Q1: Select the correct answer:

1. Spooling is an acronym for?
   a. Simultaneous Peripheral Operation On Line
   b. Simultaneous Peripheral Operation On Link
   c. Simultaneous Peripheral Operation On Light
   d. None

2. A program in execution is referred to as?
   a. Processed
   b. Process
   c. Processor
   d. All

3. ____________ is single sequence stream which allows a program to split itself into two or more simultaneously running tasks?
   a. Process
   b. Thread
   c. Queue
   d. None

4. Because threads can share common data, they do not need to use ___?
   a. Layered Communication
   b. Interprocess Communication
   c. Both
   d. None

5. ____________ can be described by a resource allocation graph?
   a. Interprocess Communication
   b. Deadlocks
   c. Synchronization
   d. None
6. __________ algorithm requires each process to make in advance the maximum number of resources of each type that it may need?
   a. Deadlock Occurrence
   b. Deadlock Avoidance
   c. Both
   d. None

7. Which of the followings are the Basic architectures for multiprocessor interconnections?
   a. Bus-Oriented systems
   b. Crossbar-connected systems
   c. both a and b
   d. Uniform memory access (UMA)

Q2: Explain what is Virtual Memory and why it is used?
Q3: Choose the right choice:

1) An interpreter is a program that -------------.
   a) places programs into memory and prepares them for execution.
   b) automates the translation of assembly language into machine language.
   c) accesses a program written in a high level language and produces an object program.
   d) appears to execute a source program as if it were machine language.

2) Advantage of using assembly language rather than machine language is that -------------.
   a) it is mnemonic and easy to read
   b) addresses any symbolic not absolute
   c) introduction of data to program is easier
   d) All of these

3) ------------- are statements that generally produce no executable code.
   a) declaration statements
   b) control statements
   c) computation statements
   d) structure statements

4) The syntax directed translation scheme is useful because it enables the compiler designer to express the generation -------------.
   a) intermediate code
   b) source code
   c) machine code
   d) syntactic code

5) A compiler program written in a high level language is called -------------.
   a) source program
   b) object program
   c) machine language program
   d) none of these

6) A grammar that produce more an parse tree for same sentence is said to be -------------.
   a) Ambiguous
   b) context free grammar
   c) normal form grammar
   d) syntactic grammar

7) Operator precedence parse is especially suitable for parsing -------------.
   a) expression
   b) recursive routines
   c) associative operators
   d) all above

Q4: Give the difference between compiler time and run time error?
Q5: Choose the correct answer:

1. Which of the following registers is used to keep track of address of the memory location where the next instruction is located?

A. Memory Address Register
B. Memory Data Register
C. Instruction Register
D. Program Register

2. Minimum time delay required between the initiation of two successive memory operations is called

A. Memory cycle time
B. Memory access time
C. Transmission time
D. Waiting time

3. PC Program Counter is also called ................

A. instruction pointer
B. memory pointer
C. data counter
D. file pointer

4. Memory address refers to the successive memory words and the machine is called as ............

A. word addressable
B. byte addressable
C. bit addressable
D. Tera byte addressable

5. Micro instructions are stored in

A. computer memory
B. primary storage
C. secondary storage
D. control memory
E. cache memory

6. Systems that do not have parallel processing capabilities are
A. SISD  
B. SIMD  
C. MIMD  
D. All of the above  

7. Pipelining strategy is called implement  

A. instruction execution  
E. instruction prefetch  
B. instruction decoding  
C. instruction manipulation  

Q6: explain briefly the main role of the cache memory in program execution.
Q7) Choose the correct answer:

1- If A and B are two invertible matrices, then.

   a) \( AB = BA \),       b) \( AB \neq BA \),       c) \( A^2 = B^2 \)

2- \( \frac{d}{dx} \sec^{-1} x \) is … …………… ………

   a) \( \frac{1}{|x|\sqrt{1-x^2}} \),       b) \( \frac{1}{|x|\sqrt{x^2-1}} \),       c) \( \frac{1}{|x|\sqrt{1-x}} \).

