Q1. Choose the proper selection for the following statements. (30 Marks)

No	Statement	Selection
1	A plateau is a ---------- A) Search strategy B) Representation method C) Hill climbing problem D) Resolution method	
2	A partial ordered relation is transitive, reflexive and ---------- A) Antisymmetric B) Bisymmetric C) Antireflexive D) Asymmetric	
3	Misspelling an identifier, keyword or operator is a ---------- error. A) Semantic B) Lexical C) Syntax D) Three addresses	
4	Variable name should be inserted into the symbol table during --------- phase. A) Semantic B) Intermediate code generation C) Lexical D) Syntax	
5	SIMD represents an organization that includes many ---------- under the supervision of a common control unit. A) Memory locations B) Processing units C) Microprocessor D) Caches	
6	PSW is saved in stack when there is ----------. A) Interrupt recognized B) Call for subroutine C) Jump to subroutine D) All	
7	Cache memory works on the principle of _----------. A) Locality of data B) Memory references C) Transfer rate D) Hit ratio	
8	Which of the following is a problem of file management system? A) Difficult to update B) Data redundancy C) Program dependence D) All	
9	A scheduler which selects processes from secondary storage device is called ----------. A) Short term scheduler B) Long term scheduler. C) Medium term scheduler. D) Process scheduler.	
10	The scheduling in which CPU is allocated to the process with least CPU-burst time is called ------ A) Priority Scheduling. B) Shortest job first Scheduling. C) Round Robin Scheduling. D) Multilevel Queue Scheduling.	
11	This secure method for authenticating a request for a service in a computer network was developed in the Athena Project at the Massachusetts Institute of Technology. A) AES B) Automated Fingerprint Identification System C) Internet Key Exchange D) Kerberos	
12	What is a common threat to token-based access controls? A) The key B) Demagnetization of the strip C) A system crash D) Loss or theft of the token	
13	In a class specifier, data or function designated private are accessible A) To any function in the program B) To any function in the program C) Only to public members of the class D) None	
14	The ascending order of a data hierarchy is: A) bit-byte-record-field-file-database B) byte-bit-field-record-file-database C) bit-byte-field-record-file-database D) bit-byte-file-record-field-database	
15	Aspect ratio is: A) The ratio of image's width to its height B) The ratio of window to viewport height C) The ratio of image's intensity levels D) The ratio of image's height to its width	

16	The purpose of display processor is …….. from the graphics routine task? A) To free the CPU B) To free the secondary memory C) To free the main memory D) Both A & C	
17	In a known plaintext attack the attacker knows A) Predetermined selected ciphertext B) One plaintext and one key C) Predetermined selected plaintext D) Plaintext and ciphertext	
18	A typical intermediate round in AES encryption consists of the steps: Substitute bytes; ---------- and ---------- . A) Shift rows and Mix columns B) Mix rows and Shift columns C) Shift rows, Mix columns and Add round key D) Shift rows, Mix columns and Expand key	
19	Which of the following is not true about relational tables? A) Column values are of the same kind B) Each row is unique C) Each column must have a unique name D) The sequence of rows is significant	
20	If a piece of data is stored in two places in the database, then A) Storage space is wasted B) Changing the data in one spot will cause data inconsistency C) It can be more easily accessed D) Both A and B	
21	When the compiler cannot differentiate between two overloaded constructors, they are called------- A) Overloaded B) Destructed C) Ambiguous D) Dubious	
22	The members of a class by default are ---------- A) Public B) Protected C) Private D) Mandatory to specify	
23	Which of the following data structure is non linear type? A) Circular queue B) Stack C) Queue D) None	
24	Which of the following data structure are index structure? A) Matrix B) Stack C) List D) Queue	
25	Which of the following data structure store the homogeneous data elements? A) Pointer B) Array C) Record D) None	
26	What is the name of the viruses that fool a user into downloading and/or executing them by pretending to be useful applications? A) Cracker B) Worm C) Trojan horses D) Keylogger	
27	What type of cable would be used to make the connection between the console port of a router and a workstation? A) Crossover B) Rollover C) Straight-through D) Patch	
28	Which wireless standard operates in the 5 GHZ transmission range and is capable of 54 Mbps of data throughput? A) 802.11 B) 802.11a C) 802.11b D) 802.11g	
29	What is the network broadcast address for a Class C address of 192.168.32.0 with the default subnet mask? A) 192.168.0.0 B) 192.168.0.255 C) 192.168.32.0 D) 192.168.32.255	
30	When new data are to be inserted into a data structure, but there is no available space, this situation is usually called ----------. A) Avail flow B) Under flow C) Over flow D) Empty list	

Q2. Put the word (True or False). **(30 Marks)**

No.	Statement	Answer
1	The empty set or null set is the set with no elements.	
2	In recursive predictive parsing a recursive procedure is associated with each grammar symbols.	
3	The postfix notation of y=(a+b)/(c*d/e) is ab+cd*/e/=y.	
4	The 2's complement of the binary number (110010) is (001110).	
5	Intel 80386 MP data types are with 8, 16, 32, and 64 bits.	
6	MMX technology instructions deal with a very small size of data.	
7	The processor serial number (or chip ID) is a unique identifier burned into the Pentium processor that can accessed over the internet.	
8	If the angle between 2 connected line segments is very small then miter join can generate a long spike that distorts the appearance of the polyline.	
9	A dashed line could be displayed by generating inter dash spacing.	
10	Each screen point is referred to as dot pitch.	
11	Shadow mask method is usually used in LCD.	
12	The *Vernam cipher* is a symmetrical block cipher.	
13	When using symmetric encryption it is very important to keep the algorithm secret.	
14	Confusion seeks to make the statistical relationship between the plaintext and ciphertext as complex as possible in order to thwart attempts to deduce the key.	
15	Greater complexity in the subkey generation algorithm should lead to greater difficulty of cryptanalysis.	
16	class c {int x ; };is a valid class declaration.	
17	Constructors are executed whenclass is declared .	
18	A friend function of a class can be called using the object of that class.	
19	A constant identifier cannot appear on the left hand side of assignment operator.	
20	A constant identifier cannot be a parameter of input statement.	

