The standard deviation of a sample of test scores, is an example of a statistic because it is calculated from a sample of test scores

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q173) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1rqHUupIj7DYKZijESAh0h0i7U3MrXSmA/view?usp=share\_link**](https://drive.google.com/file/d/1rqHUupIj7DYKZijESAh0h0i7U3MrXSmA/view?usp=share_link)

**Type: Audio**

**What is the purpose of hypothesis testing?**

a) To prove a hypothesis is true.

b) To disprove a hypothesis is true.

c) To determine if there is enough evidence to support a hypothesis.

d) To determine if a hypothesis is irrelevant.

Correct Answer: Option (c)

Explanation: Hypothesis testing is a statistical method used to evaluate whether the evidence from a sample of data provides sufficient support for a hypothesis about a population. The purpose of hypothesis testing is to make an inference about the population based on the information available in the sample data. The goal of hypothesis testing is to determine whether the evidence from the sample provides sufficient evidence to reject the null hypothesis in favour of the alternative hypothesis.

Thus, the correct answer is option (c).

Difficulty Level- Very Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q174) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1yfR3niW4RroKfjBl2wCc1khY8CKLrGnw/view?usp=share\_link**](https://drive.google.com/file/d/1yfR3niW4RroKfjBl2wCc1khY8CKLrGnw/view?usp=share_link)

**Type: Audio**

**What is the null hypothesis?**

a) A hypothesis that is believed to be true.

b) A hypothesis that is believed to be false.

c) A hypothesis that is assumed to be true until proven otherwise.

d) A hypothesis that is assumed to be false until proven otherwise.

Correct Answer: Option (c)

Explanation: The null hypothesis is a statement that there is no significant difference between a sample statistic and a population parameter or between two population parameters. It is often denoted by and is assumed to be true until proven otherwise by the alternative hypothesis. The null hypothesis is typically a statement of no effect, no relationship, or no difference between variables being studied.

Thus, the correct answer is option (c).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q175) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1pQvu7LkXCPJ\_jxpKQnGs9b61UdM8\_C6x/view?usp=share\_link**](https://drive.google.com/file/d/1pQvu7LkXCPJ_jxpKQnGs9b61UdM8_C6x/view?usp=share_link)

**Type: Audio**

**What is the alternative hypothesis?**

a) A hypothesis that is believed to be true.

b) A hypothesis that is believed to be false.

c) A hypothesis that is assumed to be true until proven otherwise.

d) A hypothesis that is assumed to be false until proven otherwise.

Correct Answer: Option (d)

Explanation: The alternative hypothesis is a statement that contradicts or challenges the null hypothesis. It represents the possibility that there is a significant difference between a sample statistic and a population parameter or between two population parameters. It is often denoted by and is considered as an opposite of the null hypothesis.

Thus, the correct answer is option (d).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q176) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1OhjI9CjVNIRM6jIj-84DR8CjUUYyG\_Oa/view?usp=share\_link**](https://drive.google.com/file/d/1OhjI9CjVNIRM6jIj-84DR8CjUUYyG_Oa/view?usp=share_link)

**Type: Audio**

**Which of the following is a characteristic of inferential statistics?**

a) It is used to summarize data

b) It is used to make conclusions about a population based on a sample

c) It is used to describe the relationships between variables

d) It is used to measure the central tendency of data

Correct Answer: Option (b)

Explanation: Inferential statistics are used to make conclusions or inferences about a population based on a sample. Inferential statistics allow us to generalize beyond the sample data to make inferences about the larger population from which the sample was drawn. Inferential statistics can also be used for estimating population parameters, constructing confidence intervals, and making predictions based on statistical models.

Thus, the correct answer is option (b).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q177) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1oEsWyuytf38NdSbM4JCzVVu-uRPYs9k0/view?usp=share\_link**](https://drive.google.com/file/d/1oEsWyuytf38NdSbM4JCzVVu-uRPYs9k0/view?usp=share_link)

**Type: Audio**

**What is the significance level in hypothesis testing?**

a) The probability of making a type II error

b) The probability of making a type I error

c) The probability of rejecting a true null hypothesis

d) The probability of accepting a false null hypothesis

Correct Answer: Option (b)

Explanation: The significance level in hypothesis testing is the probability of making a Type I error, which is rejecting a true null hypothesis. It is denoted by the symbol alpha and is typically set at , depending on the level of significance required for the test. A smaller significance level, such as , indicates a lower risk of making a Type I error, but may lead to a higher risk of a Type II error, which is accepting a false null hypothesis.

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q178) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1yJMXyu70O1GAe98zDO6zc6-GyGfW9VyW/view?usp=share\_link**](https://drive.google.com/file/d/1yJMXyu70O1GAe98zDO6zc6-GyGfW9VyW/view?usp=share_link)

**Type: Audio**

**What is a type II error in hypothesis testing?**

a) Rejecting a true null hypothesis

b) Failing to reject a false null hypothesis

c) Rejecting a false alternative hypothesis

d) Failing to reject a true alternative hypothesis

Correct Answer: Option (b)

Explanation: In hypothesis testing, a type II error occurs when a false null hypothesis is not rejected. In other words, the null hypothesis is assumed to be true even though it is actually false. This means that the test fails to detect a significant difference or relationship between variables when one actually exists. A type II error is denoted by the symbol beta (β). It is calculated as the probability of failing to reject a false null hypothesis, given that the alternative hypothesis is actually true.

Thus, the correct answer is option (b).

Difficulty Level- Very Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q179) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1\_8FeHEAd1wB7s8Ctyncn7XhbLvjWu8r7/view?usp=share\_link**](https://drive.google.com/file/d/1_8FeHEAd1wB7s8Ctyncn7XhbLvjWu8r7/view?usp=share_link)

**Type: Audio**

**What is the p-value in hypothesis testing?**

a) The probability of making a type I error

b) The probability of making a type II error

c) The probability of observing the sample data or more extreme if the null hypothesis is true

d) The probability of observing the sample data or more extreme if the null hypothesis is false

Correct Answer: Option (c)

Explanation: The p-value in hypothesis testing is the probability of observing the sample data or more extreme if the null hypothesis is true. It is the probability of obtaining a test statistic as extreme or more extreme than the one observed, assuming the null hypothesis is true. The p-value is not the probability that the alternative hypothesis is true, nor is it the probability that the null hypothesis is false. It is simply a measure of the strength of the evidence against the null hypothesis, based on the observed data.

Thus, the correct answer is option (c).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q180) What is the formula for the test statistic in hypothesis testing for a population mean?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: The test statistic in hypothesis testing for a population mean depends on whether the population standard deviation (σ) or the sample standard deviation (s) is known.

If the population standard deviation is known, the formula for the test statistic is:

Where is the sample mean, μ is the hypothesized population mean, is the population standard deviation, and is the sample size.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q181) Which of the following is a requirement for a t-test?**

a) The sample size must be larger than 30

b) The population variance must be known

c) The population distribution must be normal

d) The sample size must be lesser than 25.

Correct Answer: Option (c)

Explanation: A t-test is a statistical test used to compare the means of two groups, or to compare the mean of a single group to a known value. It is a parametric test, which means that it makes assumptions about the distribution of the data being analysed. The assumption of t-test is important because if the population distribution is not normal, the distribution of the sample means may not be normal, which can lead to incorrect inferences about the population means.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q182) What is inferential statistics?**

a) A method for collecting data

b) A method for analyzing data

c) A method for making predictions based on data

d) A method for drawing conclusions about a population based on a sample

Correct Answer: Option (d)

Explanation: Inferential statistics is a branch of statistics that deals with making inferences or drawing conclusions about a population based on a sample. The goal of inferential statistics is to use the information obtained from a sample to make predictions or draw conclusions about a larger population. It is used to test hypotheses, make predictions, and draw conclusions about populations, which can inform decision making and policy development.

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

.**Q183) What is the central limit theorem?**

a) A theorem that states that the mean of a sample is equal to the mean of the population

b) A theorem that states that the standard deviation of a sample is equal to the standard deviation of the population

c) A theorem that states that as the sample size increases, the distribution of the sample means approaches a normal distribution

d) A theorem that states that the distribution of the sample means is always a normal distribution

Correct Answer: Option (c)

Explanation: The central limit theorem (CLT) is a fundamental theorem in statistics that describes the behaviour of the mean of a large number of independent random variables, regardless of the distribution of the original random variables. Specifically, the CLT states that as the sample size increases, the distribution of the sample means approaches a normal distribution, regardless of the shape of the population distribution.

Thus, the correct answer is option (c).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q184) What is a confidence interval?**

a) A range of values that is likely to contain the true population parameter

b) A range of values that is likely to contain the sample mean

c) A range of values that is likely to contain the standard deviation of the population

d) A range of values that is likely to contain the difference between two sample means

Correct Answer: Option (a)

Explanation: A confidence interval (CI) is a statistical measure used to estimate the true value of a population parameter based on a sample of data. A CI is a range of values within which the true population parameter is likely to lie with a certain level of confidence. It is a useful tool for making statistical inferences and estimating population parameters based on sample data.

Thus, the correct answer is option (a).

