CN Program

LAN/WAN Networks

Q1 – X.25 technology data rate is

- a- 64 Kbps
- b- 64 KB
- c- 1.54 Mbps
- d- 1.5 MB

Q2 – ATM technology is a

- a- LAN example
- b- MAN example
- c- WAN example
- d- All the above

Q3 – Which of the following IP addresses is of class B?

- a- 116.112.0.0
- b- 136.120.10.10
- c- 236.125.0.1

d- 325.116.1.0

Q4 –Active directory at the server is a database that contains information about network users.

□ False

Q5 – In Classless addressing addresses are grouping in blocks

	False
--	-------

Network Programming

1) *newCachedThreadPool()* creates pool with fixed number of threads. (F) 2) A filter is needed to write an integer to a binary file. (T) 3) I/O and networking programs do not need exception handling. (F) 4) A socket connection is a full-duplex. (T) 5) openStream() method is used to connect to the server specified in the URL (T) 6) Several servers can listen to one port at the same time (F) 7) Two separate classes for UDP socket and UDP server socket exist. (F) 8) Destination address within UDP communication is stored in the packet. (T)

Network protocols

- 1. Current wireless MACs are based on
 - A. CSMA/CD
 - B. CSMA/CA
 - C. Hybrid technique depending on traffic
 - D. Hybrid technique with fixed time partitions
- 2. The initialization vector (IV) is used in the framework of
 - A. WEP security protocol
 - B. 802.11 MAC
 - C. Slotted Aloha networks
- 3. Low battery level will cause a mobile device to
 - A. Avoid competing for contention slots
 - B. Shift to receive-only mode
 - C. Shut down altogether
- 4. Advanced TCP window control is especially relevant
 - A. On circuit switching optical networks
 - B. On wireless networks
 - C. On TDM multiplexers
- 5. The "cocktail party" effect in cellular networks can be prevented by
 - A. Code modulation
 - B. Flattening the spectrum of the transmitted signal
 - C. A collision avoidance wireless MAC

Wireless Networks

- Q 1: HSPA stands for _____.
 - A) High Speed Packet Access
 - B) High Signal Packet Access
 - C) High stream Packet Access
 - D) High Spread Packet Access

Q 2: A user needs to send 3 bits using DSSS, if the user has spreading code consists of 8 bits what is the total transmitted bits?

- A) 3 bytes
- B) 8 bytes
- C) 24 bytes
- D) 12 bytes
- Q 3: Which of the following technologies has the highest data rate?
 - A) UMTS
 - B) <mark>LTE</mark>
 - C) HSPA
 - D) HSPA+

Q 4:	UMTS technology does not use Internet Protocol			
	□ Yes	🗆 <mark>No</mark>		

- Q 5: In CDMA all users' data transmitted simultaneously over one channel . □ <mark>Yes</mark> □ No
- Loss of data is one of wireless technology disadvantage. Q 6: □ Yes □ No

Numerical Analysis

1. Th	e second Taylor polynomial f	for $f(x) = e^x \cos x$ abo	ut $x_0 = 0$ is
a.	$P_2(x) = 1 + x$	с.	$P_2(x) = 1 + 2x$
b.	$P_2(x) = 1 + x^2$	d.	$P_2(x) = 1 + 2x^2$

2. Usi	ng three-dig	git rounding arithmetic $\frac{\frac{13}{14}}{2e-\frac{4}{2}}$	$\frac{\frac{\delta}{7}}{\frac{5}{5}}$ is equal:	
a.	1.00		с.	2.20
b.	1.80		d.	1.90

3. The first iteration P_1 to approximate $\sqrt{3}$ using the fixed-point iteration with $g(x) = 0.5\left(x + \frac{3}{x}\right)$ and $P_0 = 1.0$ is: 1 3 a. b. d.

4. For a function *t* the forward divided-differences are given by:

		$f[x_0]$	$x_0 = 0$
	$f[x_0, x_1]$		
$f[x_0, x_1, x_2] = \frac{50}{7}$		$f[x_1]$	$x_1 = 0.4$
	$f[x_1, x_2] = 10$		
		$f[x_2] = 6$	$x_2 = 0.7$

The missing entries in the table are: a. $f[x_0]=1$, $f[x_1]=3$ and $f[x_0,x_1]=5$ c. $f[x_0]=0.1$, $f[x_1]=0.3$ and $f[x_0,x_1]=0.3$ =0.5 $f[x_0] = 2, f[x_1] = 4$ and $f[x_0, x_1] = 6$ d. $f[x_0] = 0.2, f[x_1] = 0.4$ and $f[x_0, x_1]$ b. =0.6

