CS Program

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) LTE
C) HSPA
D) HSPA+

Q 4: UMTS technology does not use Internet Protocol

□ Yes □ **No**

Q 5: In CDMA all users' data transmitted simultaneously over one channel .

□ **Yes** □ No

Q 6: Loss of data is one of wireless technology disadvantage.

□ **Yes** □ No

CG

1) The Rotation Matrix to apply a rotation around (0,0) by ϕ degree:

a. $\begin{bmatrix} cos\emptyset & -sin\emptyset & 0 \\ sin\emptyset & cos\emptyset & 0 \\ 0 & 0 & 1 \end{bmatrix}$

b. $\begin{bmatrix} -cos\emptyset & sin\emptyset & 0 \\ sin\emptyset & -cos\emptyset & 0 \\ 0 & 0 & 1 \end{bmatrix}$

c. $\begin{bmatrix} sin\emptyset & -cos\emptyset & 0 \\ cos\emptyset & -sin\emptyset & 0 \\ 0 & 0 & 1 \end{bmatrix}$

d. $\begin{bmatrix} 1/cos\emptyset & 1/sin\emptyset & 0 \\ 1/sin\emptyset & 1/cos\emptyset & 0 \\ 0 & 0 & 1 \end{bmatrix}$

2) S^{-1} Scaling Matrix (Used to return the object to its original size):

a. $\begin{bmatrix} 1/sx & 0 & 0 \\ 1 & sy & 0 \\ 0 & 0 & 1 \end{bmatrix}$

b. $\begin{bmatrix} 1/sx & 0 & 0 \\ 0 & 1/sy & 0 \\ 0 & 0 & 1 \end{bmatrix}$

c. $\begin{bmatrix} -sx & 0 & 0 \\ 0 & -sy & 0 \\ 0 & 0 & 1 \end{bmatrix}$

d. $\begin{bmatrix} sx & 0 & 0 \\ sy & 0 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

3) Vector graphics are most suitable for
   a. Dot Matrix Printers
   b. Limited Storage Devices
   c. Electrical Engineer Maps
   d. All of the above

4) One of the following is not a coloring system:
   a. HIS
   b. RGB
   c. CMY
   d. SMK

5) An Object rotated around origin by ϕ1 degrees then rotated again ϕ2 degrees the final coordinates of the object can be calculated using one rotation of angle:
   a. ϕ1+ ϕ2
   b. ϕ1- ϕ2
   c. ϕ* ϕ2
   d. 1/ (ϕ1+ ϕ2)

6) One of the raster scan characteristics:
   a. Zoom independent
   b. Zoom dependent
   c. Real images are low quality
   d. Stored using instructions and commands

7) The final coordinates of point(2,6) after reflection around y-axis:
   a. (-2,6)
   b. (2,-6)
   c. (-2,-6)
   d. (6,2)

8) Enlarging an object uniformly to its double size then shrinking it to its half size is equivalent to scaling the object using:

a. none of above

b. sx = 1 , sy = 1

c. sx=2 , sy =2

d. sx = 0 , sy = 0

9) P_1 value in drawing the line (10, 9) (20, 15) using Beresenham's Alg.

a. 14
b. -6
c. 10
d. -2

10) The First pixels plotted for (4, 4) 40 Circle using Midpoint circle drawing alg.

a. (0, 40)
b. (0, 4)
c. (4, 44)
d. (4, 8)

11) Third point in the Line (10, 9) (20, 15) using DDA Alg.

a. (10, 10)
b. (11, 10)
c. (12, 10)
d. (12, 11)

12) The size of a 50X50 RGB image is__

a. 7.5KB
b. 60KB
c. 7.5 Kb
d. 2.5Kb
ans(a)

13) Knowing that a World Window with coordinates(2,5), (12,20) and a View Port with coordinates(1,2),(6,10):
if Xw =2 will be converted into Xv=?

a. 10

b. 1

c. 2

d. 0

14) Knowing that a clipping window coordinates (16,5),(25,15):

Which of the following points will be (removed) from the displaying window
p1 (16,5), p2 (20,11), p3 (19,20)

a. P1

b. P3

c. P1 and P2

d. P1 and P3

Programming Languages Design

Q1) A common way to define a programming language's syntax is to use a

A. binary tree
B. Binary search trees
C. context free grammar
D. regular grammars

Q2) which of following statement(s) hold(s) :