Difficulty Level: Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q185) What is the level of significance?**

a) The probability of making a Type I error

b) The probability of making a Type II error

c) The probability of correctly rejecting the null hypothesis

d) The probability of correctly accepting the null hypothesis

Correct Answer: Option (a)

Explanation: The level of significance, also known as the alpha level (α), is a pre-determined threshold that is used to determine the probability of rejecting the null hypothesis when it is actually true. In other words, the level of significance represents the maximum probability of making a Type I error, which occurs when the null hypothesis is rejected even though it is true.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q186) What is a p-value?**

a) The probability of making a Type I error

b) The probability of making a Type II error

c) The probability of observing a test statistic as extreme as, or more extreme than, the one calculated from the sample data

d) The probability of correctly rejecting the null hypothesis

Correct Answer: Option (c)

Explanation: A p-value is a statistical measure that helps determine the significance of the results in a hypothesis test. It is the probability of observing a test statistic as extreme as, or more extreme than, the one calculated from the sample data, assuming that the null hypothesis is true It is a critical component of hypothesis testing and helps to determine the significance of the results.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q187) What is the difference between descriptive and inferential statistics?**

a) Descriptive statistics summarize data, while inferential statistics make predictions based on data.

b) Descriptive statistics use probability distributions, while inferential statistics do not.

c) Descriptive statistics are used to test hypotheses, while inferential statistics are used to describe data.

d) Descriptive statistics describe data, while inferential statistics use sample data to make generalizations about a population.

Correct Answer: Option (d)

Explanation: Descriptive statistics and inferential statistics are two main branches of statistics. Descriptive statistics involves the collection, organization, analysis, and interpretation of data to summarize and describe its main features. Inferential statistics involves using sample data to make generalizations about a larger population. It uses statistical techniques to draw conclusions and make predictions about a population based on a sample of data.

Thus, the correct answer is option (d).

Difficulty Level- Hard

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q188) Which of the following is the null hypothesis in a hypothesis test?**

a) The hypothesis that is accepted

b) The hypothesis that is rejected

c) The hypothesis that is based on prior knowledge

d) The hypothesis that there is no significant difference between two groups or variables

Correct Answer: Option (d)

Explanation: In hypothesis testing, the null hypothesis is a statement or assumption that there is no significant difference between two groups or variables. It is usually denoted by H0 and is the hypothesis that researchers try to reject.The null hypothesis is often the default assumption or a statement of no effect, and it is used as a basis for statistical inference.

Thus, the correct answer is option (d).

Difficulty Level- Hard

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q189) Answer the following question with reference to the audi0**

[**https://drive.google.com/file/d/1hmNS2lQ1SXRnpDPO73R5Ci9H8miU\_0kU/view?usp=share\_link**](https://drive.google.com/file/d/1hmNS2lQ1SXRnpDPO73R5Ci9H8miU_0kU/view?usp=share_link)

**Type: Audio**

**Which of the following is a characteristic of a Type I error in hypothesis testing?**

a) Rejecting the null hypothesis when it is true

b) Accepting the null hypothesis when it is false

c) Failing to reject the null hypothesis when it is true

d) Failing to reject the null hypothesis when it is false

Correct Answer: Option (a)

Explanation: A Type I error is a false positive in hypothesis testing. It occurs when the null hypothesis is rejected, even though it is actually true. The test concludes that there is a significant effect or difference, when in fact there is none.

For example, in a medical trial, a Type I error would occur if the experimental treatment is deemed effective (null hypothesis is rejected) when it actually has no effect on the patients. This can lead to potentially harmful and unnecessary treatments being administered.

Thus, the correct answer is option (a).

Difficulty Level- Hard

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q190) What is the level of significance in a hypothesis test?**

a) The probability of making a Type I error

b) The probability of making a Type II error

c) The probability of rejecting the null hypothesis

d) The probability of accepting the null hypothesis

Correct Answer: Option (a)

Explanation: The level of significance in a hypothesis test is the probability of making a Type I error, which is the rejection of a true null hypothesis. It is typically denoted by the Greek letter alpha (α) and is chosen by the researcher before conducting the test. The most commonly used levels of significance are and , which correspond to a and chance of making a Type I error, respectively.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q191) Which of the following is the formula for calculating the t-statistic in a t-test?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: The t-statistic is a measure of how much the sample mean deviates from the population mean in standard error units.

The formula for calculating the t-statistic in a t-test is:

where is the sample mean, is the population mean, is the sample standard deviation, and n is the sample size.

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Apply

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q192) What is the purpose of a confidence interval?**

a) To make a prediction based on data

b) To describe the data

c) To estimate a population parameter with a certain level of confidence

d) To test a hypothesis

Correct Answer: Option (c)

Explanation: Confidence intervals help to quantify this uncertainty by providing a range of values within which the true population parameter is likely to lie, with a specified level of confidence. The purpose of a confidence interval is to provide a range of values within which the true population parameter is likely to lie, with a specified level of confidence. Confidence intervals are useful in making inferences about population parameters based on sample data, and they help to quantify the uncertainty associated with these estimates

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q193) Which of the following is NOT a step in the hypothesis testing process**

a) Formulating a research question

b) Collecting data

c) Calculating the sample mean

d) Interpreting the results

Correct Answer: Option (c)

Explanation: Calculating the sample mean is not a step in the hypothesis testing process. The steps include formulating a research question, setting up hypotheses, selecting a significance level, collecting data, performing statistical tests, and interpreting the results.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q194) Which method used to examine inflation rate anticipation, unemployment rate, and capacity utilisation to produce products?**

a) Data exporting technique

b) Data importing technique

c) Forecasting technique

d) Data supplying technique

Correct Answer: Option (c)

Explanation: Forecasting is a statistical technique used to predict or estimate future values of variables based on historical data. In the context of examining inflation rate anticipation, unemployment rate, and capacity utilization to produce products, forecasting techniques would be used to analyse and project these variables for planning and decision-making purposes.

Thus, the correct answer is option (c).

Difficulty Level- Hard

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q195) What is the scale applied in statistics, which imparts a difference of magnitude and proportions, considered as?**

a) Nominal scale

b) Ordinal scale

c) Interval scale

d) Ratio scale

Correct Answer: Option (d)

Explanation: Ratio scale is a scale of measurement in statistics that imparts a difference of magnitude and proportions. It is the highest level of measurement scale that exhibits all the properties of other lower-level scales, such as nominal, ordinal, and interval scales, along with an absolute zero point.

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q196)  In a normal distribution, what percentage of the data falls within one standard deviation of the mean?**

a) 68%

b) 95%

c) 99.7%

d) 50%

Correct Answer: Option (a)

Explanation: In a normal distribution, approximately 68% of the data falls within one standard deviation of the mean. This is known as the empirical rule, or the 68-95-99.7 rule, which states that about 68% of the data falls within one standard deviation of the mean, about 95% falls within two standard deviations, and about 99.7% falls within three standard deviations.

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q197) Which of the following is an assumption of the t-test?**

a) The data are normally distributed.

b) The variances of the two populations are equal.

c) The sample size is large.

d) The population means are known.

Correct Answer: Option (a)

Explanation: The t-test assumes that the data are normally distributed. Other assumptions of the t-test include independent random samples, equal variances (for a two-sample t-test), and a sufficiently large sample size. The population means are not known and are estimated from the sample.

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy – Understand

**Q198) In inferential statistics, what is a sample?**

a) A subset of a population

b) The entire population

c) The mean of a population

d) The standard deviation of a population

Correct Answer: Option (a)

Explanation: A sample is a subset of a population that is used to infer information about the entire population. Samples are typically used when it is not feasible to collect data from the entire population. By analyzing a representative sample, statisticians can draw conclusions about the characteristics of the entire population.

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q199) Which of the following values is used as a summary measure for a sample, such as a sample mean?**

(A) Population parameter

(B) Sample parameter

(C) Sample statistic

(D) Population mean

Correct Answer: Option (c)

Explanation: A sample statistic is a value calculated from a sample, which is a subset of a larger population, and is used as a summary measure to describe the characteristics of that sample. For example, the sample mean is a common sample statistic used to estimate the population mean. A sample statistic is a numerical value that is calculated from the data collected in the sample, and it provides information about the characteristics or properties of that sample

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q200) The control charts and procedures of descriptive statistics which are used to enhance a procedure can be classified into:**

a) Statistical process control (SPC) charts

b) Exploratory data analysis (EDA) techniques

c) Inferential statistical techniques

d) Data visualization techniques

Correct Answer: Option (a)

Explanation: Statistical process control (SPC) charts are used to monitor and control a process over time by using descriptive statistics. They are a type of control chart that displays the process data over time, allowing for the detection of patterns or trends that may indicate process instability or variability.

Thus, the correct answer is option (a).

Difficulty Level- Hard

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q201) Answer the following question with reference to the audio**

**What is an index number?**

a) A statistical measure of the average of a group of numbers

b) A measure of the variability of a set of data

c) A ratio of two quantities expressed as a percentage

d) A measure of the change in a variable over time

Correct Answer: Option (d)

Explanation: An index number is a statistical measure used to track changes over time or compare data from different sources. It is used to show how the value of a particular variable changes over time, relative to a base year or a given benchmark. An index number is usually expressed as a percentage, with the base year or benchmark set to

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q202) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1BqNDMSSecVRu-IweKWhXzTh467XWdspD/view?usp=share\_link**](https://drive.google.com/file/d/1BqNDMSSecVRu-IweKWhXzTh467XWdspD/view?usp=share_link)

**Type: Audio**

**Which of the following is a base period in index numbers?**

a) The period for which the index number is calculated

b) The period that serves as a reference point for the index number

c) The period with the highest value in the index number

d) The period with the lowest value in the index number

Correct Answer: Option (b)

Explanation: A base period is the period of time that serves as a reference point for an index number. The base period is usually assigned a value of 100, and all other periods are compared to this base period. This comparison allows analysts to track changes in the value of a particular variable over time All other periods are then compared to this base period, and changes in the value of the variable over time are tracked..