5. Using three-point formula and the following table

J. Using	g unee-poi		tonowing table		-	
1	.4	1.3	1.2	1.1	x	
16.4	14465	13.46374	11.02318	9.025013	f(x)	
the appr a. b.	roximate v 22.012354 20.245874	alue of $f^{\dagger}(1.2) =$		c. 21 d. 22	548120 2.193635	
6 Usin	- 4 1 4		$f^{\prime}(1,0)$	(1) to a with la	0.1 :	
6. Using	g the two-p	Solution formula to app	roximate f (1.8) fc	or $f(x) = mx$ with n	= 0.1 1S:	
a. b	0.3400722	5		c. 0.4	4374834 2654874	
υ.	0.334072.)		u. 0.	2034874	
7. Using a. <mark>b.</mark>	g the Trape 0.325487 <mark>0.228074</mark>	ezoidal rule, the app	1 roximate value of	$\int_{1}^{5} x^{2} dx \text{ is:} \\ \text{c.} 0. \\ \text{d.} 0. \end{cases}$	154872 451230	
8. Using	g Simpson	's rule, the approxir	nate value to $\int_{1}^{1.5} x^2 \ln t$	uxdx is:	182541	
a. h	0.105452			d = 0	192341 192245	
9. The r digit rou a. b.	number π h unding of π 0.31415 0.31416	nas an infinite decin π is:	nal expansion of the	e form $\pi = 3.14159$ c. d.	265, the five- 3.1415 3.1416	
10. If p absolute	10. If $p = 0.3000 \times 10^1$ and the approximate value of p is $p^* = 0.3100 \times 10^1$. Then the absolute error is:					
a.	0.1			с.	0.01	
b.	0.2			d.	0.02	

Algorithms

1. How many spanning trees does the following graph have?



<mark>a. 3</mark>

b. 2

c. 1

d. None of the above

2. Which of the following is not a path from vertex A to vertex E in the digraph?

<mark>a. A, B, D, E</mark> b. A, B, E c. A, C, B, E





3. Let *k* be an integer greater than **1**. Which of the following represents the order of growth of the

 $\sum_{i=1}^{n} k^{i}$

as a function of *n* ?

<mark>a. θ (kⁿ)</mark>

b. θ (kⁿlogn)

c. θ (k^{n logn})

d. θ (k^{2kn})

4. Using Kruskal's algorithm, which edge should we choose second?



a. CD b. AB c. AC d. None of the

d. None of the above

5. The big Oh for the following Algorithm segment is

A= 0 for i=1 to n { for j=1 to I A= A+1 }

a. O(n)b. $O(n^3)$ c. $O(n^2)$ d. non

6. For the following code, the bias of each conditional branch in the code is labeled on the control flow graph to the right. For example, the Boolean expression if_condition evaluates to true on one-half of the executions of that expression.

do
{
 U;
 if (if_condition)



```
{
    V;
    if (break_condition)
    break;
  }
else
  W;
X;
} while (loop_condition);
Y;
What is the expected number of times that U executes?
(A) 1 (B) 1.5
(C) 2 (D) More than 10
```

7. An undirected graph G consists of "4" vertices with equal degrees If the number

of edges = 4, then the degree of each vertex =

a) 16 b) 8 <mark>c) 2</mark> d) 1

8. The number of the edges of a tree with 10 vertices is equal to:

a) 7 b) 9 c) 11 d) 13

9. Which of the following formulas in big-O notation best represent the expression

n²+35n+6?

a. O(n³)

<mark>b. O(n²)</mark>

c. O(n)

d. O(42)

10. What is the worst-case time for serial search finding a single item in an array?

a. O(1)
b. O(n log n)
c. O(n)
d. O(n³)

11. Which of the following algorithms runs in N log N average time but quadratic worst-case time?

- a. insertion sort
- b. merge sort
- <mark>c. quicksort</mark>
- d. shellsort
- **12.** What is the running time of the Heapsort on an array of length *n* that is *already sorted* in increasing or decreasing order?
 - a. Increasing order is $\theta(n \lg n)$, while decreasing order is $\theta(n^2)$
 - b. Both are θ (*n* lg *n*)
 - c. Increasing order is θ (n^2), while decreasing order is θ ($n \lg n$)
 - d. Both are θ (n^2)
- **13.** Suppose the input to Partition algorithm of Quicksort is a set of equal integers. The worst-case time of Partition will be:
 - a. O(1)

<mark>b. O(*n*)</mark>

- c. O(*n* lg *n*)
- d. None of the above
- 14. Suppose the input to Partition algorithm of Quicksort is a set of equal integers. The recurrence equation will be:

 $T(n) = T(n-1) + n \log n$

<mark>c. T(n) = 2T(n/2) + n</mark>

d. T(n) = T(n/2) + n

Data Base

1. Which schema level hides the details of physical storage structures and concentrates on describing entities, relationships and constraints of the whole database?

a. Conceptual (logical) level

b. internal (physical) level

c. external (view) level

d. sea level

2. Physical data independence can be defined as

a. the capacity to change the physical representation and access techniques without having to

change application programs.

b.the capacity to change the logical level without having to change application programs.

c. the capacity to change the view level without having to change application programs.

d. all the above.

3. A weak entity type

a. must have total participation in an identifying relationship

b. does not have a key attribute(s)

<mark>c. both (a) and (b)</mark>

d. none of the above

4. A multivalued attribute A, of an entity E, should be mapped to the relational model by

a. including a column for A in the relation corresponding to entity type E

b. defining a new table with a single column A

c. defining a new table with two columns, one for a and one for the key of E

d. none of the above

5. Concurrency in DBMS means

- a) The restoration of the databases after any type of failure
- b) More than one user can access the same data items at the same time.
- c) More than one user can change the same data item at the same time.
- d) No more than one user can access the same data items at the same time.

6. On an entity-relationship diagram, a diamond represents a(n):

- a. repeating group.
- b. multivalued attribute.
- c. entity.
- d. relationship.

7. A person, place, object, event, or concept in the user environment about which the organization wishes to maintain data refers to a(n):

- a. attribute.
- b. data element.
- c. relationship.
- d. entity.

Data Structures

1. In a linked list implementation of a queue, which of these pointers will change during an insertion into an empty queue ?

