

LVL2 SET A TEST 5 PROGRAMMING

Hitbullseye

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Question No: 1

DIRECTIONS for the question: Mark the best option:

The objective of testing is?

- Debugging
- To uncover errors
- To gain modularity
- To analyze system

Explanation

Correct answer is: B

Question No: 2

DIRECTIONS for the question: Mark the best option:

Given the relations

employee (name, salary, deptno) and
department (deptno, deptname, address)

Which of the following queries cannot be expressed using the basic relational algebra operations (\cup , $-$, \times , π , σ , p)?

Department address of every employee

Employees whose name is the same as their department name

The sum of all employees' salaries

All employees of a given department

Explanation

Correct answer is: C

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Question No: 3

DIRECTIONS for the question: Mark the best option:

Given an arbitrary non-deterministic finite automaton (NFA) with N states, the maximum number of states in an equivalent minimized DFA is at least.

N^2

2^N

$2N$

$N!$

Explanation

Correct answer is: B

Question No: 4

DIRECTIONS for the question: Mark the best option:

Consider the following graph:

Which one of the following is NOT the sequence of edges added to the minimum spanning tree using Kruskal's algorithm?

(b,e)(e,f)(a,c)(b,c)(f,g)(c,d)

(b,e)(e,f)(a,c)(f,g)(b,c)(c,d)

(b,e)(a,c)(e,f)(b,c)(f,g)(c,d)

(b,e)(e,f)(b,c)(a,c)(f,g)(c,d)

Explanation

Correct answer is: D

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Question No: 5

DIRECTIONS for the question: Mark the best option:

Which of the following system calls results in the sending of SYN packets?

socket

bind

listen

connect

Explanation

Correct answer is: D

Question No: 6

DIRECTIONS for the question: Mark the best option:

In designing a computer's cache system, the cache block (or cache line) size is an important parameter. Which one of the following statements is correct in this context?

- A smaller block size implies better spatial locality
- A smaller block size implies a smaller cache tag and hence lower cache tag overhead
- A smaller block size implies a larger cache tag and hence lower cache hit time
- A smaller block size incurs a lower cache miss penalty

Explanation

Correct answer is: D

Question No: 7

DIRECTIONS for the question: Mark the best option:

Which of the following addressing modes permits relocation without any change whatsoever in the code?

- Indirect addressing
- Indexed addressing
- Base register addressing
- PC relative addressing

Explanation

Correct answer is: D

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Question No: 8

DIRECTIONS for the question: Mark the best option:

Which of the following is true about Huffman Coding.

- Huffman coding may become lossy in some cases
- Huffman Codes may not be optimal lossless codes in some cases
- In Huffman coding, no code is prefix of any other code
- All of the above

Explanation

Correct answer is: D

Question No: 9

DIRECTIONS for the question: Mark the best option:

Which of the following statements are TRUE about an SQL query?

- P: An SQL query can contain a HAVING clause even if it does not a GROUP BY clause
- Q: An SQL query can contain a HAVING clause only if it has a GROUP BY clause
- R: All attributes used in the GROUP BY clause must appear in the SELECT clause
- S: Not all attributes used in the GROUP BY clause need to appear in the SELECT clause

P and R

P and S

Q and R

Q and S

Explanation

Correct answer is: C

Question No: 10

DIRECTIONS for the question: Mark the best option:

Which of the following transport layer protocols is used to support electronic mail?

SMTP

IP

TCP

UDP

Explanation

Correct answer is: C

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Question No: 11

DIRECTIONS for the question: Mark the best option:

Consider the following C function

```
void swap (int a, int b)
{
    Int temp;
    temp = a;
    a = b;
    b = temp;
}
```

In order to exchange the values of two variables x and y.

call swap (x, y)

call swap (&x, &y)

swap (x,y) cannot be used as it does not return any value

swap (x,y) cannot be used as the parameters are passed by value

Explanation

Correct answer is: D

Question No: 12

DIRECTIONS for the question: Mark the best option:

Let S be a stack of size $n \geq 1$. Starting with the empty stack, suppose we push the first n natural numbers in sequence, and then perform n pop operations. Assume that Push and Pop operation take X seconds each, and Y seconds elapse between the end of one such stack operation and the start of the next operation. For $m \geq 1$, define the stack-life of m as the time elapsed from the end of $\text{Push}(m)$ to the start of the pop operation that removes m from S. The average stack-life of an element of this stack is

$$n(X+Y)$$

$$3Y + 2X$$

$$n(X + Y)-X$$

$$Y + 2X$$

Explanation

Correct answer is: C

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Question No: 13

DIRECTIONS for the question: Mark the best option:

Consider the following C function:

```
int f(int n)
{
    static int i = 1;
    if(n >= 5)
        return n;
    n = n+i;
    i++;
    return f(n);
}
```

The value returned by $f(1)$ is

5

6

7

8

Explanation

Correct answer is: C

Question No: 14

DIRECTIONS for the question: Mark the best option:

Which of the following standard algorithms is not Dynamic Programming based.