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q203) Answer the following question with the reference to the audio**

[**https://drive.google.com/file/d/1SF3mxub\_4kb9H644oEmX3WFG5USNN-kp/view?usp=share\_link**](https://drive.google.com/file/d/1SF3mxub_4kb9H644oEmX3WFG5USNN-kp/view?usp=share_link)

**Type: Audio**

**What is the Laspeyres index?**

a) An index number that uses current period quantities and base period prices

b) An index number that uses base period quantities and current period prices

c) An index number that uses current period quantities and current period prices

d) An index number that uses base period quantities and base period prices

Correct Answer: Option (b)

Explanation: The Laspeyres index is a type of price index commonly used in economics to measure the change in the price of a fixed basket of goods and services. The Laspeyres index is calculated by taking the ratio of the cost of the basket in the current period to the cost of the basket in the base period, using fixed quantities of goods and services.

Thus, the correct answer is option (b).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q204) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/14MctdjbZosKHYL6KYRoOnUGxZxMGVe\_J/view?usp=share\_link**](https://drive.google.com/file/d/14MctdjbZosKHYL6KYRoOnUGxZxMGVe_J/view?usp=share_link)

**Type: Audio**

**Which of the following is a disadvantage of the Laspeyres index?**

a) It overstates the increase in prices over time

b) It understates the increase in prices over time

c) It cannot be used to compare prices across different regions

d) It cannot be used to compare prices across different time periods

Correct Answer: Option (b)

Explanation: One of the main disadvantages of the Laspeyres index is that it tends to underestimate the increase in prices over time. This is because the Laspeyres index uses fixed quantities of goods and services from the base period, which may not accurately reflect changes in consumption patterns over time.

Thus, the correct answer is option (b).

Difficulty Level\_ Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q205) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1j7-bzM1MCVr9n0\_fp805cJM85DHepbQX/view?usp=share\_link**](https://drive.google.com/file/d/1j7-bzM1MCVr9n0_fp805cJM85DHepbQX/view?usp=share_link)

**Type: Audio**

**What is the Paasche index?**

a) An index number that uses current period quantities and base period prices

b) An index number that uses base period quantities and current period prices

c) An index number that uses current period quantities and current period prices

d) An index number that uses base period quantities and base period prices

Correct Answer: Option (c)

Explanation: The Paasche index is a type of price index used in economics to measure the change in the price of a basket of goods and services over time. The Paasche index is calculated by taking the ratio of the cost of the basket in the current period to the cost of the basket in the base period, using current quantities of goods and services

Thus, the correct answer is option (c).

Difficulty Level- Very Hard

Bloom’s Taxonomy – Remember

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q206) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/14IwuAAGoMORpRLlil9n7\_2xKlxywxP1x/view?usp=share\_link**](https://drive.google.com/file/d/14IwuAAGoMORpRLlil9n7_2xKlxywxP1x/view?usp=share_link)

**Type: Audio**

**Which of the following is a disadvantage of the Paasche index?**

a) It overstates the increase in prices over time

b) It understates the increase in prices over time

c) It cannot be used to compare prices across different regions

d) It cannot be used to compare prices across different time periods

Correct Answer: Option (a)

Explanation: One of the main disadvantages of the Paasche index is that it tends to overstate the increase in prices over time. This is because the Paasche index uses current quantities of goods and services, which may not accurately reflect changes in consumption patterns over time. As a result, the Paasche index can overstate the increase in prices if consumers shift their consumption towards more expensive goods and services over time.

Thus, the correct answer is option (a).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q207) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1MHG3EIb8WBtHjBWMl8\_p1kekZq\_gavNh/view?usp=share\_link**](https://drive.google.com/file/d/1MHG3EIb8WBtHjBWMl8_p1kekZq_gavNh/view?usp=share_link)

**Type: Audio**

**Which of the following is the Fisher index?**

a) An index number that uses the arithmetic mean of the Laspeyres and Paasche indices

b) An index number that uses current period quantities and base period prices

c) An index number that uses base period quantities and current period prices

d) An index number that uses current period quantities and current period prices

Correct Answer: Option (a)

Explanation: The Fisher index, also known as the ideal index, is a weighted geometric average of the Laspeyres and Paasche indices. It was developed by economist Irving Fisher as a way to overcome the disadvantages of both the Laspeyres and Paasche indices.

The formula for the Fisher index is:

Thus, the correct answer is option (a).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q208) What is an major use of an index number?**

a) A measure of the average value of a set of data

b) A measure of the change in the value of a variable over time

c) A measure of the difference between two sets of data

d) A measure of the variability of a set of data

Correct Answer: Option (b)

Explanation: An index number is a statistical measure that represents the relative change in a variable over time or across different regions. It is used to compare the value of a variable at one point in time or location to its value at another point in time or location. An index number is typically expressed as a percentage or a ratio, with a base period or base value set as the reference point for comparison.

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q209) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/13i\_nstbL\_\_20u6iu1hKUm-vBbqYaa9Pw/view?usp=share\_link**](https://drive.google.com/file/d/13i_nstbL__20u6iu1hKUm-vBbqYaa9Pw/view?usp=share_link)

**Type: Audio**

**Which of the following is an example of a price index?**

a) Consumer Price Index (CPI)

b) Gross Domestic Product (GDP)

c) Unemployment Rate

d) Interest Rate

Correct Answer: Option (a)

Explanation: A price index is a type of index number that measures the change in the prices of a basket of goods and services over time. It is used to track inflation or deflation, which is the increase or decrease in the general level of prices in an economy. The Consumer Price Index (CPI) is an example of a price index. It measures the average change over time in the prices paid by urban consumers for a basket of goods and services, such as food, housing, clothing, transportation, and medical care.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q210) Explain the role of base period in an index number?**

a) The time period for which the index number is calculated

b) The period of time used as a reference for comparison

c) The period of time with the highest index value

d) The period of time with the lowest index value

Correct Answer: Option (b)

Explanation: In index numbers, the base period is a fixed period of time used as a reference point for comparison with other periods. It is typically given a value of 100, and all subsequent values are calculated relative to this base period. The base period is chosen based on several factors, including availability of data, stability of prices, and relevance to the analysis being conducted.

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q211) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1mj7M1MvHCmZ2Gv\_bTTPZVVNNznvzFyP3/view?usp=share\_link**](https://drive.google.com/file/d/1mj7M1MvHCmZ2Gv_bTTPZVVNNznvzFyP3/view?usp=share_link)

**Type: Audio**

**Which of the following is a characteristic of a Laspeyres price index?**

a) It uses current-period quantities as weights

b) It uses base-period quantities as weights

c) It uses current-period prices as weights

d) It uses base-period prices as weights

Correct Answer: Option (b)

Explanation: A Laspeyres price index is a type of price index commonly used in economics to measure the change in the price level of a basket of goods and services over time. Laspeyres price index uses a fixed set of base-period quantities as weights to calculate the average price change over time. It has the characteristic of overestimating price increases over time and may not reflect changes in consumption patterns or the availability of substitutes.

Thus, the correct answer is option (b).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q212) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1bPXggrlA8Dnvu6TUymT1yJoFV3wugap-/view?usp=share\_link**](https://drive.google.com/file/d/1bPXggrlA8Dnvu6TUymT1yJoFV3wugap-/view?usp=share_link)

**Type: Audio**

**Which of the following is a characteristic of a Paasche price index?**

a) It uses current-period quantities as weights

b) It uses base-period quantities as weights

c) It uses current-period prices as weights

d) It uses base-period prices as weights

Correct Answer: Option (a)

Explanation: A Paasche price index is an index that uses current-period quantities as weights. The Paasche index is calculated by taking the ratio of the total cost of a basket of goods and services in the current period to the cost of the same basket in the base period. It is useful for calculating the cost of living for consumers or for measuring the current value of a stock market portfolio.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q213) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1\_YW6GN0LVEZiX\_NOagvHFFbebZgIoSjg/view?usp=share\_link**](https://drive.google.com/file/d/1_YW6GN0LVEZiX_NOagvHFFbebZgIoSjg/view?usp=share_link)

**Type: Audio**

**Which of the following is an example of a quantity index?**

a) Producer Price Index (PPI)

b) Retail Price Index (RPI)

c) Industrial Production Index (IPI)

d) Purchasing Managers Index (PMI)

Correct Answer: Option (c)

Explanation: An example of a quantity index is the Industrial Production Index (IPI). Quantity indices measure changes in the quantity of goods produced or the amount of services provided over time, rather than changes in prices. The IPI specifically measures changes in the production of industrial goods over time, providing a measure of the growth or decline of industrial output.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q214) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/11JTkmwvmXSxT4kduA8QGMNlV2MUr836Y/view?usp=share\_link**](https://drive.google.com/file/d/11JTkmwvmXSxT4kduA8QGMNlV2MUr836Y/view?usp=share_link)

**Type: Audio**

**What is the difference between a fixed-base index and a chain index?**

a) A fixed-base index uses a base period that remains constant over time, while a chain index uses a base period that changes over time.

b) A fixed-base index uses current-period prices and quantities, while a chain index uses base-period prices and quantities.

c) A fixed-base index uses current-period prices and base-period quantities, while a chain index uses current-period quantities and base-period prices.

d) A fixed-base index uses base-period quantities and prices, while a chain index uses current-period quantities and prices.