3- The solution of following differential equation \([y''+9y = 0]\) is………

   a) \( y = c_1 \cos x + c_2 \sin x \),       b) \( y = c_1 \cos 3x + c_2 \sin 3x \),       c) \( y = c_1 e^{3x} + c_2 e^{-3x} \)

4- The solution of following differential equation \([y''' = 0]\) is………

   a) \( y = c_1 + c_2 e^x + c_3 e^{-x} \),       b) \( y = c_1 + x c_2 + x^2 c_3 \),       c) \( y = c_1 + x c_2 \)

5- If \( f(x) \) is Fourier series, and \( 2\Pi \) is periodic number of it. Then \( a_n = \ldots \)

   a) \( \frac{1}{\Pi} \int_0^{2\Pi} f(x) \cos nx \, dx \) , b) \( \frac{2}{\Pi} \int_0^{2\Pi} f(x) \cos nx \, dx \) , c) \( \frac{1}{\Pi} \int_{-\Pi}^{\Pi} f(x) \sin nx \, dx \).

6- If \( f(x) \) is Fourier series, and \( 2\Pi \) is periodic number of it. Then \( b_n = \ldots \)

   a) \( \frac{2}{\Pi} \int_0^{2\Pi} f(x) \sin nx \, dx \), b) \( \frac{1}{\Pi} \int_0^{2\Pi} f(x) \sin nx \, dx \), c) \( \frac{1}{\Pi} \int_{-\Pi}^{\Pi} f(x) \cos nx \, dx \).

7- If \([ f(s) = \frac{1}{s^2-1} ]\), the inverse of Laplace transformation\( [ f(t) = L^{-1}\{\frac{1}{s^2-1}\} ] \)

is………(a)f(t)=sint,      (b) f(t)=cost,    (c) f(t)=Sinht,
Q8: Let \( f(t) = e^{-iat} \). Show that

\[ a) \quad L\{\cos at\} = \frac{s}{s^2 + a^2}, \quad b) \quad L\{\sin at\} = \frac{a}{s^2 + a^2} \]

Where \( L \) is Laplace transformation.
Q9: choose the correct answer:

1- Maximum number of template arguments in a function template is
   a. One  b. Two  c. Three  d. many

2- In multiple inheritance
   a. The base classes must have only default constructors
   b. Cannot have virtual functions
   c. Can include virtual classes
   d. None of the above

3- The term __________ means the ability to take many forms.
   a. Inheritance
   b. Polymorphism
   c. Member function
   d. Encapsulation

4- Which of the following declarations are illegal
   a. void *ptr;
   b. char *str = “hello”;
   c. char str = “hello”;
   d. const *int p1;

5- Mechanism of deriving a class from another derived class is known as____
   a. Polymorphism
   b. Single Inheritance
   c. Multilevel Inheritance
   d. Message Passing

6- What is the error in the following code?

   ```cpp
class t
{
virtual void print();
}
```
   a. No error
   b. Function print() should be declared as static.
   c. Function print() should be defined.
   d. Class t should contain data members.

7- A class which can use all the features of an established class, is
a. A static class  
b. A super class  
c. A subclass  
d. Overloaded  

8- The members of a class by default are  
a. Public  
b. Protected  
c. Private  
d. Mandatory to specify  

Q10: Differentiate between abstraction and encapsulation.
Q11: Select the correct answer:

1. Java program are run in:
   a. JVM
   b. JavaBeans
   c. JavaViewer
   d. All of these

2. JDBC is stand for:
   a. JavaBeans database connectivity
   b. Java database connectivity
   c. Java database communicate
   d. Java database connection

