Question No : 1 of 26 Marks: 1 (Budgeted Time 1 Min)

Al-Khwarizmi's work was written in a book titled _____

Answer ( Please select your correct option )

- al Kitab al-mukhatasar fi hisab al-jabrwa'l-muqabalah
- Calculation by Completion
- al Kitab
- al-jabrwa'l-muqabalah

Question No : 2 of 26 Marks: 1 (Budgeted Time 1 Min)

Unlike programs, algorithms to be understood primarily by _____ and_____

Answer ( Please select your correct option )

- Machines, not people
- Mathematical expressions, not algebraic expressions
- Programmers, not machines
- RAM, not programmer

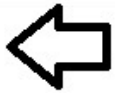
correct answer solve
by hadi

MADE BY HADI

Question No : 3 of 26 Marks: 1 (Budgeted Time 1 Min)

Which formula is used for calculating worst case running time?

Answer ( Please select your correct option )

- $Tworst(n) = \max_{|I|=n} T(I)$ 
- $Tworst(n) = \max_{|I|=1} T(I)$
- $Tworst(n) = \max_{|I|=1} T(n)$
- $Tworst(n) = \max_{|I|=n} T(n)$

Question No : 4 of 26 Marks: 1 (Budgeted Time 1 Min)

Analysis of Selection algorithm ends up with,

**page 37**

Answer ( Please select your correct option )

- ⊖(n)  correct answer solve by hadi
- ⊖(1 / 1+ n)
- ⊖(n / 2)
- ⊖((n / 2) + n)

Question No : 5 of 26 Marks: 1 (Budgeted Time 1 Min)

A (an) _____ is a left-complete binary tree that conforms to the *heap order*

**p 40**

Answer ( Please select your correct option )

- heap

correct answer solve
by hadi

- binary tree
- binary search tree
- array

Question No : 6 of 26 Marks: 1 (Budgeted Time 1 Min)

Principal operation for maintaining the heap property is called heapify, it is also called

**p 43**

Answer ( Please select your correct option )

- sifting down
- sifting up
- sifting left
- sifting right

Question No : 7 of 26 Marks: 1 (Budgeted Time 1 Min)

What is common between Bubble sort, Insertion sort, Selection sort, Quick sort, and Heap sort?

Answer ( Please select your correct option )

- All are in-place algorithms

correct answer solve
by hadi

- All are stable algorithms
- None of these
- All are unstable algorithms

Question No : 8 of 26 Marks: 1 (Budgeted Time 1 Min)

When primary memory storage is at a premium, a (an) _____ algorithm may be preferable.

:(

Answer ( Please select your correct option )

- In-place
- Stable
- External storage
- None of these

Question No : 9 of 26 Marks: 1 (Budgeted Time 1 Min)

If there are $\Theta(n^2)$ entries in edit distance matrix then the total running time is

Answer ( Please select your correct option )

- $\Theta(1)$
- $\Theta(n^2)$ 
- $\Theta(n)$
- $\Theta(n \log n)$

correct answer solve
by hadi

Question No : 10 of 26 Marks: 1 (Budgeted Time 1 Min)

Catalan number is given by the formula

Answer ( Please select your correct option )

- $C(n) = \frac{1}{n+1}\binom{2n}{n}$ 
- $C(n) = \frac{1}{n-1}\binom{2n}{n}$
- $C(n) = \frac{1}{n+1}\binom{n}{2n}$
- $C(n) = \frac{1}{n-1}\binom{n}{2n}$

Question No : 11 of 26 Marks: 1 (Budgeted Time 1 Min)

For Chain Matrix Multiplication we can not use divide and conquer approach because,

Answer ( Please select your correct option )

- We do not know the optimum k
- We use divide and conquer for sorting only
- We can easily perform it in linear time
- Size of data is not given

correct answer solve
by hadi

Question No : 12 of 26 Marks: 1 (Budgeted Time 1 Min)

We can find the product A x B of matrices A and B, only if they are compatible which means,

Answer ( Please select your correct option )