Correct Answer: Option (a)

Explanation: Fixed-base index and chain index are both methods of calculating index numbers, but they differ in how they handle changes over time. A fixed-base index uses a base period that remains constant over time, while a chain index uses a base period that changes over time. In a fixed-base index, the base period serves as a reference point for all subsequent periods, and the index number measures the change in prices or quantities relative to the base period. In contrast, a chain index updates the base period each period, which means that the index number measures the change in prices or quantities relative to the previous period rather than a fixed base period.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q215) Which of the following is the formula for calculating the price relative for a commodity?**

a)

b)

c)

d)

Correct Answer: Option (c)

Explanation: The price relative measures the ratio of the current price of a commodity to the price of that commodity in the base period. It is used to calculate price indices like the Laspeyres and Paasche indices.

The correct formula for calculating the price relative for a commodity is:

This gives a ratio that represents the change in the price of the commodity from the base period to the current period.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy –Remember

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q216) Which of the following is the formula for calculating the unweighted aggregate index?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: The unweighted aggregate index is a simple type of index that does not assign weights to the various components of the index. This means that each component of the index is given equal importance. The formula for calculating the unweighted aggregate index is based on the sum of the current values of the components of the index and the sum of their corresponding base period values.

The formula is

Thus, the correct answer is option (a).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q217) Which of the following is the formula for calculating the weighted aggregate index?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: The formula for calculating the weighted aggregate index is:

This formula is used when calculating price or quantity indices that are based on a weighted average of individual commodities or items. The weights are typically based on the relative importance of each commodity or item in the overall index. By using weights, the index can better reflect the importance of different items or commodities in the overall measure.

Thus, the correct answer is option (a).

Difficulty Level- Hard

Bloom’s Taxonomy – Remember

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q218) Which of the following is the most appropriate type of index number to use when the base period values are not known or are not representative?**

a) Fixed-base index

b) Chain-base index

c) Simple aggregate index

d) Weighted aggregate index

Correct Answer: Option (b)

Explanation: When the base period values are not known or are not representative, the most appropriate type of index number to use is a chain-base index. A chain-base index uses the previous period's values as the new base period, allowing for a more accurate comparison of current values to the previous period. This is because it accounts for changes in the composition of the items being measured over time.

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q219) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/15HSWGWl2jiJoDs6IGoaiQySMG86mzTEk/view?usp=share\_link**](https://drive.google.com/file/d/15HSWGWl2jiJoDs6IGoaiQySMG86mzTEk/view?usp=share_link)

**Type: Audio**

**Which of the following is a disadvantage of using the simple aggregate index?**

a) It is difficult to calculate.

b) It does not take into account the different weights of the items.

c) It assumes that all items are equally important.

d) It is affected by the variability of individual items.

Correct Answer: Option (c)

Explanation: The simple aggregate index is a type of index number that does not take into account the different weights or importance of individual items. It calculates the index number by summing up the current values of all the items in the basket and dividing it by the sum of the base period values of the same items. This assumption can lead to a major disadvantage of using the simple aggregate index, which is that it does not accurately reflect changes in the relative importance of different items over time

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q220)Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1ikgjyScA\_VGRlkXycAwcs2-Cz2skybBG/view?usp=share\_link**](https://drive.google.com/file/d/1ikgjyScA_VGRlkXycAwcs2-Cz2skybBG/view?usp=share_link)

**Type: Audio**

**In a consumer price index (CPI), which of the following is NOT included in the basket of goods and services?**

a) Rent

b) Food

c) Clothing

d) Stocks

Correct Answer: Option (d)

Explanation: The consumer price index (CPI) is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services. The basket of goods and services typically includes items such as food, housing, clothing, transportation, medical care, and recreation. Stocks are not included in the basket of goods and services used to calculate CPI.

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q221) In which type of index number, the weights are based on the value of production?**

a) Quantity index number

b) Price index number

c) Value index number

d) Composite index number

Correct Answer: Option (c)

Explanation: In value index number, the weights are based on the value of production. This type of index number is used to measure changes in the value of production or income over time. The value index number is obtained by multiplying the quantities produced in each period by their respective prices and then taking the ratio of the total value of production in the current period to that in the base period.

Thus, the correct answer is option (c).

Difficulty Level- Easy

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q222) What is the formula for calculating simple index number?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: A simple index number is a measure that expresses the relative change in the price or quantity of a specific item or group of items over time, with respect to a base period.

The formula for calculating simple index number is

where is the current period price and is the base period price. This formula helps in measuring the percentage change in prices of a particular commodity or group of commodities between two periods.

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q223) Which method is used for measuring the average of relatives in index number?**

a) Aggregate method

b) Simple aggregative method

c) Weighted aggregative method

d) Marshall-Edgeworth method

Correct Answer: Option (c)

Explanation: The weighted aggregative method is a variation of the average of relatives method that takes into account the relative importance of each item in the group. It involves assigning weights to each item based on its relative importance (e.g., sales volume, market share, or expenditure), and then calculating a weighted average of the relatives.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Remember

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q224) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1Nyu4wggaCrBgatAICwrHX8fCJPXoU7QR/view?usp=share\_link**](https://drive.google.com/file/d/1Nyu4wggaCrBgatAICwrHX8fCJPXoU7QR/view?usp=share_link)

**Type: Audio**

**What is the purpose of constructing index numbers?**

a) To measure the rate of inflation

b) To compare the prices of different commodities

c) To measure the changes in the value of production or income over time

d) All of the above

Correct Answer: Option (d)

Explanation: Index numbers are used to measure the relative changes in the value of a variable or group of variables over time, with respect to a fixed reference period. The purpose of constructing index numbers is to provide a useful tool for measuring economic phenomena, such as inflation, price changes, and changes in the value of production or income, among others

Thus, the correct answer is option (d).

Difficulty Level- Easy

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q225) Which of the following is NOT a limitation of index numbers?**

a) Difficulty in selecting appropriate weights

b) Changes in quality of goods over time

c) Changes in the composition of the basket of goods over time

d) Can only be used for measuring changes in prices

Correct Answer: Option (d)

Explanation: Index numbers are a widely used tool in economics for measuring and analyzing changes in various economic phenomena, such as prices, production, and income. Can only be used for measuring changes in prices is not a limitation of index numbers, but rather a misconception. While index numbers are commonly used for measuring changes in prices, they can also be used for measuring changes in other economic variables, such as production and income.

Thus, the correct answer is option (d).

Difficulty Level- Easy

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q226) Which of the following measures of central tendency is affected by extreme values?**

a) Mode

b) Median

c) Mean

d) Range

Correct Answer: Option (c)

Explanation: The mean is a measure of central tendency that is calculated by summing up all the values in a dataset and dividing by the total number of values. It is commonly used to describe the average value of a variable in a dataset. However, the mean can be heavily influenced by extreme values, also known as outliers. The mode and median are less affected by extreme values and may be more appropriate measures of central tendency in certain situations.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q227) In a time series, which of the following is a measure of the overall change in the series over time?**

a) Trend

b) Seasonality

c) Cyclical variation

d) Irregular variation

Correct Answer: Option (a)

Explanation: In time series analysis, a time series is a set of observations of a variable over time. Trend refers to the long-term movement or direction of a time series over time. It represents the overall change in the series over time and can be either upward, downward, or flat. Trend can be caused by a variety of factors such as changes in technology, demographic shifts, economic growth, or natural disasters.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q228) Which of the following measures of dispersion is the most sensitive to extreme values?**

a) Range

b) Variance

c) Standard deviation

d) Mean absolute deviation

Correct Answer: Option (c)

Explanation: The standard deviation is the most commonly used measure of dispersion, as it is more interpretable than the variance, and it is sensitive to both the spread and the shape of the distribution. It is also more sensitive to extreme values than the mean absolute deviation, which calculates the average absolute difference between each data point and the mean, without squaring the differences.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q229) Which of the following is a method of calculating index numbers?**

a) Weighted average method

b) Moving average method

c) Geometric mean method

d) All of the above

Correct Answer: Option (d)

Explanation: Index numbers are used to measure the relative changes in a group of related variables over time, such as prices, quantities, or economic indicators. There are several methods for calculating index numbers, including the weighted average method, moving average method, and geometric mean method. The choice of method depends on the type of data and the purpose of the index.

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q230) Which of the following is NOT a measure of dispersion?**

a) Range

b) Standard Deviation

c) Mean

d) Quartile Deviation

Correct Answer: Option (c)

Explanation: Measures of dispersion are used to describe the spread or variability of a set of data. They give information about how much the individual data points deviate from the center of the data set. The most common measures of dispersion are the range, standard deviation, and quartile deviation. The mean is a measure of central tendency that gives information about the typical or average value in a data set. It is not a measure of dispersion, as it does not provide information about how much the individual data points deviate from the center.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Remember

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q231) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1t1LCHGAhue9WOcBmZ\_wCMGYDCuO84e79/view?usp=share\_link**](https://drive.google.com/file/d/1t1LCHGAhue9WOcBmZ_wCMGYDCuO84e79/view?usp=share_link)

**Type: Audio**

**In a time series, the difference between the actual value and the trend value is called:**

a) Seasonal variation

b) Cyclical variation

c) Irregular variation

d) None of the above

Correct Answer: Option (d)

Explanation: In a time series, the difference between the actual value and the trend value is called the "residual" or "error." The residual is the amount by which the actual value deviates from the trend value at a given point in time. It represents the variation in the time series that is not explained by the trend. Seasonal variation, Cyclical variation and Irregular variation are different types of variation in time series.