- a. Only front-pointer changes.
- b. Only rear-pointer changes.

c. Nither front-pointer nor rear-pointer chanhes.

d. Both pointers change.

2. One difference between a queue and a stack is :

- a. A queue requires dynamic memory, but a stack does not.
- b. A stack requires dynamic memory, but a queue does not.
- c. A queue uses two ends of the linear structure, while a stack uses only one.
- d. A stack uses two ends of the linear structure, while a queue uses only one.

3. A linked stack is full when :

- a. count == max_stack_size
- b. Dynamic memory is full.

c. new' operator fails to allocate new memory.

d. count > max_stack size

4. A linked queue contains exactly one element when :

a. rear == NULL;

b. front == NULL;

c. rear == front;

d. count == 1;

5. Which of the following is not a part of a definition of any ADT :

- a. List of operations that work with objects of a given data type
- b. Name of the operation
- c. Time and memory limits for each operation
- d. Description of the operation parameters and the type of these parameters

6. Which of the following is not an operation in class queue :

<mark>a. PUSH</mark>

- b. RETRIEVE
- c. APPEND
- d. none of the above

7. The average number of comparisons required to insert an element in a dynamic stack of size n is:

a.O(log log n)

b.O(n)

c.O(n log n)

<mark>d. O(1)</mark>

8. The height of the binary search tree is:

a. The number of nodes in the left subtree

- b. The number of nodes in the right subtree
- c. The total number of nodes in the tree

d. The number of nodes on the longest path in the tree

9. The circular queue design is used in implementing:

- a. An array stack
- b. A linked stack
- c. A linked queue
- d. An array queue

Discrete Math

- 1- A theorem $A \Rightarrow B$ is :
- (a) a contradiction statement that can be proved
- (b) a tautological statement that can be proved
- (c) a contingency statement that can be proved
- (d) a contingency statement that cannot be proved

2 - Let $X = \{1, 5, \pi, \sqrt{3}, e, 11\}$ and τ is a partition of X defined by :

 $au = \left\{ \left\{5, \pi, 11\right\}, \left\{1, e\right\}, \left\{\sqrt{3}\right\} \right\}$ then the equivalence relation R

in X produced by τ is

(a) $R = I_X$

(b)
$$R = I_X \bigcup \{ (5,11), (11,5), (5,\pi), (\pi,5), (\pi,11), (1,e), (e,1) \}$$

(c)
$$R = I_X \bigcup \{ (5,11), (11,5), (5,\pi), (\pi,5), (\pi,11), (11,\pi), (1,e), (e,1) \}$$

(d) $R = I_X \cup \{(5,11), (11,5), (\pi,5), (\pi,11), (11,\pi), (1,e)\}$

3 - Let $X = \{a, b, c, d, e, f\}$ and τ is a partition of X defined by :

 $au = \{\{a, b, c\}, \{d, f\}, \{e\}\}$ then the equivalence relation produced by R on X is

(a)
$$R = I_x = \{(a,a), (b,b), (c,c), (d,d), (e,e), (f,f)\}$$

(b) $R = I_X \bigcup \{(a,b), (b,a), (c,b), (b,c), (c,a), (a,c), (d,f), (f,d)\}$

(c)
$$R = I_X \bigcup \{(a,b), (b,a), (c,d), (d,c), (c,e), (e,c), (d,b), (b,d)\}$$

(d)
$$R = I_X \bigcup \{(a,b), (b,a), (c,d), (d,c), (c,f), (f,c), (d,e), (e,d)\}$$

4– Let (A, R) be a partially ordered set , let $a \in A$ then a is greatest element of A if

- (a) $x > a \implies x = a$
- (b) $a \leq x$, $\forall x \in A$
- (c) $x \leq a$, $\forall x \in A$

(d) $x < a \implies x = a$

5- Assume that A is a set and $R \subseteq A \times A$ then R is an equivalence relation in A If and only if :

(a)
$$I_A \subseteq R$$
 (b) $R^{-1} = R$

(c) $R \circ R \subseteq R$ $I_A \subseteq R \land R^{-1} = R \land R \circ R \subseteq R$

6- Assume that (A, R) totally ordered set ,then (A, R) is well ordered set if and only if :

(a) $\forall X \subseteq A , X \neq \phi$, $\exists a \in A : a \leq x$, $\forall x \in X$

(b) $\forall X \subseteq A , X \neq \phi$, $\exists a \in X : a \leq x$, $\forall x \in X$

(c) $\forall X \subseteq A$, $X \neq \phi$, $\exists a \in A : a \ge x$, $\forall x \in X$

(d) $\forall X \subseteq A , X \neq \phi$, $\exists a \in A : x > a \Longrightarrow x = a$

7- If a graph G has n = 21 vertices 5 of them each has degree 6 and the

remaining vertices each has degree 2 then the number of edges of G is :

(a) There is no graph $\,G\,$ with those properties because sum of degrees of all vertices of $\,G\,$ is even

(b) 62

(c) 21

(d) 31

8-Let $A = \{2, 3, 4, 6, 12, 15, 16\}$ and

 $R = \left\{ (x\,,\,y\,)\,,\,x\,,\,y\,\in A\,\,\wedge x\,ig|\,y\,\,\,
ight\}\,\,$, consider Hasse diagram of

the partially ordered set (A, R) :