- No of Columns of A must be equal to No of Rows of B
- No of Columns of A must be equal to No of Columns of B
- No of Rows of A must be equal to No of Rows of B
- Order of A must be equal to order of B

correct answer solve
by hadi

MADE BY HADI

Question No : 13 of 26 Marks: 1 (Budgeted Time 1 Min)

Time complexity of chain matrix multiplication is $\Theta(n^3)$ and space complexity is

Answer ( Please select your correct option )

- $\Theta(n^2)$ 
- $\Theta(n^3)$
- $\Theta(n \log n)$
- $\Theta(\log n)$

Question No : 14 of 26 Marks: 1 (Budgeted Time 1 Min)

The worst case running time of the algorithm given below is,

```
MAXIMA(int n, Point P[1...n])
1  for i ← 1 to n        n times
2  do maximal ← true
```

Answer ( Please select your correct option )

- $\Theta(n^6)$
- $\Theta\left(n^{\frac{2n}{6}}\right)$
- $\Theta(n^2)$ ⇦ correct answer solve by hadi
- $\Theta(2n \lg 6)$

MADE BY HADI

Question No : 14 of 26 Marks: 1 (Budgeted Time 1 Min)

```
MAXIMA(int n, Point P[1...n])
1  for i ← 1 to n        n times
2  do maximal ← true
3     for j ← 1 to n     n times
4     do
```

Answer ( Please select your correct option )

- $\Theta(n^6)$
- $\Theta\left(n^{\frac{2n}{6}}\right)$
- $\Theta(n^2)$
- $\Theta(2n \lg 6)$

already submit,,,,,correct
answer solve by hadi

MADE BY HADI

Question No : 14 of 26 Marks: 1 (Budgeted Time 1 Min)

```
3     for j ← 1 to n        n times
4     do
5        if (i ≠ j)&(P[i].x ≤ P[j].x)&(P[i].y ≤ P[j].y)    4 accesses
6           then maximal ← false break
7     if maximal
```

Answer ( Please select your correct option )

- $\Theta(n^6)$
- $\Theta\left(n^{\frac{2n}{6}}\right)$
- $\Theta(n^2)$ ⇦
- $\Theta(2n \lg 6)$

correct answer solve
by hadi...already
submit

MADE BY HADI

Question No : 14 of 26 Marks: 1 (Budgeted Time 1 Min)

```
5        if (i ≠ j)&(P[i].x ≤ P[j].x)&(P[i].y ≤ P[j].y)   4 accesses
6          then maximal ← false break
7      if maximal
8        then  output P[i].x, P[i].y   2 accesses
```

Answer ( Please select your correct option )

- $\Theta(n^6)$
- $\Theta\left(n^{\frac{2n}{6}}\right)$
- $\Theta(n^2)$
- $\Theta(2n \lg 6)$

correct answer solve
by hadi....already
submit

MADE BY HADI

Question No : 15 of 26 Marks: 1 (Budgeted Time 1 Min)

In Sieve Technique, we know _____

It applies to problems where we are interested in finding
a **single item from a larger set of n items** We **do not know** **which item is of interest,**

**repeat**

Answer ( Please select your correct option )

- Item of ineterst
- Order of items
- complexity of items
- All items are of ineterst

correct answer solve
by hadi

Question No : 16 of 26 Marks: 1 (Budgeted Time 1 Min)

In Random access machine, instructions are executed _____.

Answer ( Please select your correct option )

- five at a time
- infinite instructions at a time
- one-by-one
- parallel

correct answer solve
by hadi

MADE BY HADI

Question No : 17 of 26 Marks: 1 (Budgeted Time 1 Min)

Which of the following is calculated with **Big Theta** notation?

Answer ( Please select your correct option )

- Lower bounds
- Upper bounds
- Both upper and lower bound
- Medium bounds

Question No : 18 of 26 Marks: 1 (Budgeted Time 1 Min)

Suppose we have an algorithm that carries out $N^2$ operations for an input of size N. Let us say that a computer takes 1 microsecond (1/1000000 second) to carry out one operation. How long does the algorithm run for an input of size 3000?