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q232) Answer the following question with reference to the ausio**

[**https://drive.google.com/file/d/1cMVu67nfPNo9Bt5FgJJ7I4NV7AkwefZV/view?usp=share\_link**](https://drive.google.com/file/d/1cMVu67nfPNo9Bt5FgJJ7I4NV7AkwefZV/view?usp=share_link)

**Type: Audio**

**What is a time series?**

a) A sequence of data points collected at regular intervals over time.

b) A statistical measure used to compare the changes in the value of a variable over time.

c) A numerical value used to represent a quantity.

d) A measure of the central tendency of a data set.

Correct Answer: Option (a)

Explanation: A time series is a type of data that consists of a sequence of observations or measurements that are collected at regular intervals over time. Examples of time series data include daily stock prices, monthly sales figures, and annual GDP growth rates. The main characteristic of time series data is that the observations are ordered chronologically and are usually spaced at regular time intervals, such as minutes, hours, days, months, or years.

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy – Remember

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q233) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1RBI-AkTuqte7RPsFIzZ75CSG71-xqay5/view?usp=share\_link**](https://drive.google.com/file/d/1RBI-AkTuqte7RPsFIzZ75CSG71-xqay5/view?usp=share_link)

**Type: Audio**

**What is a trend in time series analysis?**

a) A pattern that repeats over a fixed interval.

b) The overall direction of a time series over time.

c) The seasonal variation in a time series.

d) The irregular fluctuations in a time series.

Correct Answer: Option (b)

Explanation: In time series analysis, a trend refers to the general direction or tendency of the data over time. It reflects the long-term changes or movements in the data and can provide valuable information about the underlying behavior or pattern of the time series.

Trends can be classified as upward, downward, or horizontal. Trends can be analyzed and modeled using a variety of techniques, including regression analysis, moving averages, and exponential smoothing.

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q234) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1AJSTRwGRQT8LNBlaAK9Zaad7jGBigtI7/view?usp=share\_link**](https://drive.google.com/file/d/1AJSTRwGRQT8LNBlaAK9Zaad7jGBigtI7/view?usp=share_link)

**Type: Audio**

**What is seasonal variation in time series analysis?**

a) A pattern that repeats over a fixed interval.

b) The overall direction of a time series over time.

c) The irregular fluctuations in a time series.

d) The long-term movement of a variable being analyzed.

Correct Answer: Option (a)

Explanation: Seasonal variation in time series analysis refers to the pattern that repeats itself over a fixed interval, such as a week, month, or quarter. It represents the regular fluctuations in a time series that are due to seasonal factors like weather, holidays, and other recurring events. Seasonal variation can be measured and analyzed using statistical techniques, such as seasonal indices or seasonal adjustment

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q235) Answer the following with reference to the audio**

[**https://drive.google.com/file/d/1FSjh4C6tofHLy-2MQx5EigPxJ1RYKWuB/view?usp=share\_link**](https://drive.google.com/file/d/1FSjh4C6tofHLy-2MQx5EigPxJ1RYKWuB/view?usp=share_link)

**Type: Audio**

**What is a Hodrick-Prescott filter?**

a) A statistical technique used to separate a time series into its trend and cyclical components.

b) A technique used to estimate the volatility of a financial instrument.

c) A method used to calculate the optimal sample size for a statistical study.

d) A statistical test used to determine the significance of a regression coefficient.

Correct Answer: Option (a)

Explanation: The Hodrick-Prescott filter is a statistical technique used to separate a time series into its trend and cyclical components.The Hodrick-Prescott filter works by decomposing a time series into two components: a trend component and a cyclical component. The Hodrick-Prescott filter uses a mathematical formula to estimate the trend component of the time series

Thus, the correct answer is option (a).

Difficulty Level- Very Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q236) What is a seasonal adjustment in time series analysis?**

a) A statistical technique used to remove the seasonal component of a time series.

b) A method used to estimate the trend component of a time series.

c) A technique used to forecast the future values of a time series.

d) A statistical test used to determine the correlation between two time series.

Correct Answer: Option (a)

Explanation: Seasonal adjustment is a statistical technique used to remove the seasonal component from a time series, revealing underlying trends and irregular components. Seasonal variation refers to the predictable changes in a time series that occur over a fixed interval of time, such as a year, a month, or a quarter. These changes can be caused by factors such as weather, holidays, or the timing of production cycles.

Thus, the correct answer is option (a).

Difficulty Level- Very Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q237) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/18JRzsemyWc5zNmpmZUMFZtc8DUPq8bzE/view?usp=share\_link**](https://drive.google.com/file/d/18JRzsemyWc5zNmpmZUMFZtc8DUPq8bzE/view?usp=share_link)

**Type: Audio**

**What is a Superlative index?**

a) An index number calculated using the current period's quantities and prices.

b) An index number calculated using the base period's quantities and prices.

c) An index number calculated using a geometric mean of quantities and prices.

d) An index number calculated using a harmonic mean of quantities and prices.

Correct Answer: Option (a)

Explanation: A Superlative index is a type of index number that is calculated using the quantities and prices of both the base period and the current period. This method is considered to be more accurate than other methods of calculating index numbers because it takes into account changes in the composition of the basket of goods and services over time. The formula for calculating a superlative index involves taking the geometric mean of two Laspeyres or Paasche indexes

Thus, the correct answer is option (a).

Difficulty level- Very Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q238) The value of the Price Index for a particular year is . If the base year is and the base** **value is 100, what does the price index of indicate?**

a) Inflation has increased by since

b) Inflation has decreased by since

c) Prices have increased by since

d) Prices have decreased by since

Correct Answer: Option (c)

Explanation: The price index compares the price of a basket of goods and services in a particular year to the price of the same basket in a base year. In this case, the base year is 2005, and the base value is 100. The price index for the particular year is .

To interpret this index number, we can say that the overall price level in the particular year is of the price level in the base year. In other words, prices have increased by 20% since

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q239) Which of the following is NOT a time series analysis technique?**

a) Moving averages

b) Exponential smoothing

c) Regression analysis

d) Seasonal variation

Correct Answer: Option (d)

Explanation: Seasonal variation is not a time series analysis technique, but rather a component of time series analysis. It refers to the pattern that repeats over a fixed interval in a time series. Seasonal variation can have a significant impact on the behavior of a time series, and it is important to identify and account for it in order to accurately interpret the data. Moving averages, exponential smoothing, and regression analysis are all time series analysis techniques:

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q240) What is the difference between a parameter and a statistic?**

a) A parameter is a numerical characteristic of a sample, while a statistic is a numerical characteristic of a population.

b) A parameter is a numerical characteristic of a population, while a statistic is a numerical characteristic of a sample.

c) A parameter is a measure of central tendency, while a statistic is a measure of variability.

d) A parameter and a statistic are the same thing.

Correct Answer: Option (b).

Explanation: A parameter is a numerical characteristic of a population, such as the population mean or standard deviation. A statistic, on the other hand, is a numerical characteristic of a sample, such as the sample mean or standard deviation. The main difference between the two is that parameters describe the entire population, while statistics describe a subset of the population (the sample).

Thus, the correct answer is option (b).

Difficulty Level- Easy

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q241 What is the formula to calculate the future value of a present amount using simple interest?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: The formula to calculate the future value (FV) of a present amount (PV) using simple interest is:

where is the interest rate and t is the time period.

The formula works by taking the initial amount (PV) and multiplying it by 1 plus the interest rate (r) times the number of time periods (t). This gives you the total amount that the initial amount will grow to over the given time period.

Thus, the correct answer is (a)

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q242) What is the present value of a $10,000 investment with an annual interest rate of 5% compounded quarterly after two years?**

a) $10,025.13

b) $9,532.60

c) $10,401.00

d) $9,874.15

Correct Answer: Option (b)

Explanation: The formula for calcultating the present value is

where:

r = Annual Interest

n = Number of compounding periods per year i.e Quarterly

t ( Number of years

Sub the values and solving for PV:

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q243) Which of the following represents the future value of an investment with a present value of an annual interest rate of and a term of years?**

a)

b) $

c)

d)

Correct Answer: Option (b)

Explanation: The formula for future value is

Where

r

t

Sub the values and solving for FV:

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q244) (NAR) of compounded quarterly?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: To calculate the NAR, we can use the following formula:

R=10%

N=4

Sub the values into the formula, we get:

Converting the result back to a percentage, we get:

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy –Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q245) What is the present value of due in years, given a discount rate of**

a)

b)

c)

d)

Correct answer: Option (a)

Explanation: The present value of a future cash flow is the current value of that cash flow, discounted at a specific rate of return or discount rate.

To calculate the present value of the future cash flow, we can use the following formula:

FV = $1,000

r = 8% or 0.08 as a decimal,

n = 5

Sub these values into the formula, we get:

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy –Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q246) What is the future value of invested for years at an interest rate of compounded annually?**

a)

b)

c) $932.28

d) $932.85

Correct answer: Option (b)

Explanation: To calculate the future value of the investment, we can use the following formula:

Where: FV = $500

r = 6% or 0.06

n = 10

Sub these values into the formula, we get:

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q247) What is the effective annual rate (EAR) for a nominal annual rate of compounded monthly?**

a)

b)

c)

d)

Correct answer: Option (d)

Explanation: The formula for calculating EAR is

r = 10% or 0.10

n = 12

Sub these values into the formula, we get:

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q248) What is the difference between simple and compound interest?**

a) Simple interest is interest calculated only on the principal amount, while compound interest is interest calculated on both the principal and accumulated interest.

b) Simple interest is interest calculated on both the principal and accumulated interest, while compound interest is interest calculated only on the principal amount.

c) Simple interest is interest calculated using a fixed percentage rate, while compound interest has a variable percentage rate.

d) Simple interest is used for short-term loans, while compound interest is used for long-term investments.