A. The first Programming Language for Scientific Applications was LISP
B. The first Programming Language for Scientific Applications was Fortran
C. The first widely used language for AI application the functional Programming Language PROLOG
D. none

Q3) Let A, B, C be char then the following expression

```
C = A+B;
```

A. represents a safe expression
B. not safe because character are not structure type compatible
C. the value of C cannot exceed 256
D. not safe

Q4) Attribute grammars are typically used to

A. Handle left-recursion.
B. Handle language features which context-free grammars can not.
C. Prove program correctness.
D. Compile grammars into efficient tables.

Q5) which of following statement(s) hold(s):

A. Type Checking is not important factor in language reliability.

B. Exception handling is the ability of a program to intercept run-time errors, and taking corrective measures and then to continue
C. Run-Time Type checking is expensive
D. B and C

Q6) Multiplicity means

A. Having more than one way to encode a particular problem
B. Having more than one way to multiply two numbers in Programming language
C. The following statements represent an example for multiplicity in C++:

```
count = count +1;
count +=1;
count++;
++count;
```

D. A and C

Q7) What happens in an assignment such as ``x := y'' ?

A. The address of x is modified to be the address of y
B. The address of y is modified to be the address of x
C. The object bound to y is copied and bound to x, and any previous binding of x to an object is lost
D. x and y become aliases

Q8) Analyze the following Pascal code segment to decide which of following statements is(are) correct:

```
var Z: array [1..10] of integer;
Y: array [1..10] of integer;

Let also be:
type f = array [1..9] of integer;
var b: f; a: f;
```

A. Z and Y are name type compatible
B. "b" and "a" are name type compatible
C. "a" and "b" can only be type checked to compatibility using structural type checking
D. A and B

Q9) Consider the following case in PHP using Dynamic Type Binding (1P)

```
list = [2, 4.33, 6, 8];    //case-1

list = 15.3;               // case-2
```

A. list is in case-1 scalar
B. list is in case-2 scalar
C. case-2 in dynamic Binding not allowed
D. none=

Q10) Decide the meaning of the following BNF syntactical rule:

<A> → B {<stmt}$^{+}$ E

A. "A" is any expression which starts with "B" but it ends with "E"
B. "A" is an expression which starts with "B" followed by any number of "stmt" and ends with "E"
C. "B" "E" is an expression can be generated from "A"
D. "E" "B" is an expression can be generated from "A"

Computation Theory

1) Consider the following CFG:

S → AbAbA
A → aA | λ

What is the regular expression for the language defined by the above CFG?

A) b*ab*ab*
B) a*b*a*b*a*
C) (a*ba*ba*)*
D) a*ba*ba*

2- Which string can be generated by this regular expression a*ba*(ba*ba*)* ?

A) aaabb
B) abbab
C) baabbb
D) bababab

3- Consider the following CFG:

S → a S | bB | λ
B → aB | bS | bC
C → aC | λ

What is the language defined by the above CFG?

A) All words with an even number of a's.
B) All words with an odd number of b's.
C) All words with an even number of b's.
D) All words with an odd number of a's.

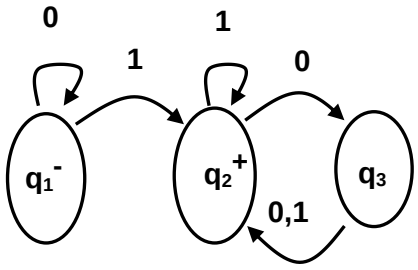
4- Which machine has a program component?

A) Push Down Automata
B) Finite Automata
C) Turing Machine
D) Transition Graph

5-The following FA accepts

A) 001000
B) 10010001

C) 111000110
D) 10101010
E) 010101110



6. Consider the language defined by the regular expression

b* (abb*)* (λ + a) .