16 ↑ 8 12 \uparrow \uparrow 4 6 15 \uparrow ↑ 2 3

Let
$$B = \{2, 4, 6, 12\} \subseteq A$$
, then

- (a) Inf $B \wedge Sup B$ are 3, 16
- (b) Inf $B \wedge Sup B$ are 2, 12
- (c) Inf $B \wedge Sup B$ are 12, 15
- (d) Inf $B \wedge Sup B$ is 20
- 9-Let $A = \{2, 3, 4, 6, 12, 15, 16\}$ and

 $R = \left\{ (x, y), x, y \in A \land x \mid y \right\}$, consider Hasse diagram of

the partially ordered set (A, R) :

16 \uparrow 8 12 \uparrow \uparrow 4 6 15 \uparrow \uparrow 2 3

Let $B = \{2, 3, 4, 6, 12, 15\} \subseteq A$, then

- (a) B has greatest element 15
- (b) Least elements of B are 2, 3
- (c) Minimal elements of *B* are 2, 3
- (d) Least element of B is 2

10- Consider the directed graph G = (V, E),



1	then deg	a^+ , de	$eg^{-}d$ ar	e:
(a) 2 , 0				
(b) 3 , 2				
(c) 2 , 2				

(d) 1 , 3

11- Strongly connected graph is :





Information Network Security

1) Which of the following is FALSE about hash functions

- A. Can be applied to any sized message M
- B. Produces fixed-length output h
- ← It is easy to compute h=H(M) for any message M

 \bigcirc Given h, it is feasible to find x, where (H(x)=h)

(2) A dedicated appliance or software running on a device installed between the internal network of a system and public networks (Internet) to forward some packets and filter out others is known as:

A Router

- B. Firewall
- C. Switch
- D. Gateway

(3) Which sequence is correct for the virus operation?

- Dormant, propagation, triggering, execution
- B. Propagation, triggering, execution, dormant
- C. Dormant, execution, triggering, propagation
- D. Dormant, triggering, propagation, execution
- (4) The policy in which the firewall shall drop all packets arrive to it regardless of destination port number they want to communicate with is called:
 - A. Default drop policy
 - B. Default accept policy
 - C. Specified accept policy
 - D. Random drop policy

(5) Digital signature provides_____

- A. Authentication
- B. Nonrepudiation
- Both (A) and (B)
- D. Neither (A) nor (B)

(6) Malicious code embedded in legitimate program is called

- A. Trap door
- B. Logic bomb
- Zombie ہے
- D. Trojan horse
- (7) A piece of self-replicating code attached to some other code is referred to as:
- A. Worms
- (B. Viruses
- C. Zombies
- D. Trapdoors

(8) Which of the following is FALSE about Trojan horse?

A Program with hidden side-effects

B. Activated when specified conditions met

- C. When run performs some additional tasks, for example allowing attacker to indirectly gain access they do not have directly
- D. Used to propagate a virus/worm or install a backdoor
- (9) A virus spreads using E-mail with attachment containing a macro virus is called

A. Macro virus

- B E-mail virus
- C. Worms
- D. Trojan horse

(10) An authentication technique involves the use of a secret key to generate a small fixed-size block of data is known as:

A. Message authentication code (MAC)

- B. Encryption
- C. Decryption
- D. Digital signature
- (11) A secret entry point into a program allows those who know access bypassing usual security procedures is

🕢 <mark>Trap door</mark>

- B. Logic bomb
- C. Zombie
- D. Trojan horse

Internet programming

- 1) Which of the following is not an attribute of the TABLE element?
- (a) WIDTH
- (b) BORDER

(c) CAPTION

- (d) ALIGN
- 2) METHOD = "get" should be used when
- (a) updating a database.
- (b) the form data must be sent as an environment variable.
- (c) special characters must be submitted.
- (d) making a database request.

3) What attribute is always required by the INPUT element?

(a) **TYPE**

- (b) VALUE
- (c) SIZE
- (d) MAXLENGTH

4) Which of the following attributes should always be included in an input element?

- (a) SIZE
- (b) VALUE
- (c) MAXLENGTH

(d) <mark>NAME</mark>

- 5) Which of the following is not a valid input type?
- (a) select
- (b) radio
- (c) checkbox
- (d) password
- 6) _____ was originally created by _____.
- a) JScript, Netscape
- b) JScript, ECMA
- c) JavaScript, Microsoft
- d) JavaScript, Netscape

7) Consider the following script. What is wrong with the following code?

1 <SCRIPT LANGUAGE = "JavaScript">

2 var firstNumber,

3 secondNumber;

4 thirdNumber;

5

6 thirdNumber =

7 parseInt(window.prompt("Enter an integer", 0));

8 document.write(thirdNumber);

9 </SCRIPT>

a) thirdNumber in line 8 must be in quotes.

b) The words Enter an integer in line 7 should not be in quotes.

c) The word **var** must be placed before **secondNumber** in line 3.

d) The word **var** must be placed before **thirdNumber** in line 4.

8) A META element with NAME = "description"

(a) should contain a list of keywords.

(b) is not used by search engines.

(c) should contain a few sentences about the Web site.

(d) is displayed by the browser.

