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 ɸ1 degrees then rotated again ɸ2 degrees the final coordinates of the object can be calculated using one rotation of angle:
   a. ɸ1+ ɸ2
   b. ɸ1- ɸ2
   c. ɸ* ɸ2
   d. 1/ (ɸ1+ ɸ2)

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"

Computer 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
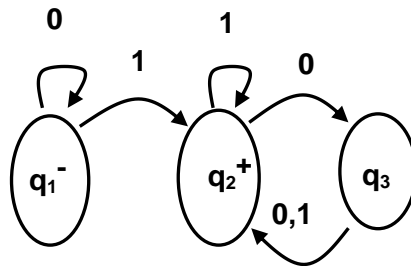
What is the language defined by the above CFG?

   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) <mark>10010001</mark>
   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**
<mark>[D] all words without a double **a**</mark>

7. If L = {λ, 0, 00, 000,…} over the alphabets {0,1}, then the regular expression is
<mark>[A]   0*</mark>
[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)*
<mark>[C] (0+1)(0+1)(0+1)</mark>
[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
<mark>[A] (a+b)* ab*ab*</mark>
[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