This is the language of

[A] all words with a double **b**
[B] all words without a double **b**
[C] all words with a double **a**
[D] all words without a double **a**

7. If L = {λ, 0, 00, 000,…} over the alphabets {0,1}, then the regular expression is
[A] 0*
[B] 00*
[C] (0,1)*
[D] None of the above

8. If L = { all the strings of 0's and 1's of length three } then the regular expression for this language is
[A] (0+1)*
[B] (01)*
[C] (0+1)(0+1)(0+1)
[D] All of the above

9. If L = { the language of words with at least two a's } then the regular expression of this language is
[A] (a+b)* ab*ab*
[B] b*a(a+b)*ab*
[C] All of the above
[D] None of the above

10. The regular expression a*b is equivalent to
[A] (a+b)*b
[B] a (aa)* (λ + a)b + b
[C] (a*+b)*b
[D] None of the above

Multi Media Programming

1. The Entropy of (128) equal probable symbols is:
b) 10 bits
c) 7 bits
d) 4 bits
e) 8 bits
f) 6 bits

2. The block in B-targeted frame can be derived from
a. From previous B-Frame and next P-Frame
b. From previous I or P frame and next B-Frame
c. From previous P or I frame only
d. From previous I or P frame and next P frame
e. None of the above

3. For YCbCr color system, the human visual system is less sensitive to ?

a) Cr channel
b) Both Cr and Cb channels
c) Y channel
d) Both Y and Cr channels
e) Cb channel

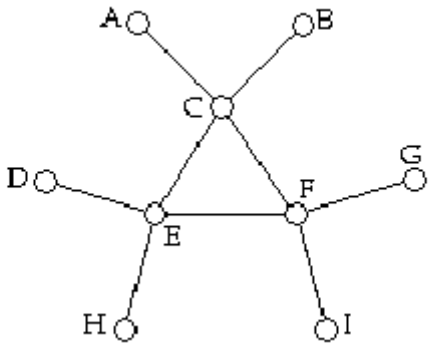
4. To reduce the quantization error
a) Increase the number of bit/ sample
b) Increase the number of Channels
c) Decrease the sampling rate
d) b and c together
e) None of the above

5. The image size, for 30X20 monochrome (1 bit/pixel) is

a) 4800 bits
b) 600 bits
c) 300 bits
d) 1800 bits
e) 900 bits

Algorithms

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



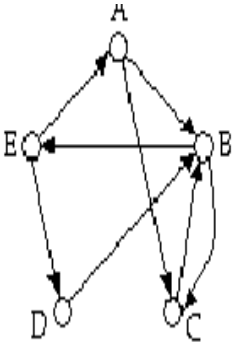
a. 3

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?



a. A, B, D, E

b. A, B, E

c. A, C, B, E

d. A, B, 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* ?

