AgarkarMedia Academy

Test 5

Name:

Date:

Aptitude

1. If 3x - 7 = 5, what is the value of x?
    a. 2
    b. 4
    c. 3
    d. 1
2. If a shirt costs $15 after a 25% discount, what was its original price?
    a. $15
    b. $25
    c. $22
    d. $20
3. If the area of a rectangle is 24 square units and the length is 6 units, what is the width?
    a. 2
    b. 4
    c. 8
    d. 12
4. Solve for x in the equation 2x+5=13
    a. 4
    b. 3
    c. 6
    d. 2
5. The perimeter of a square is 20 cm. What is the length of one side?
    a. 4 cm
    b. 5 cm
    c. 6 cm
    d. 7 cm
6. If a bus travels at a speed of 60 miles per hour, how long will it take to cover a distance of 180 miles?
    a. 2 hours
    b. 3 hours
    c. 4 hours
    d. 5 hours
7. If a^2+b^2 = 15 and ab=5 then what is the value of a+b?
    a. 4
    b. 6

c. 3
d. 5

8. The sum of the first 20 terms of an arithmetic series is 480. If the first term is 5, what is the 20th term?
    a. 75
    b. 45
    c. 43
    d. 73
9. If $x^2+y^2=34$ and $xy=15$ then what is the value of $|x-y|$?
    a. 3
    b. 2
    c. -3
    d. -2
10. The length of the diagonal of a rectangle is 17 units and the width is 8 units. What is the area of the rectangle?
    a. 100 sq. units
    b. 102 sq. units
    c. 112 sq. units
    d. 120 sq. units
11. In a triangle ABC, angle A = 40° and angle B = 70°. What is the measure of angle C?
    a. 60°
    b. 70°
    c. 80°
    d. 90°
12. If $2^x+2^y=16$ and $2^x-2^y=8$ then what is the value of x+y?
    a. 6
    b. 4
    c. 8
    d. 5
13. The sum of three consecutive odd numbers is 63. What is the largest of these numbers?
    a. 19
    b. 21
    c. 23
    d. 25
14. If all roses are flowers and some flowers fade quickly, then:
    a. All roses fade quickly
    b. Some roses fade quickly
    c. No roses fade quickly
    d. None of the above
15. If no mammals can fly and all bats are mammals, then:
    a. Contradiction
    b. No bats can fly
    c. Some bats can't fly
    d. Tautology
16. All cats have tails. Some animals have tails. Therefore:
    a. All animals are cats
    b. Some cats are animals

    c. All animals have tails
    d. Some animals are cats
17. In a deck of 52 playing cards, how many cards must be drawn to guarantee that you have at least two cards of the same suit?
    a. 13
    b. 14
    c. 15
    d. 16
18. In a box, there are 5 blue balls and 3 red balls. If two balls are drawn at random without replacement, what is the probability of drawing one blue ball and one red ball in any order?
    a. 20/56
    b. 15/56
    c. 15/28
    d. 20/28
19. In how many ways can you arrange 4 blue balls and 3 red balls in a line such that no two red balls are adjacent?
    a. 10
    b. 12
    c. 15
    d. 17
20. How many weeks are there in a year?
    a. 21
    b. 51
    c. 53
    d. 52

English Proficiency

1. Choose the word that best completes the sentence:
   I _____ to the store yesterday.
    a. went
    b. gone
    c. goes
    d. go
2. Which sentence is grammatically correct?
    a. She don't like pizza.
    b. They doesn't like pizza.
    c. He doesn't like pizza.
    d. You doesn't like pizza.
3. Select the correct synonym for the word "benevolent":
    a. Cruel
    b. Kind
    c. Hostile
    d. Ruthless
4. Choose the correct form of the verb:

She _____ been studying for hours.