9) Microsoft's version of scripting that uses the Java syntax is called ______.

a) JavaScript

b) JScript

c) ECMAScript

d) J++

10) Which of the following are declared correctly?

a) for (var i=0;i<100;i++) [

statement;

b) for (var i=0;i<100;++I) [

statement;

}

]

```
c) for (var i=0;i<100;+++i) {
```

statement;

}

```
d) for (var i=0;i<100;++i; ) {
```

statement;

}

Java Language

1. What is the result of attempting to compile and run the program?

class A {
 String s1 = "A.s1"; String s2 = "A.s2";
 }
 class B extends A {
 String s1 = "B.s1";
 public static void main(String args[]) {
 B x = new B(); A y = (A)x;
 System.out.println(x.s1+" "+x.s2+" "+y.s1+" "+y.s2);
 }}
a. Prints: B.s1 A.s2 B.s1 A.s2

b. Prints: B.s1 A.s2 A.s1 A.s2

c. Prints: A.s1 A.s2 B.s1 A.s2

d. Prints: A.s1 A.s2 A.s1 A.s2

2. A compile-time error is generated at which line?

class MCZ31 {
 public static void main (String[] args) {
 char a = '\t'; // 1
 char b = '\\'; // 2
 char c = '\''; // 3

```
char d = '\"; // 4
char e = '\?'; // 5
}}
a. 1
b. 2
c. 3
d. 4
```

3. What is the result of attempting to compile and run the program?

```
class MCZ13 {
   public static void main (String[] args) {
     String s = null;
     System.out.print(s);
   }}
a. Prints nothing.
```

b. Prints: null

- c. Compile-time error
- d. Run-time error

4. A compile-time error is generated at which line?

```
class MCZ15 {
    public static void main (String[] args) {
        float a = 1.1e1f; // 1
        float b = 1e-1F; // 2
        float c = .1e1f; // 3
        double d = .1d; // 4
        double e = 1D; // 5
    }}
a. 1
b. 2
c. 4
d. none of the above.
```

5. A class can not be called "tightly encapsulated" unless which of the following is true?

a. The class is declared final.

b. All local variables are declared private.

- c. All method parameters are declared final.
- d. None of the above
- 6. Which class declaration results in a compile-time error?

```
class Z {
    abstract class A {} // 1
    final class B {} // 2
    private class C {} // 3
    protected class D {} // 4
    public class E {} // 5
    }
a. 1
b. 2
c. 3
```

d. None of the above

7. Which of the following is a true statement?

- a. An anonymous class can extend only the Object class.
- b. An anonymous class can not implement an interface.
- c. An anonymous class declaration can not have an implements clause.

d. An anonymous class declaration can name more than one interface in the implements clause

8. Which variable can not be substituted for ??? without causing a compile-time error?

```
class A {
    private static String s1 = "s1";
    final String s2 = "s2";
    A () { new Z("s5","s6");}
    class Z {
        final String s3 = "s3";
        String s4 = "s4";
        Z (final String s5, String s6) {
            System.out.print(???);
        }}
    public static void main(String args[]) {new A();}
    }
a. s1
b. s2
```

c. s3

d. None of the above

9.In a linked list implementation of a queue, which of these pointers will change during an insertion into an empty queue ?

- e. Only front-pointer changes.
- f. Only rear-pointer changes.
- g. Nither front-pointer nor rear-pointer chanhes.
- h. Both pointers change.

10.

```
class MWC201 {
  public static void main(String[] args) {
    int[][] a1 = {{1,2,3},{4,5,6},{7,8,9,10}};
    System.out.print(a1[0][2]+","+a1[1][0]+","+a1[2][1]);
}
```

What is the result of attempting to compile and run the program?

a. Prints: 3,4,8

- b. Prints: 7,2,6
- c. Compile-time error
- d. Run-time error

11. package com.dan.chisholm;

```
public class A {
  public void m1() {System.out.print("A.m1, ");}
  protected void m2() {System.out.print("A.m2, ");}
  private void m3() {System.out.print("A.m3, ");}
  void m4() {System.out.print("A.m4, ");}
}
class B {
  public static void main(String[] args) {
    A a = new A();
    a.m1(); // 1
    a.m2(); // 2
    a.m3(); // 3
    a.m4(); // 4
}}
```

Assume that the code appears in a single file named A.java. What is the result of attempting to compile and run the program?

- a. Prints: A.m1, A.m2, A.m3, A.m4,
- b. Compile-time error at 1.
- c. Compile-time error at 2.
- d. Compile-time error at 3.

Logic Design

- 1- The simplified expression of full adder carry is
- A. c=xy+xz+yz
- B. c=xy+xz
- C. c=xy+yz
- D. c=x+y+z
- 2- Full adder performs addition on
- A. 2 bits
- B. <mark>3 bit</mark>s
- C. 4 bits
- D. 5 bits

3-The SR latch consists of

- A. 1 input
- B. <mark>2 inputs</mark>
- C. 3 inputs
- D. 4 inputs

4-The outputs of SR latch are

- A. x and y
- B. a and b
- C. s and r
- D. q and q'

5-The inputs of SR latch are

A. x and	y
----------	---

- B. a and b
- C. s and r
- D. j and k

6-Enable input of the shift register is called a

Α.	<mark>load</mark>	B. store
C.	reset	D. strobe

7-A circuit that converts n inputs to 2ⁿ outputs is called

- A. encoder
- B. decoder
- C. comparator
- D. carry look ahead

8-Encoders are made by

Δ	oate
A .	Suc

- B. OR gate
- C. NAND gate
- D. XOR gate

9-Decoder is a

- A. combinational circuit
- B. sequential circuit
- C. complex circuit
- D. gate

10-The subtraction of two binary numbers is done by taking complementing

- A. output
- B. subtractor
- C. subtrahend
- D. remainder

11-Subtraction with subtract or is same as done with

- A. adder
- B. adder subtractor
- C. multiplier
- D. divider

12-When the mode of adder/subtractor is 1 it

- A. adds
- B. subtracts
- C. divides
- D. multiplies

13-When the mode of adder/subtractor is 0 it

A. adds

- B. subtracts
- C. divides
- D. multiplies

Operating Systems

1.What is operating system?