21	A function can be return an array.	
22	Replay, Modification of messages and denial of service are types of active attack.	
23	The prepending virus inserting itself at the end of a file, while the appending virus places itself at the start of a file.	
24	Authentication is the way you tell the system who you are, while the identification is verified user's identity.	
25	A first-generation anti-virus (simple scanners) requires a virus signature to identify a virus.	
26	Key Distribution Centre (KDC) in Kerberos server consist of Authenticated server and Encrypted server.	
27	One advantage of public-key cryptography is that, when properly implemented, it is much faster than symmetric key cryptography.	
28	WAN connections operate using serial interfaces and provide lower bandwidth services compared to LANs.	
29	UTP cable rely on shielding to reduce signal degradation caused by EMI and RFI.	
30	The TCP/IP network access layer supports both LAN and WAN technologies.	

Q3. Answer the following. **(5 Marks)**

1. What is the output of the following code segment: (2 Marks)

```
int x=10;
  if (x > 0) x -= 15;
  if (x < 0) x += 20;
  cout<<"x=" <<x;
```

Answer:

2. What is the contents of A[] after executing the following code segment. (3 Marks)

```
int[] A = new int[10];
int i, j, c,k;
for (i = 0; i < 10; A[i] = i, i++) ;
for ( k = 0, j = i-1; k < i; k++,j--)
{
    c = A[k]; A[k] = A[j];  A[j] = c;
}
```

Answer:

A= | | | | | | | | | | |

Q4. Which of the following instructions should be privileged? (8 Marks)

a. Set value of timer.
b. Read the clock.
c. Clear memory.
d. Issue a trap instruction.
e. Turn off interrupts.
f. Modify entries in device-status table.
g. Switch from user to kernel mode.

Answer:

Q5. Answer the following: (8 Marks)

1. **Determine the types of cryptosystem**
   a. The way, in which the plaintext is processed, it processed the input elements continuously producing out one element at time.

   Answer:

   b. The frequency distribution of the plaintext is the same of ciphertext.

   Answer:

   c. The cipher replaces each pair of letters in the plaintext with another pair of letters, so it is a type of diagraph cipher.

   Answer:

2. List three types of DAC access control.

Answer:

1.

2.

3.

3. There are essentially only two methods of intrusion detection, list them.

Answer:

1.

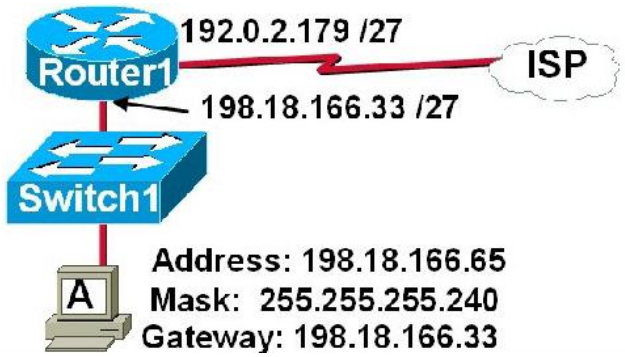
2.

Q6. Answer the following: (9 Marks)

1. Several computers in the company require new NICs. A technician has located a good price on the Internet for the purchase of these NICs. Before these NICs are purchased and installed, what details must be verified? (**Chose three only**).
   A) the MAC address on the NIC
   B) the size of the RAM on the NIC
   C) the bandwidth supported by the NIC
   D) the type of media supported by the NIC
   E) the type of network architecture supported by the NIC

Answer:

2. Host A is connected to the LAN, but it cannot connect to the Internet. The host configuration is shown in the exhibit. What are the **TWO** problems with this configuration?



   A) The host subnet mask is incorrect.
   B) The host is not configured for subnetting.
   C) The default gateway is a network address.
   D) The default gateway is on a different network than the host.
   E) The host IP address is on a different network from the Serial interface of the router.

Answer:

3. Which two functions of the OSI model occur at layer two? (**Choose Two)**

   A) Physical addressing B) Encoding C) Routing D) Cabling E) Media access control

Answer:

4. Which two descriptions are correct about characteristics of IPv6 unicast addressing? (**Choose Two**)
   A) Global addresses start with 2000::/3.
   B) Link-local addresses start with FF00::/10.
   C) Link-local addresses start with FE00:/12.
   D) There is only one loopback address and it is ::1.

Answer:

Q7. Trace the following code segment to show the expected output. (10 Marks)

```
private static void Main(string[] args)
    {

        Overload overload = new Overload();
        overload.Display();
        Overload overload1 = new Overload("parameter");
        Console.WriteLine (overload1.Getname());
    }

public class Overload
    {
        private string name = "initialization";
        public Overload() {
            Console.WriteLine(name); name = "new value";
        }
        public  Overload(string name) {
            name = "constructor";
        }
        public string Getname() {
           return name;
        }
        public void Display()
        {
            display(ref name, ref name);
            Console.WriteLine(name);
        }

        private void display(ref string x, ref string y)
        {
            x = "xname";
            Console.WriteLine(name);
            y = "yname";
            Console.WriteLine(name);
            name = "name";
        }
    }
```

Answer:

1.

2.

3.

4.

5.