Answer ( Please select your correct option )

- 90 seconds
- 9 seconds
- 0.9 seconds
- 0.09 seconds

correct answer solve
by hadi

Question No : 19 of 26 Marks: 1 (Budgeted Time 1 Min)

Which one is the best algorithm from the following with respect to running time?

Answer ( Please select your correct option )

- $\Theta(n)$
- $\Theta(n^2)$
- $\Theta(n \log n)$
- $\Theta(n^3)$

Question No : 20 of 26 Marks: 1 (Budgeted Time 1 Min)

Which of the following is true?

Answer ( Please select your correct option )

- The worst case time complexity of the quick sort is NlogN
- The best case time complexity of the merge sort is logN
- The worst case time complexity of the selection sort is N^2
- The worst case time complexity of the merge sort is logN

correct answer solve
by hadi

MADE BY HADI

Question No : 21 of 26 Marks: 2 (Budgeted Time 4 Min)

What is the necessary assumption for average case analysis of quick sort?

Answer ( Please click here to Add Answer )

Question No : 22 of 26 Marks: 2 (Budgeted Time 4 Min)

If we solve the knap-sap algorithm with brute force then how much running time will be required?

Answer ( Please click here to Add Answer )

Question No : 23 of 26 Marks: 3 (Budgeted Time 6 Min)

In comparison based sorting algorithms, there are “n! “Permutations to arrange the elements, and lower bound achieved is Omega (n log n). To prove this, which factors of binary tree enable us to take the “log” for “n!” comparisons?

Answer ( Please click here to Add Answer )

Question No : 24 of 26 Marks: 3 (Budgeted Time 6 Min)

What are Catalan numbers? Give the formula to find Catalan numbers.

Answer ( Please click here to Add Answer )

Question No : 25 of 26 Marks: 5 (Budgeted Time 10 Min)

Consider the following recursive `search` function which returns the index of the `array` element containing `key`, if such an element exists.

```
int search( int* array, int left, int right, int key )
{
     int mid = (left+right)/2;
```

Answer ( Please click here to Add Answer )

Question No : 25 of 26 Marks: 5 (Budgeted Time 10 Min)

```
     int mid = (left+right)/2;
if( left == right )
          return left;
else if( array[mid] <= key )
     return search( array, mid+1, right, key );
```

Answer ( Please click here to Add Answer )

Question No : 25 of 26 Marks: 5 (Budgeted Time 10 Min)

```
else if( array[mid] <= key )
     return search( array, mid+1, right, key );
else
     return search( array, left, mid, key );
}
```

Answer ( Please click here to Add Answer )

Question No : 25 of 26 Marks: 5 (Budgeted Time 10 Min)

```
    return search( array, left, mid, key );
}
```

Given the following declaration:

```
int list[4] = { 5, 6, 7, 8 };
```

does `search(list, 0, 4, 8)` correctly return the index of the `list` element containing 8? Show your work.

Answer ( Please click here to Add Answer )

Question No : 26 of 26 Marks: 5 (Budgeted Time 10 Min)

Write down the steps of dynamic programming strategy.

Answer ( Please click here to Add Answer )

# HADI VU PAST PAPER

WE DEAL ALL KIND OF VU PROJECT
(PHP,ANDROID,PYTHON)

# DEAR STUDENTS

ARE YOU LOOKING
FOR ASSISTANCE

1) ASSIGNMENTS
2) QUIZZES
3) GDB
4) GRAND QUIZZES

We Provide,You Solution of VU Academic Activities include Assignments, Quizzes,GDBs,Grand Quizzes If You Need Help in Services Kindly inform us.

**TEAM HADI**
**(VU LAHORE)**

**TEAM HADI**
(VU LAHORE)

HADI TECH

**#PAID_TASK**

**CONTACT US**

CALL & WHATSAPP

**0308-7122922**

# VIRTUAL UNIVERSITY OF PAKISTAN



# MID TERM PAST PAPER



**MADE AND SOLVED BY HADI**