Correct Answer: Option (a)

Explanation: Simple interest is calculated only on the initial principal amount. The formula for calculating simple interest is:

Where: P = Principal amount, R = Rate of interest ,T = Time period (in years) .

Compound interest can be compounded annually, semi-annually, quarterly, monthly, or even daily, depending on the compounding frequency. The formula for calculating compound interest is:

Thus, the correct answer is option (a).

Difficulty Level- Hard

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q249) What is the present value of a future payment?**

a) The amount of money that will be paid in the future.

b) The amount of money that must be paid today to receive a future payment.

c) The amount of money that was paid in the past for a future payment.

d) The amount of money that will be paid in the future plus any interest earned.

Correct Answer: Option (b)

Explanation: Present value is a financial concept used to determine the value of a future payment or cash flow in today's dollars. It takes into account the time value of money, which is the idea that a dollar today is worth more than a dollar in the future due to the potential to earn interest or investment returns.

The present value represents the current worth of a future payment, discounted to reflect the time value of money. The formula for calculating the present value is:

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q250) What is the future value of a present investment?**

a) The amount of money invested today.

b) The amount of money that must be invested today to receive a future payment.

c) The amount of money that will be earned on an investment in the future.

d) The amount of money that will be earned on an investment in the future plus the original investment.

Correct Answer: Option (d)

Explanation: The future value is a financial concept that represents the total value of an investment, including the original investment amount and any interest or investment returns earned over time. It is calculated based on the assumption that the investment grows at a certain rate of return. The formula for calculating the future value of an investment is:

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q251) What is the difference between the nominal interest rate and the effective interest rate?**

a) The nominal interest rate is the stated interest rate, while the effective interest rate is the actual interest rate earned.

b) The nominal interest rate is the actual interest rate earned, while the effective interest rate is the stated interest rate.

c) The nominal interest rate is the interest rate without compounding, while the effective interest rate includes compounding.

d) The nominal interest rate is the interest rate with compounding, while the effective interest rate excludes compounding.

Correct Answer: Option (a)

Explanation: The nominal interest rate, also known as the stated interest rate, is the interest rate that is explicitly stated by a lender or borrower. It is the rate that is typically advertised or communicated to borrowers or investors. The effective interest rate, also known as the annual percentage yield (APY) or the annual percentage rate (APR), is the actual inteest rate that takes into account the effects of compounding over time. The difference between the nominal interest rate and the effective interest rate is that the nominal interest rate is the stated interest rate, while the effective interest rate is the actual interest rate earned, taking into account the effects of compounding over time.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q252) What is the rule of 72?**

a) A mathematical formula used to calculate the present value of a future payment.

b) A formula used to calculate the future value of an investment.

c) A shortcut method used to estimate how long it will take for an investment to double in value.

d) A method used to determine the effective interest rate on a loan.

Correct Answer: Option (c)

Explanation: The rule of is a simple mathematical formula that allows you to quickly estimate the time it will take for an investment to double in value, based on a given interest rate or rate of return. It is a rule of thumb that provides a rough estimate and is commonly used in finance and investment decision-making to quickly assess the potential growth of an investment.

The formula for the rule of is as follows:

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q253) What is the formula for calculating the future value of an investment?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: The formula for calculating the future value (FV) of an investment is commonly used in finance and involves several variables, including the present value (PV) of the investment, the interest rate (r), and the time period (t) for which the investment will compound.

The formula is expressed as:

This will give you the estimated value of the investment at the end of the compounding period.

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q254) What is the time value of money?**

a) The idea that money available at the present time is worth more than the same amount in the future

b) The idea that money available in the future is worth more than the same amount at present

c) The idea that money has no value over time

d) The idea that money has a fixed value over time

Correct Answer: Option (a)

Explanation: The time value of money is a fundamental concept in finance and economics that reflects the idea that the value of money changes over time. It is based on the understanding that a dollar today is worth more than the same dollar in the future. The time value of money is the idea that money available at the present time is worth more than the same amount in the future due to the potential to earn returns, opportunity cost, and risk.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q255) Answer the following question with reference to the audio**

[**https://drive.google.com/file/d/1GEDyWEsFzPDA\_GwyZvNJ20GHG-k5-YQt/view?usp=share\_link**](https://drive.google.com/file/d/1GEDyWEsFzPDA_GwyZvNJ20GHG-k5-YQt/view?usp=share_link)

**Type: Audio**

**What is a present value?**

a) The value of an investment at a future date

b) The value of an investment at the present date

c) The value of an investment after it has been fully depreciated

d) The value of an investment after all taxes have been paid

Correct Answer: Option (b)

Explanation: Present value, also known as discounted value or present discounted value, is the current value of an investment or a stream of expected future cash flows, discounted to reflect the time value of money. It is the value of an investment or cash flow as of the present moment, taking into consideration the time value of money, which suggests that money available today is worth more than the same amount in the future.

Thus, the correct answer is option (b).

Difficulty Level: Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q256) What is a future value?**

a) The value of an investment at a future date

b) The value of an investment at the present date

c) The value of an investment after it has been fully depreciated

d) The value of an investment after all taxes have been paid

Correct Answer: Option (a)

Explanation: Future value is the estimated value of an investment or a stream of expected cash flows at a specified future date, based on assumptions about the investment's growth or interest rates. It represents the projected worth of an investment after a certain period of time, taking into consideration the time value of money. The formula for calculating the future value of an investment is:

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q257) What is a discount rate?**

a) The interest rate at which an investment grows

b) The interest rate used to determine the present value of a future cash flow

c) The interest rate charged on a loan

d) The interest rate paid on a deposit

Correct Answer: Option (b)

Explanation: A discount rate is the rate of interest or return that is used to calculate the present value of a future cash flow or an investment. It is the rate at which future cash flows are discounted or reduced to their present value, taking into consideration the time value of money. The formula for calculating the present value using a discount rate is:

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q258) What is compounding?**

a) The process of calculating the present value of a future cash flow

b) The process of calculating the future value of a present cash flow

c) The process of calculating the interest earned on an investment over time

d) The process of adding interest to the principal amount of an investment over time

Correct Answer: Option (d)

Explanation: Compounding refers to the process of earning interest on both the original amount of money invested (the principal) and the accumulated interest from previous periods. The concept of compounding is based on the time value of money, which recognizes that money has the potential to earn returns or interest when invested. The formula for calculating the future value of an investment with compound interest is:

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q259) When does the earnings per share (EPS) rise with higher debt?**

(a) When the rate of return on investment is higher than the rate of interest

(b) When the rate of return on investment is lower than the rate of interest

(c) When the rate of interest is more than the rate of return

(d) None of the above

Correct Answer: Option (a)

Explanation: Earnings per share (EPS) is a financial metric that indicates the profitability of a company and is calculated by dividing the company's net earnings by the number of outstanding shares of common stock. A higher EPS is generally considered favorable as it indicates that the company is generating more profits per share. If the company's investments yield a higher return than the cost of debt (interest rate), the use of debt can amplify the returns to shareholders and result in higher EPS.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q260) Name the process that enables the management to foresee the fund requirements, both the quantum as well as the timing.**

(a) Financial management

(b) Capital budgeting decisions

(c) Dividend decision

(d) Financial planning

Correct Answer: Option (d)

Explanation: Financial planning is the process of determining how a business will achieve its financial goals and objectives. It involves forecasting and estimating the fund requirements of a business, both in terms of the quantum (amount) and timing. Financial planning allows management to anticipate and plan for the financial needs of the business in order to ensure that adequate funds are available when required.

Thus, the correct answer is option (d).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q261) What is simple interest?**

a) Interest earned on the principal amount only

b) Interest earned on the principal amount and any interest earned on that amount

c) Interest earned on the principal amount and any interest earned on that amount, plus any additional deposits

d) Interest earned on the principal amount, plus any additional deposits

Correct Answer: Option (a)

Explanation: Simple interest refers to the interest earned or charged on the original principal amount of an investment or loan, without taking into account any interest that has been previously earned or charged. It is a straightforward method of calculating interest based solely on the initial principal amount. The formula for calculating simple interest is:

Thus, the correct answer is option (a).

Difficulty Level- Easy

Bloom’s Taxonomy – Remember

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q262) What is the formula for calculating compound interest?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: The formula for calculating compound interest is

where A is the future value, P is the principal amount, r is the interest rate, and t is the time period. This formula takes into account the concept of compounding, which means that the interest earned or charged on an investment or loan is added to the initial principal amount and then earns additional interest in subsequent periods.

Thus, the correct answer is option (a).

Difficulty Level\_ Easy

Bloom’s Taxonomy – Remember

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q263) What is an annuity?**

a) A one-time payment of a fixed amount

b) A series of equal payments made over a period of time

c) A variable payment made at irregular intervals

d) A payment made in advance of a loan

Correct Answer: Option (b)

Explanation: An annuity refers to a series of equal payments made over a specified period of time, either at regular intervals (such as monthly, quarterly, or annually) or at irregular intervals. An annuity can be classified as either an ordinary annuity or an annuity due, depending on when the payments are made. n ordinary annuity is a series of equal payments made at the end of each period.