a. have
b. has
c. had
d. having

5. Which of the following sentences is in the passive voice?
    a. The cat chased the mouse.
    b. The cake was baked by Mary.
    c. She is reading a book.
    d. He will finish the project.
6. What is the plural form of "child"?
    a. childs
    b. childes
    c. children
    d. child's
7. Choose the correctly punctuated sentence:
    a. I can't believe it's Monday already.
    b. I cant believe its Monday already.
    c. I can't believe its Monday already.
    d. I cant believe it's Monday already.
8. Identify the adverb in the following sentence:
   She sings beautifully.
    a. She
    b. Sings
    c. Beautifully
    d. None of the above
9. Choose the correct meaning of the idiom:
   "To hit the nail on the head"
    a. To be good at carpentry.
    b. To speak directly to the point.
    c. To avoid a difficult situation.
    d. To hammer a nail into wood.
10. Identify the conjunction in the following sentence:
    He is tired, but he is happy.
    a. He
    b. Is
    c. Tired
    d. But

MERN CODING

Question 1: Context-based Theming

Problem Statement:

You are tasked with building a theming system for a React application using Context API. The application should have two themes: "light" and "dark". Users should be able to toggle between these themes.

Requirements:

Implement a context provider (**ThemeContextProvider**) that manages the current theme and provides a way to toggle it.
Use **useState** and **useContext** hooks to manage the current theme state.
Use **useEffect** to update the body element with the appropriate class (light-theme or dark-theme) based on the current theme.
Create two components: **ThemedButton** and **ThemeToggler**.
ThemedButton should display a button with appropriate styling based on the theme. **ThemeToggler** should provide a button to toggle the theme.
Ensure that the theme choice persists even if the user navigates to different parts of the application.

Question 2: Shopping Cart with Context API

Problem Statement:

You are building a shopping cart feature for an e-commerce website using React. The application should allow users to view products, add them to a shopping cart, and view the items in their cart.

Requirements:

Implement a context provider (**CartContextProvider**) that manages the state of the shopping cart.
Use **useState** and **useContext** hooks to manage the state of the cart.
Create components: **ProductList**, **ProductDetail**, and **Cart**. **ProductList** displays a list of products, **ProductDetail** displays details of a selected product, and **Cart** displays the items in the shopping cart.
Use **react-router-dom** to set up routes for navigating between the product list, product details, and the shopping cart.
Include functionality to add and remove items from the cart. The cart should persist across different route.
Display the total price of items in the cart.

Python CODING

Question 1: Word Frequency Counter

Problem Statement:
Write a Python function word_frequency(text) that takes a string text as input and returns a dictionary where the keys are unique words in the text and the values are the frequencies of those words.

Consider the following:
Words are case-insensitive (i.e., "Hello" and "hello" should be considered the same word).
Ignore punctuation and special characters.
Words are defined as sequences of characters separated by spaces.
Example:

```
>>> word_frequency("Hello, how are you? How's your day?")
Output:
{
   'hello': 1,
   'how': 2,
   'are': 1,
   'you': 1,
   'your': 1,
   'day': 1
}
```

Question 2: Matrix Transposition

Problem Statement:
Write a Python function transpose_matrix(matrix) that takes a 2D list (matrix) as input and returns the transpose of the matrix.

The transpose of a matrix is obtained by swapping the rows and columns. For example, if matrix is a 2x3 matrix, the transpose will be a 3x2 matrix.

Example:

```
>>> matrix = [
...     [1, 2, 3],
...     [4, 5, 6]
... ]
>>> transpose_matrix(matrix)
Output:
[
   [1, 4],
   [2, 5],
   [3, 6]
]
```

Answer Key

Test 5

Aptitude:

1. C
2. D
3. B
4. A
5. A
6. B
7. D
8. C
9. B
10. D
11. B
12. A
13. C
14. B
15. B
16. D
17. B
18. C
19. A
20. D

English Proficiency

1. A
2. B
3. B
4. B
5. B
6. C
7. A
8. C
9. B
10. D