a) collection of programs that manages hardware resources

b) system service provider to the application programs

c) link to interface the hardware and application programs

d) all of the mentioned

2. Which one of the following is not true?

- a) kernel is the program that constitutes the central core of the operating system
- b) kernel is the first part of operating system to load into memory during booting
- c) kernel is made of various modules which can not be loaded in running operating system
- d) kernel remains in the memory during the entire computer session

3. In operating system, each process has its own

a) address space and global variables

b) open files

- c) pending alarms, signals and signal handlers
- d) all of the mentioned

4. A process can be terminated due to

- a) normal exit
- b) fatal error
- c) killed by another process
- d) all of the mentioned

5. Which process can be affected by other processes executing in the system?

a) cooperating process

b) child process

- c) parent process
- d) init process

6. Which one of the following is a synchronization tool?

a) thread

b) pipe

<mark>c) semaphore</mark>

d) socket

7. The number of processes completed per unit time is known as ______.

a) Output

<mark>b) Throughput</mark>

c) Efficiency

d) Capacity

8. When the process issues an I/O request :

a) It is placed in an I/O queue

- b) It is placed in a waiting queue
- c) It is placed in the ready queue
- d) It is placed in the Job queue

9. If all processes I/O bound, the ready queue will almost always be _____, and the Short term Scheduler will have a _____ to do.

a) full,little

b) full,lot

<mark>c) empty,little</mark>

d) empty,lot

10. Restricting the child process to a subset of the parent's resources prevents any process from :

a) overloading the system by using a lot of secondary storage

b) under-loading the system by very less CPU utilization

c) overloading the system by creating a lot of sub-processes

d) crashing the system by utilizing multiple resources

11. The main disadvantages of Operating system regarding the batch systems is

- a. It has leak in memory
- b. Its electronic devices is slower than its mechanical devices

- c. It uses card reader
- d. It does one task at a time

12. In Operating Systems the system calls mainly task

- a. Handling all the deadlock problems
- b. Give the priority for routing algorithms
- c. Creation any sub-process
- d. Provide the interface between currently running processes and the OS

13. Which of the following scheduler controls the degree of multiprogramming?

- a. CPU scheduler.
- b. Short-term scheduler.
- c. Job scheduler. "Long Tem-Scheduler"
- d. Medium-term scheduler

Network Planning and Administration

Q1 - Which of the following operating systems is (are) open source

- A. Mac OS ver. 10.6
- B. Solaris Ver. 10
- C. MS 2008 R12
- D. All the above

Q2 - Which of the following is a function of DHCP

- a- Assign IP addresses
- b- Assign Physical Addresses
- c- Assign Port addresses
- d- All the above

Q3 - Which of the following procedures is (are) part of the postinstallation process

- a. Set the computer name
- b. Configure the IP address
- c. Add roles and features
- d. All of the above

Q4 – When you buy server OS, Microsoft requires _____ (CAL).

- a. Configuration AD List
- b. Client Access List
- c. Client Access License
- d. Creation of AD License

Q5 – A Domain Controller (DC) is a server

- a) allowing users in the network to run and use web applications
- b) that is responsible for allowing host access to domain resources
- c) used to store websites
- d) Not a part of AD

Multi Media Networks

- 1 Which of the following is NOT TRUE in streaming live multimedia?
 - A Internet radio talk show is an example of streaming live multimedia
 - B Rewind and pause are possible
 - C Fast forward is possible
 - D It requires playout buffer
- 2 An analog signal is sampled for 32 seconds at constant rate of 8000 samples/sec with 16-bit per sample, what is the size of the generated data?
 - A 500 MB
 - B 500 KB
 - C 160 KB
 - D 300 Byte
- 3 How server handles different client receive rate capabilities?
 - A Server sends data according to minimum receive rate.
 - B Server sends data according average receive rate.
 - C Server sends data according to maximum receive rate.
 - D Server stores, transmits multiple copies of video, encoded at different rates.
- 4 Which of the following is an example of real-time interactive MM application?
 - A PC-2-PC phone
 - B PC-2-phone
 - C Videoconference with Webcams
 - D All of the above

5 Which of the following is NOT TRUE about packet loss and delay on Internet phone?

- A IP datagram lost due to network congestion (i.e., router buffer overflow)
- B Packet loss is not acceptable on Internet Phone.
- C Typical maximum tolerable delay is 400 msec
- D Packet loss rates between 1% and 10% can be tolerated.

6 Which of the following is FALSE about SIP?

- A All telephone calls and video conference calls take place over the Internet.
- B People are identified by names or e-mail addresses.
- C People are identified by phone numbers.
 - D Can reach the callee, no matter where the callee roams, no matter what IP device the callee is currently using.
- 7 FIFO scheduling means :

- A Randomly choose next packet to send on link
- B Send packets in order of arrival to queue
- C Send the last packets first
- D None of the above

8 The priority discards policy means if packet arrives to full queue

- A Drop all arriving packet
- B Drop/remove on priority basis
- C Drop/remove randomly
- D Transmit highest-priority queued packet

9 Which of the following is FALSE about WFQ

- A Stands for Weighted Fair Queuing.
- B Generalized Round Robin.
- C Cyclically scan class queues, serving one from each class (if available)
- D Each class gets weighted amount of service in each cycle.