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q264) What is the primary aim of financial management?**

a) Maximize profits

b) Minimize costs

c) Maximize shareholder wealth

d) Achieve sales targets

Correct Answer: Option (c)

Explanation: The primary aim of financial management is to maximize the wealth of shareholders, which involves making decisions that increase the value of their investment in the business. This typically includes actions such as maximizing profitability, optimizing capital structure, managing cash flow, and making prudent investment decisions that create value for shareholders in the long run.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q265) What is the term used to describe a situation in which a business is unable to pay off its debts and obligations as they become due?**

a) Bankruptcy

b) Insolvency

c) Liquidation

d) Receivership

Correct Answer: Option (b)

Explanation: Insolvency refers to a financial state in which a business or individual is unable to pay off its debts and obligations as they become due. It indicates a situation where the liabilities of a business exceed its assets, or the business does not have enough cash flow or liquidity to meet its financial obligations.

Thus, the correct answer is option (b).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q266) What is the term used to describe the legal process by which a business's assets are sold off to repay its debts and obligations?**

a) Insolvency

b) Bankruptcy

c) Receivership

d) Liquidation

Correct Answer: Option (d)

Explanation: Liquidation is the term used to describe the legal process by which a business's assets are sold off to repay its debts and obligations. It involves converting the assets of a business into cash to distribute among its creditors in order to satisfy its outstanding debts. Liquidation can occur in different circumstances, such as when a business becomes insolvent and is unable to meet its financial obligations, or when a business voluntarily decides to wind up its operations and distribute its assets among its creditors.

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q267) In which of the following situations is the working capital requirement of a business not likely to be high?**

a) Seasonal business with fluctuating sales

b) Business with slow inventory turnover

c) Business with extended credit terms to customers

d) Business with high production levels and short operating cycles

Correct Answer: Option (d)

Explanation: Business with high production levels and short operating cycles: In contrast, a business with high production levels and short operating cycles is likely to have a lower working capital requirement. This is because the business can quickly convert its inventory into sales and cash, minimizing the need for large amounts of working capital to cover inventory holding costs or credit extended to customers.

Thus, the correct answer is option (d).

Difficulty Level- Hard

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q268) Which of the following statements is NOT true with regard to the use of fixed capital?**

a) Fixed capital is used to acquire long-term assets

b) Fixed capital is used for investment in land, buildings, machinery, etc.

c) Fixed capital is typically used for short-term operational expenses

d) Fixed capital is employed to generate revenue and profits over an extended period of time

Correct Answer: Option (c)

Explanation: Fixed capital refers to the capital used by a business to acquire long-term assets, such as land, buildings, machinery, equipment, etc., that are used in the production of goods or services. Fixed capital is not typically used for short-term operational expenses. The Short-term operational expenses are typically covered by working capital, which represents the funds needed for day-to-day operations, such as purchasing inventory, paying wages, and meeting other short-term liabilities.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q269) A higher financial leverage ratio indicates that:**

a) The company has lower debt levels

b) The company has higher debt levels

c) The company has balanced debt and equity levels

d) The company has no debt

Correct Answer: Option (b)

Explanation: Financial leverage ratio, also known as debt ratio or debt-to-equity ratio, measures the proportion of a company's debt to its equity. It is calculated by dividing the total debt of a company by its total equity. A higher financial leverage ratio indicates that a company has higher debt levels compared to its equity.

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

**Q270) Which of the following is not an objective of financial planning?**

a) Managing cash flows effectively

b) Maximizing profits and shareholder value

c) Minimizing financial risk

d) Reducing employee turnover

Correct Answer: Option (d)

Explanation: Financial planning is the process of setting financial goals, developing strategies to achieve those goals, and allocating resources to implement the strategies. It involves various objectives, such as managing cash flows effectively, maximizing profits and shareholder value, and minimizing financial risk. However, reducing employee turnover is not directly related to financial planning, as it pertains to human resources management rather than financial management.

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q271) Which of the following sources of capital should not be selected by a business if its fixed cost is high?**

a) Equity shares

b) Preference shares

c) Debentures

d) All of the above

Correct Answer: Option (c)

Explanation: Debentures are a form of long-term debt that a company issues to raise capital. They carry fixed interest costs and are considered a fixed financial obligation that needs to be serviced regularly. If a business has high fixed costs, such as high interest expenses, it may not be advisable to choose debentures as a source of capital, as it would add to the fixed costs and further increase the financial burden on the business.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q272) Name the financial decision which relates to disposal of profits.**

a) Investment decision

b) Financing decision

c) Dividend decision

d) Capital budgeting decision explain answer in detail

Correct Answer: Option (c)

Explanation: The dividend decision is a financial decision that relates to the distribution of profits earned by a company among its shareholders. When a company earns profits, it has the option to either retain the profits within the company for reinvestment in future growth opportunities or distribute them to shareholders in the form of dividends. The dividend decision involves determining the portion of profits to be paid out as dividends and the portion to be retained as retained earnings.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q273) Which of the following financial statements provides information about the financial position of a company at a specific point in time?**

a) Income statement

b) Cash flow statement

c) Balance sheet

d) Statement of changes in equity

Correct Answer: Option (c)

Explanation: The balance sheet, also known as the statement of financial position, provides information about the financial position of a company at a specific point in time. It is one of the key financial statements that companies prepare as part of their financial reporting. It follows the fundamental accounting equation, which states that the total assets of a company must equal the total liabilities plus shareholders' equity.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q274) What is the purpose of capital budgeting decisions in financial management?**

a) Determining the company's capital structure

b) Managing the company's working capital

c) Evaluating and selecting investment projects

d) Deciding on the company's dividend policy

Correct Answer: Option (c)

Explanation: Capital budgeting decisions involve evaluating and selecting investment projects that are expected to generate positive cash flows and add value to the company. It is an important decision-making process in financial management to allocate resources effectively to maximize the shareholders' wealth. The main purpose of capital budgeting decisions is to determine which investment projects are worthwhile and align with the company's overall financial goals and strategic objectives.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q275) What is the formula for calculating the Net Present Value (NPV) of an investment project?**

a)

b)

c)

d)

Correct Answer: Option (b)

Explanation: The Net Present Value (NPV) of an investment project is calculated by subtracting the initial cash outflows from the expected cash inflows, taking into account the discount rate to account for the time value of money. A positive NPV indicates that the project is expected to generate a net increase in value.

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q276) What is the purpose of financial ratios in financial management?**

a) To evaluate the profitability of a company

b) To assess the liquidity of a company

c) To measure the efficiency of a company's operations

d) All of the above

Correct Answer: Option (d)

Explanation: Financial ratios are widely used in financial management as a tool for evaluating various aspects of a company's financial performance and position. Financial ratios are calculated by comparing different financial data points from a company's financial statements, and they provide insights into key areas of a company's operations, profitability, liquidity, solvency, efficiency, and other financial aspects.

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q277) What is the debt-to-equity ratio used for?**

a) To measure a company's liquidity

b) To assess a company's profitability

c) To evaluate a company's solvency

d) To measure a company's efficiency

Correct Answer: Option (c)

Explanation: The debt-to-equity ratio is a financial ratio that compares a company's total debt to its shareholders' equity. It is calculated by dividing the company's total debt by its shareholders' equity. The debt-to-equity ratio is used as a measure of a company's solvency, which refers to its ability to meet its long-term debt obligations. It helps in evaluating the long-term sustainability and stability of a company's financial position and influences investment decisions, lending decisions, and overall risk assessment of a company.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q278) What is the future value of invested at an interest rate of per annum compounded annually for years?**

a)

b)

c)

d)

Correct Answer: Option (a)

Explanation: The future value (FV) of an investment can be calculated using the compound interest formula:

where: PV =

r

n =

Sub these values into the formula, we get:

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Evaluate

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q279) What is the formula for calculating the present value of a single cash flow?**

a)

b)

c)

d)

Correct answer: Option (c)

Explanation: The formula for calculating the present value (PV) of a single cash flow (CF) is given by

where r represents the discount rate and t represents the number of time periods until the cash flow is received. The formula uses the concept of discounting, which is the process of determining the present value of a future cash flow by adjusting it to reflect the time value of money.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q280) What is the purpose of discounting in financial mathematics?**

a) To calculate the future value of an investment

b) To determine the present value of a future cash flow

c) To evaluate the profitability of an investment

d) To calculate the rate of return on an investment

Correct Answer: Option (b)

Explanation: Discounting is a fundamental concept in financial mathematics that involves adjusting the value of a future cash flow to its present value. The purpose of discounting is to account for the time value of money, which recognizes that a dollar received in the future is worth less than a dollar received today due to the potential earning capacity of money over time.

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q281) What is linear programming?**

a) A mathematical technique used to solve linear equations

b) A method used to plot linear graphs

c) A mathematical optimization technique used to optimize a linear objective function subject to linear constraints

d) A statistical method used to analyze linear data

Correct Answer: Option (c)

Explanation: Linear programming is a mathematical technique used to optimize a linear objective function subject to linear constraints. It involves finding the best possible solution that maximizes or minimizes a given objective while satisfying a set of constraints. The goal of linear programming is to find the values of the decision variables that satisfy all the constraints and optimize the objective function

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q282) In linear programming, what is an objective function?**

a) A function that represents the constraints in the problem

b) A function that represents the decision variables in the problem

c) A function that represents the optimal solution of the problem

d) A function that represents the goal or objective of the problem

Correct Answer: Option (d)

Explanation: The objective function in linear programming represents the goal or objective of the problem. It is a mathematical function that is either maximized or minimized, based on the problem's requirements. The objective function typically involves the decision variables, which are the unknowns or variables that need to be determined in order to optimize the objective function.