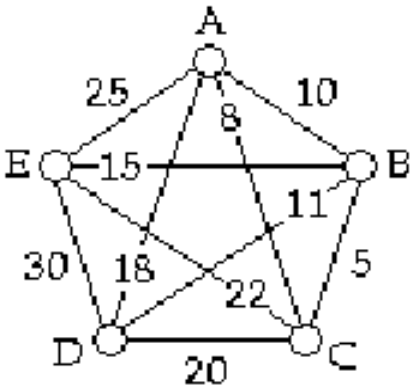
a. $\theta(k^n)$

b. $\theta(k^n \log n)$

c. $\theta (k^{n \log n})$

d. $\theta (k^{2kn})$

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



a. CD
b. AB
c. AC
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

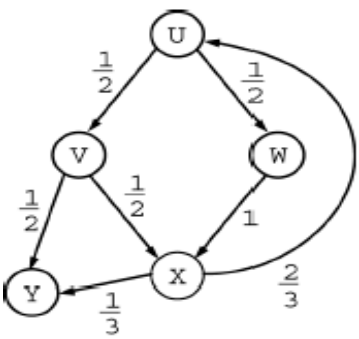
6. For the following code, the bias of each conditional branch in the code is labeled on the control flow graph to the right. For example, the Boolean expression if_condition evaluates to true on one-half of the executions of that expression.

```
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
c) 2
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 $n^2+35n+6$?

a. $O(n^3)$

b. $O(n^2)$

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. $O(n^3)$

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

a. insertion sort
b. merge sort
c. quicksort
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 $\theta(n \lg n)$

c. Increasing order is $\theta(n^2)$, while decreasing order is $\theta(n \lg n)$

d. Both are $\theta(n^2)$

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)

b. O(*n*)

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:

a $T(n) = T(n-1) + n$

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

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

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)

c. both (a) and (b)

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 :

a. PUSH

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)

d. O(1)

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 :

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

in X produced by τ is

(a) $R = I_X$

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

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

(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 :

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

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

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

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

(a) $x > a \Rightarrow x = a$

(b) $a \le x \ , \ \forall x \in A$

(c) $x \le a \ , \ \forall x \in A$

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

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) $R \circ R \subseteq R$

(d) $I_A \subseteq R \wedge R^{-1} = R \wedge R \circ R \subseteq R$

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

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

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

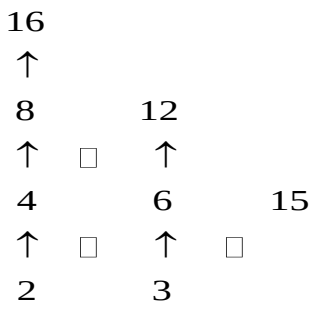
(b) 62

(c) 21

(d) 31

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

$R = \{(x\ , y\ )\ ,\ x\ , y\ \in A\ \wedge x \mid y\ \ \}$, consider Hasse diagram of the partially ordered set $(A\ ,\ R)$:



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 $2\ ,\ 12$

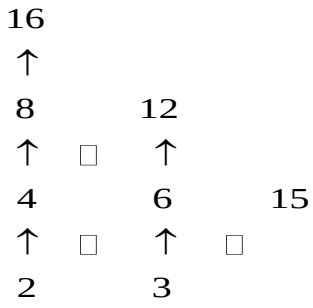
(c) $Inf\ B \ \wedge\ Sup\ B$ are $12\ ,\ 15$

(d) $Inf\ B \ \wedge\ Sup\ B$ is 20

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

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

the partially ordered set $(A\ ,\ R)$:



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

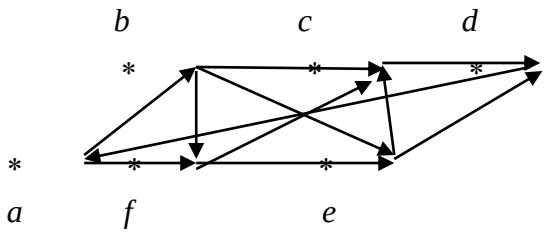
(a) B has greatest element 15

(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 $G=(V\ ,E)$,



then $\deg^{+}a$, $\deg^{-}d$ are:

(a) $2\ ,\ 0$

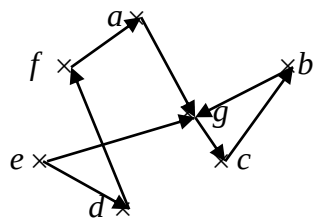
(b) 3 , 2

(c) 2 , 2

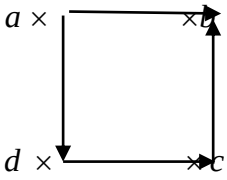
(d) 1 , 3

11- Strongly connected graph is :

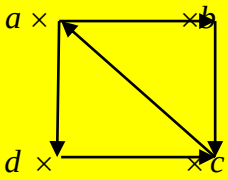
(a)



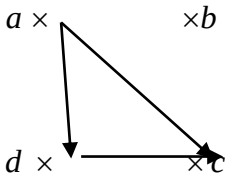
(b)



(c)



(d)



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
C. It is easy to compute h=H(M) for any message M
D. 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?**

A. 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
C. Both (A) and (B)
D. Neither (A) nor (B)

(6) **Malicious code embedded in legitimate program is called**

A. Trap door
B. Logic bomb
C. Zombie
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**

A. Trap door
B. Logic bomb
C. Zombie
D. Trojan horse

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. 3 bits
C. 4 bits
D. 5 bits

3-The SR latch consists of

A. 1 input
B. 2 inputs
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

A. load
B. store
C. reset
D. strobe

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

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

8-Encoders are made by

A. AND gate
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
c) semaphore
d) socket

7. The number of processes completed per unit time is known as _____.
a) Output
b) Throughput
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
c) empty,little
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

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.

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) **NAME**

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.

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
c) 1000h 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

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

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

b. Body

c. Detail

d. None is correct

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