10 Which of the following is true regarding MM networking applications?

- A loss intolerant and delay intolerant
- B loss intolerant and delay tolerant
- C loss tolerant and delay intolerant
- D loss tolerant and delay tolerant

11 In a fixed playout delay of *q* msec:

- A large *q* means less packet loss
- B large *q* means more packet loss
- C q has no effects on the packet loss
- D small *q* means bad interactive experience

12 The simple FEC technique usually send _____, where *n* is the number of chunks.

- A 2ⁿ
- B *n*
- C *n* + 1
- D n-1

13 The interleaving technique for recovery from packet loss usually has

- A redundancy overhead
- B no redundancy overhead
- C no playout delay
- D decrease playout delay

System Analysis and Design:

1. Which of the following Information systems are aimed at improving the routine business activities on which all organizations depend?

- (a) Management Information systems
- (b) Decision support systems
- (c) Transaction processing systems

- (d) Management support systems
- (e) Transaction Information systems.

2. Which of the following strategies are adopted if information requirements are not well-defined?

- (a) Rapid application development method
- (b) Structured analysis development method
- (c) Systems development life cycle method
- (d) Prototyping method
- (e) Spiral method.

3.Structured Programming involves:

- (a) functional modularization
- (b) localization of errors
- (c) decentralized programming
- (d) stress on analysis
- (e) stress on requirements gathering.

4. Which of the following is not a fact-finding technique?

(a) Third party enquiry

- (b) Interview
- (c) Questionnaire
- (d) Record reviews
- (e) Observation.

5. Which of the following questions are useful in evaluating data flow diagrams?

- (a) Are there any unnamed components in the data flow diagram?
- (b) Are there any processes that do not receive input?
- (c) Are there any data stores that are input but never referenced?
- (d) Both (a) and (b) above
- (e) All (a), (b) and (c) above.

6. In system design and development field what does spaghetti code mean?

- (a) programs written in unstructured languages.
- (b) well structured and well documented code.
- (c) program code that has many GOTO statements.
- (d) Both (a) and (c) above
- (e) Both (b) and (c) above.

7. Which of the following statements is false with respect to a Data Dictionary?

(a) It is a repository of the elements in a system.

(b) data dictionary and data store both are same

- (c) It manages detail
- (d) It communicates the common meanings for system elements and activities.
- (e) It documents system features.

8. Match the following and select the correct options given under

- i) physical design A) Documentation
- ii) interview B) Type of output
- iii) Input design C) defines design specifications that are to be coded
- iv) Installation procedure D) a data gathering technique

v) report E) Identification and design of interfaces to enter data

(a) i-D, ii – A, iii-B, iv – C, v- E (b) i-C, ii – D, iii-E, iv – A, v- B (c) i-A, ii – D, iii-B, iv – C, v- E (d) i-D, ii – A, iii-E, iv – B, v- C (e) i-B, ii – A, iii-D, iv – C, v- E.

9. Cost-Benefit Analysis is performed during

- (a) Analysis phase
- (b) Design phase
- (c) Feasibility study phase
- (d) Implementation phase
- (e) Maintenance phase.

COMPUTER ORGANIZATION AND ARCHITECTURE

1. Which of the following register points to the address of next instruction to be executed a) IP register b) BX register c) SP register d) AX register 2. Which of the following defines a constant Max (a) Max db 80 (b) Max equ 80 (c) Max dw 80 (d) mov Max, 80 3. The effect of the following code mov Ah.1 int 21h is to (a) read a character into AL (b) read a character into DL (c) display the character in AL (d) display the character in DL 4. The physical address is (10350 h) and the content of (IP= 350 h), The content of CS will be a) 10000h b) 3A67h <mark>c) 1000h</mark> d) 650h 5. The Program that write by a programmer contains: a) Data Segment and Code Segments Only.

- b) Stack Segment and Data Segments Only.
- c) Stack and Code Segments.
 - d) stack segment only

6. The Maximum numbers of bytes allowed for the programmer

- to be written in one code segment is:
- a) 128 Kbyte

b) 32 Kbyte

c) 256 Kbyte d) 64 Kbyte 7. State which of the following buses is unidirectional a) data bus b) control bus c) address bus d) data + control 8. which of the following register can be divided into two half's a) CS b) IP c) SP d) Bx 9. Which of the following is an 8086 instruction that clears the content of Ax? a) Mov Ax, 1 b) ADD Ax, Ax c) Xor Ax,Ax d) Or Ax, Ax 10. Which of the following an 8086 instruction clear the MSB of Ax ?

a) Or Ax, 7FFFh b) Test Ax, 7FFFh

c) Sub Ax, 7FFFh

d) AND Ax, 7FFFh

Securing Electronic Transactions

- 1. Which of the following protocols allows the server and client to authenticate each other and to negotiate an encryption and MAC algorithm and cryptographic keys to be used to protect data sent in an SSL record?
 - A. Handshake protocol
 - B. Change cipher spec protocol
 - C. Alert protocol
 - D. HTTP protocol
- 2. The segment of security management that deals with real-time monitoring, correlation of events, notifications and console views is commonly known as
 - A. Security Information Management (SIM)
 - B. Security Event Management (SEM)
 - C. Security Information and Event Management (SIEM)
 - D. Secure socket Layer (SSL)
- 3. The SEIM capability that looks for common attributes, links events together into

meaningful bundles, and turns data into useful information, is called

A	Data Aggregation
В	Correlation
С	Alerting
D	Compliance

4. The technology that provides real-time analysis of security alerts generated by network hardware and applications, and it comes as software, appliances or managed services, is called