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q283) What is a constraint in linear programming?**

a) A limitation on the decision variables in the problem

b) A limitation on the objective function in the problem

c) A limitation on the number of variables in the problem

d) A limitation on the number of constraints in the problem

Correct Answer: Option (a)

Explanation: A constraints in linear programming are limitations or restrictions on the values of the decision variables, which define the feasible region and guide the optimization process to find an optimal solution that satisfies all the constraints. The constraints can be related to factors such as resource availability, capacity limits, demand constraints, or other relevant considerations depending on the specific problem.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q284) Which of the following is not a linear programming assumption?**

a) Proportionality

b) Additivity

c) Continuity

d) Convexity

Correct Answer: Option (d)

Explanation: Convexity is a property of certain mathematical functions or sets that have specific geometric properties, and it is not a general assumption in linear programming. Convexity is relevant in nonlinear programming, where the objective function or constraints may be nonlinear and have convex properties. The three main assumptions in linear programming are proportionality, additivity and continuity.

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q285) What is a feasible region in linear programming?**

a) The region where the objective function is optimized

b) The region where the constraints are not violated

c) The region where the decision variables are set to their maximum values

d) The region where the decision variables are set to their minimum values

Correct Answer: Option (b)

Explanation: The feasible region in linear programming is the set of all possible combinations of decision variable values that satisfy all the constraints in the problem. It is the region where the constraints are not violated, and the objective function is optimized within this region.

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q286) What are the limitations of graphical methods in linear programming?**

a) Can only be used for problems with non-negative constraints.

b) Can only handle two decision variables.

c) Cannot handle multiple constraints.

d) Limited accuracy in finding optimal solutions.

Correct Answer: Option (b)

Explanation: One of the limitations of graphical methods in linear programming is that they are most effective for problems with only two decision variables, as they can be easily represented on a two-dimensional coordinate plane. Problems with more than two variables require higher-dimensional space, which cannot be easily visualized. Additionally, graphical methods may not provide accurate solutions in cases where the feasible region is complex or the objective function has multiple optimal points.

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q287) What is the objective of linear programming?**

a) To maximize the objective function

b) To minimize the objective function

c) To find the average of the objective function

d) To solve quadratic equations

Correct Answer: Option (a)

Explanation: The objective of linear programming is to optimize a linear objective function subject to constraints. This can involve either maximizing or minimizing the objective function, depending on the specific problem being solved and the desired outcome. The objective function in linear programming is formulated to represent that quantity, and the linear programming model seeks to find the values of the decision variables that result in the highest possible value of the objective function.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q288) Which of the following is NOT a step in the linear programming process?**

a) Formulating the objective function

b) Determining the constraints

c) Finding the derivative of the objective function

d) Graphical analysis

Correct Answer: Option (c)

Explanation: The linear programming process typically involves several steps, including formulating the objective function, determining the constraints, solving the linear programming model, and interpreting the results. Option (c), finding the derivative of the objective function, is not a step in the linear programming process, as linear programming deals with linear mathematical expressions and does not involve derivatives.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q289) Which method is used to solve linear programming problems with two decision variables graphically?**

a) Simplex method

b) Dual method

c) Graphical method

d) Sensitivity analysis

Correct Answer: Option (c)

Explanation: The graphical method is used to solve linear programming problems with two decision variables graphically. It involves plotting the constraints and the objective function on a graph to visually identify the optimal solution. In the graphical method, the constraints of the linear programming problem are represented as lines or inequalities on a coordinate plane.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q290) Which of the following is NOT a condition for a linear programming problem to have a unique solution?**

a) Non-negativity constraint

b) Feasible region is unbounded

c) Feasible region is empty

d) Objective function is non-linear

Correct Answer: Option (d)

Explanation: A linear programming problem requires the objective function to be linear, meaning it must be a linear mathematical expression in terms of the decision variables. If the objective function is non-linear, such as involving exponential or polynomial terms, the problem is no longer a linear programming problem, and the conditions for having a unique solution may not be applicable.

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q291) In linear programming, if a constraint is or , what is the appropriate way to convert it into an equation?**

a) Add a slack variable for and a surplus variable for

b) Add a surplus variable for and a slack variable for

c) Add a slack variable for both and

d) Add a surplus variable for both and

Correct Answer: Option (a)

Explanation: In linear programming, constraints are typically expressed as equations or inequalities involving the decision variables. When a constraint is in the form of "≥" or "≤", it can be converted into an equation by introducing a slack variable or a surplus variable, respectively. When a constraint is in the form of "≥", it represents a lower bound on the decision variable and when a constraint is in the form of "≤", it represents an upper bound on the decision variable.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q292) Which of the following is NOT a component of linear programming?**

a) Objective function

b) Constraints

c) Random variables

d) Decision variables

Correct answer: Option (c)

Explanation: In linear programming, the objective function, constraints, and decision variables are the key components that are used to formulate and solve the problem. Random variables are not used in linear programming, as it is a deterministic optimization technique that does not involve uncertainty or probabilistic events.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q293) In linear programming, the objective function is:**

a) The function that needs to be minimized

b) The function that needs to be maximized

c) The function that represents the constraints

d) The function that represents the decision variables

Correct answer: Option (b)

Explanation: In linear programming, the objective function, constraints, and decision variables are the key components that are used to formulate and solve the problem. Random variables, on the other hand, are not used in linear programming, as it is a deterministic optimization technique that does not involve uncertainty or probabilistic events

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q294) Which of the following represents a feasible solution in linear programming?**

a) A solution that satisfies all the constraints

b) A solution that satisfies some of the constraints

c) A solution that satisfies none of the constraints

d) A solution that satisfies only the objective function

Correct answer: Option (a)

Explanation: In linear programming, a feasible solution refers to a solution that satisfies all the constraints of the problem. Feasible solutions are the set of values for the decision variables that are consistent with the given constraints, and they are typically represented as points or vectors in the feasible region of the problem. The objective of linear programming is to find the optimal solution that satisfies the constraints and optimizes the objective function

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q295) The graphical method in linear programming is used to:**

a) Find the optimal solution

b) Determine the feasible region

c) Identify the constraints

d) Define the decision variables

Correct answer: Option (b)

Explanation: The graphical method, also known as the graphical approach or graphical analysis, is a technique used in linear programming to visually determine the feasible region, which is the set of all possible values for the decision variables that satisfy the given constraints of the problem. The graphical method involves plotting the constraints on a coordinate plane and identifying the region where all the constraints intersect or overlap.

Thus, the correct answer is option (b).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q296) The corner point method in linear programming involves:**

a) Testing all the points in the feasible region

b) Testing only the points on the boundary of the feasible region

c) Testing only the points inside the feasible region

d) Testing only the points outside the feasible region

Correct answer: Option (a)

Explanation: The corner point method involves testing the objective function at each corner or vertex of the feasible region. Since the feasible region is bounded by the constraints, the optimal solution must lie on one of the corners of the feasible region. By evaluating the objective function at each corner point, the optimal solution that maximizes or minimizes the objective function can be identified.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q297) In linear programming, if the feasible region is unbounded:**

a) The problem has no solution

b) The problem has multiple solutions

c) The problem has a unique solution

d) The problem has infinitely many solutions

Correct answer: Option (d)

Explanation: If the feasible region is unbounded, it means that there are no constraints that limit the values of the decision variables in one or more directions, allowing them to take on arbitrarily large or small values. In such cases, the linear programming problem may have infinitely many solutions. The feasible region can be bounded or unbounded, depending on the shape and orientation of the constraints.

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q298) Which of the following methods is used to find the initial basic feasible solution in linear programming?**

a) Graphical method

b) Corner point method

c) Simplex method

d) Dual simplex method

Correct answer: Option (c)

Explanation: The simplex method is a popular and widely used algorithm for solving linear programming problems. One of the key steps in the simplex method is to find an initial basic feasible solution, from which the algorithm iteratively moves towards an optimal solution.

The initial basic feasible solution is a starting point for the simplex method to begin its iterations. It is a feasible solution that satisfies all the constraints of the linear programming problem.

Thus, the correct answer is option (c).

Difficulty Level- Medium

Bloom’s Taxonomy – Analyze

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q299) In linear programming, if the objective function coefficients are changed, but the constraints remain the same, the optimal solution:**

a) Remains the same

b) Changes

c) Becomes infeasible

d) Becomes unbounded

Correct answer: Option (a)

Explanation: In linear programming, the optimal solution refers to the solution that maximizes or minimizes the objective function while satisfying all the constraints. The objective function coefficients represent the weights or importance assigned to the decision variables in the objective function. Changing these coefficients does not affect the constraints or the feasible region, but only changes the relative importance of the decision variables in the objective function.

Thus, the correct answer is option (a).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**

**Q300) Which of the following is NOT a method to solve linear programming problems?**

a) Graphical method

b) Simplex method

c) Corner point method

d) Randomized method

Correct Answer: Option (d)

Explanation: Linear programming problems can be solved using various methods, such as graphical method, simplex method, and corner point method. These methods are well-established and widely used techniques for finding optimal solutions to linear programming problems. The randomized method is not a standard or widely used method for solving linear programming problems. It is not a recognized or established approach in the field of linear programming.

Thus, the correct answer is option (d).

Difficulty Level- Medium

Bloom’s Taxonomy – Understand

**$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$**