Bellman–Ford Algorithm for single source shortest path

Floyd Warshall Algorithm for all pairs shortest paths

0-1 Knapsack problem

Prim's Minimum Spanning Tree

Explanation

Correct answer is: D

Question No: 15

DIRECTIONS for the question: Mark the best option:

The following postfix expression with single digit operands is evaluated using a stack:

8 2 3 ^ / 2 3 * + 5 1 * -

Note that \wedge is the exponentiation operator. The top two elements of the stack after the first * is evaluated are:

6, 1

5, 7

3, 2

1, 5

Explanation

Correct answer is: A

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Question No: 16

DIRECTIONS for the question: Mark the best option:

Consider three processes (process id 0, 1, 2 respectively) with compute time bursts 2, 4 and 8 time units. All processes arrive at time zero. Consider the longest remaining time first (LRTF) scheduling algorithm. In LRTF ties are broken by giving priority to the process with the lowest process id. The average turn around time is:

13 units

14 units

15 units

16 units

Explanation

Correct answer is: A

Question No: 17

DIRECTIONS for the question: Mark the best option:

The set difference of the set A with null set is _____

A

null

U

B

Explanation

Correct answer is: A

Question No: 18

DIRECTIONS for the question: Mark the best option:

Which of the following statements is true?

If a language is context free it can always be accepted by a deterministic push-down automaton

The union of two context free languages is context free

The intersection of two context free languages is context free

The complement of a context free language is context free

Explanation

Correct answer is: B

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Question No: 19

DIRECTIONS for the question: Mark the best option:

The number of tokens in the following C statement is
printf("i = %d, &i = %x", i, &i);

3

26

10

21

Explanation

Correct answer is: C

Question No: 20

DIRECTIONS for the question: Mark the best option:

Assume that source S and destination D are connected through two intermediate routers labeled R. Determine how many times each packet has to visit the network layer and the data link layer during a transmission from S to D.

Network layer – 4 times and Data link layer – 4 times

Network layer – 4 times and Data link layer – 3 times

Network layer – 4 times and Data link layer – 6 times

Network layer – 2 times and Data link layer – 6 times

Explanation

Correct answer is: C

Question No: 21

DIRECTIONS for the question: Mark the best option:

A process executes the code

```
fork();  
fork();  
fork();
```

The total number of child processes created is

3

4

7

8

Explanation

Correct answer is: C

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Question No: 22

DIRECTIONS for the question: Mark the best option:

The lexical analysis for a modern computer language such as Java needs the power of which one of the following machine models in a necessary and sufficient sense?

Finite state automata

Deterministic pushdown automata

Non-Deterministic pushdown automata

Turing Machine

Explanation

Correct answer is: A

Question No: 23

DIRECTIONS for the question: Mark the best option:

A virtual memory system uses First In First Out (FIFO) page replacement policy and allocates a fixed number of frames to a process. Consider the following statements:

P: Increasing the number of page frames allocated to a process sometimes increases the page fault rate.

Q: Some programs do not exhibit locality of reference. Which one of the following is TRUE?

Both P and Q are true, and Q is the reason for P

Both P and Q are true, but Q is not the reason for P.

P is false, but Q is true

Both P and Q are false.

Explanation

Correct answer is: B

Question No: 24

DIRECTIONS for the question: Mark the best option:

A RAM chip has a capacity of 1024 words of 8 bits each ($1K \times 8$). The number of 2×4 decoders with enable line needed to construct a $16K \times 16$ RAM from $1K \times 8$ RAM is

4

5

6

7

Explanation

Correct answer is: B

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Question No: 25

DIRECTIONS for the question: Mark the best option:

The number of leaf nodes in a rooted tree of n nodes, with each node having 0 or 3 children is:

$n/2$

$(n-1)/3$

$(n-1)/2$

$(2n+1)/3$

Explanation

Correct answer is: D

Question No: 26

DIRECTIONS for the question: Mark the best option:

The protocol data unit(PDU) for the application layer in the Internet stack is

Segment

Datagram

Message

Frame

Explanation

Correct answer is: C

Question No: 27

DIRECTIONS for the question: Mark the best option:

$S \rightarrow aSa \mid bSb \mid a \mid b$; The language generated by the above grammar over the alphabet {a,b} is the set of

- All palindromes
- All odd length palindromes
- Strings that begin and end with the same symbol
- All even length palindromes

Explanation

Correct answer is: B

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Question No: 28

DIRECTIONS for the question: Mark the best option:

What is used for implementing the changes in existing or new requirements of user in software maintenance?

Preventive maintenance

Perfective maintenance

Corrective maintenance

Adaptive maintenance

Explanation

Correct answer is: B

Question No: 29

DIRECTIONS for the question: Mark the best option:

Project risk factor is considered in?

Spiral Model

Waterfall Model

Prototyping Model

Iterative enhancement Model

Explanation

Correct answer is: A

Question No: 30

DIRECTIONS for the question: Mark the best option:

Consider a CSMA/CD network that transmits data at a rate of 100 Mbps (108 bits per second) over a 1 km (kilometer) cable with no repeaters. If the minimum frame size required for this network is 1250 bytes, what is the signal speed (km/sec) in the cable?

8000

10000

16000

20000

Explanation

Correct answer is: D

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