А	SIEM
В	SIM
С	SEM
D	SSL

- 5. Which of the following can be considered as a driver of E-commerce security problems
 - A The Internet's vulnerable design
 - B The Shift to Profit-Induced Crimes
 - C Internet underground economy
 - D All of the above

6. Intentional crimes carried out on the Internet is known as:

- A Fraud
- B Hacking
- C Cybercrime
- D Phishing

7. Someone who gains unauthorized access to a computer system is called:

- A Cyber criminal
- B Hacker

- C Cracker
- D Phisher
- 8. A huge number (e.g., hundreds of thousands) of hijacked Internet computers that have been set up to forward traffic, including spam and viruses, to other computers on the Internet is known as:
 - ABotnetBSpywareCE-mail spam
 - D Spam site
- **9.** A trusted agent who certifies public keys for general use (Corporation or Bank) is called:
 - A Digital signature
 - B Hash function
 - C Certification authority
 - D Web-of-Trust

10. The SSL protocol inserts itself between

- A The application layer and the transport layer
- B The transport layer and the network layer
- C The application layer and the network layer
- D The network later and the data link layer

IDCN

1) Which of the following is a port address?

- a) 123
- b) P123
- c) 01111011
- d) C4

2) Which of the following is a reliable protocol?

- a) IP
- b) TCP

- c) UDP
- d) All the above

3) Cable is used for voice and data communications with minimum cost is

- A) Twisted pair.
- B) Coaxial.
- C) Fiber Optic.
- D) None of the above.

4) Bit interval is a term that is used to describe:

- A) The time required to send one single bit
- B) The number of bits sent in one second
- C) The rate at which the signal repeats
- D) The amount of time it takes for one repetition

Software Engineering:

1-What happens in the maintenance stage of the Software Development Life Cycle (SDLC)?

- a. Change the software according to new customer requests
- b. Define the main structure of the code
- c. Write software code
- d. Make sure that the code meets requirements

2-Project management concerns with activities of scheduling and cost.

- a. True
- b. False

3-Maintenance to adapt the software to a different operating environment is called: corrective maintenance.

- a. True
- b. False

4-Which of the following statements is correct about CASE?

a. CASE tools are software programs.

- b. CASE tools do not allow the translation of system models into programs.
- c. CASE products require high performance machines.
- d. CASE tools complicate the system development process.

5-What happens in the design stage of the Software Development Life Cycle (SDLC)?

- a. Analyze requirements
- b. Make sure that the code meets requirements
- c. Collect requirement from stakeholders
- d. Decide the best solution for the collected requirement

6-A deliverable is an end-point of a software process activity.

- a. True
- b. False

7-In which phase of the software development life cycle requirements specification document is written?

- a. implementing System
- b. Requirements Engineering
- c. Designing the System
- d. Testing and Maintaining the System

8-Which statement about a prototype is true?

- A. It is a functional model of the entire system.
- B. It is the complete untested product ready for final review by the customer.
- C. It is necessary in order to verify that the software is progressing according to what the customer wants.
- D. It is an executable file for the entire system

9- Which of the following techniques is used to elicit requirements?

- A. Scenarios
- B. Object model
- C. Functional model
- D. System Model

10- Which statement best describe a meaning of "waterfall" life cycle model.

A. When a phase in the lifecycle is executed continuously without stop.

B. When a phase in the lifecycle iterates like a ring on the spiral, moving outward

from the center.

C. When a phase in the lifecycle overlapping with each others.

D. When a phase in the lifecycle is completed, the results fall down to the next phase and there is no going back.

11- Project risk factor is considered in ?

- A. Iterative enhancement model
- B. Prototyping model

C. Spiral model

D. Waterfall model

12- Techniques developed to keep the analysis effort minimal, yet still effective include:

A. JAD

- B. interviewing
- C. observations
- D. quiz sessions

Visual Programming:

1) Which is true about the name and text property of a control?

- A. The text property changes to match any changes in the name property.
- B. They are the same when the control is first created.
- C. They are never the same unless the programmer makes it that way.
- D. The name property changes to match any changes in the text property.

2) An object is composed of:

- A. Properties
- B. B. Events
- C. Methods

D. All of the above

3) Which statement about objects is true?

- A. One class is used to create one object.
- B. One class can create many objects.
- C. One object is used to create one class.
- D. One object can create many classes.

4) Using a ______ variable does not enable us to create read-only properties that are often required by a class.

- A. private
- B. public
- C. Friend
- D. protected

5) A _____ performs invisible tasks even if you write no code.

- A. Destructor
- B. constructor
- C. Function
- D. private method

Technical Writing

1. Editing for consistency and accuracy is performed during:

- a. Planning phase
- b. Drafting phase

c. Finalizing phase

d. None

2. The three elements in problem statement are:

a. Planning, organization, and managing

b. The problem, the method of solving, and the purpose

c. Audience, scope, solving methodology

d. None is correct

3. Audience considerations when writing a document:

- a. Audience type and expertise
- b. Audience purpose in using the document

c. Audience attitude

d. All are correct

4. The rate of information presented to the reader is:

a. Document density

b. Document details

- c. Document complexity
- d. All are correct

5. The part of memos which is used to outline the message in a very accessible and transparent way is:

a. Heading

<mark>b. Body</mark>

c. Detail

d. None is correct