3. The getter method names must start with the ________ prefix
   a. set
   b. get
   c. pet
   d. all of these

4. This method is used to determine a beans method:
   a. MethodDescriptor [] getMethodDescriptor () :
   b. MethodDescriptor [] getMethodDescriptor () ;
   c. MethodDescriptor [] getMethodDescriptor [] :
   d. MethodDescriptor getMethodDescriptor [] :

5. Java can support
   a. TCP/IP
   b. Multithreading
c. Remote object
d. All of these

6. _____ consists of various tools that are used to develop & execute java programs
   a. JDK
   b. JBK
   c. JEK
   d. JMK

7. Which feature is not supported by java
   a. Abstraction
   b. Pointer
   c. Polymorphism
   d. Inheritance

8. The _____________ data types are allocated memory by using the new operator
   a. Primitive
   b. Non-primitive
   c. Personnel
   d. None of these

**Q12: How to install ASP on Windows?**
Q13: Select the correct answer:

1. In RGB colored image format, each pixel is of ........... size.
   a. 8 bits.
   b. 16 bits.
   c. 24 bits.
   d. 32 bits.

2. The logical operation ........... Can be used to find the similarity between the white regions of two different images.
   a. AND.
   b. OR.
   c. XOR.
   d. None of the above.

3. Image addition can be used to combine the information of two images, so it can be used in ...........
   a. image change detection.
   b. Image edge detection.
   c. Image morphing in motion picture.
   d. All of the above.

4. The ............. of an image, is a function showing for each grey level the number of pixels in the image that have this grey level.
   a. Resolution.
   b. Histogram.
   c. Quantization.
   d. None of the above.

5. The histogram ............. Increase image contrast.
   a. Stretch.
   b. Shrink.
   c. Equalization.
   d. Enhancement.

6. ............ is any undesired information that contaminate an image.
   a. Blur.
   b. Noise.
   c. Dust.
   d. None of the above.

7. ............. is the most common kernel (mask) used for edge detection.
   a. Perwitt.
   b. Sobel.
   c. Kirsch.
d. All the above.

8. When segmenting an image, the resulted image will be …………
   a. Non overlapping regions.
   b. Overlapping regions.
   c. Large regions.
   d. Small regions.

Q14:

Given a (5) images each of them has one of the below histograms.

1. A very narrow histogram.
2. A very spread histogram.
3. A histogram skewed toward the right.
4. A histogram skewed toward the left.
5. A histogram having two peaks.

What your explanation of the 5 images with those histograms.
Q.15 Select the correct answer:

1. Software engineering include of a set of three key elements:
   a. Methods, Tools, Procedures
   b. Defines, Tools, Procedures
   c. Methods, Tools, Testing
2. Prototyping is the process that enables the developer to:
   a. Create a system of the software to be built
   b. Create a model of the software to be built
   c. Create product of software to be built.
3. The elements of computer-based system are:
   a. Analysis, Design, Testing, Documentation
   b. Software, Programs, Structures, Documentation
   c. System, People, Database, Hardware
4. The definition phase of life cycle include of:
   a. Configuration review, Maintenance, Adaptive, Action
   b. Test units, Integration, Validation
   c. Scope, Resources, Cost, Feasibility, Schedule
5. System analysis is connected with the following objectives:
   a. Identify, Evaluation, Perform, Allocate, Establish, Create
   b. Description, Economic justification, Ramifications
   c. Selection, Generation, Reliability, Availability
6. The cost-benefits analysis include
   a. Cost modification, Cost management, Cost operating, Cost application
   b. Cost input, Cost sort, Cost search, Cost Testing
   c. All above
7. The analyst must exhibit the following character traits
   a. Knowledge base, information about problem, information about computer technical
   b. Ability to grasp, ability to absorb, understand environment
   c. Apply hardware, Communication forms.
8. The functions of vertical partitioning approach include:
   a. Code data, Decode box, General control
   b. Translation algorithm, Files lookup, Data validation
   c. All above

Q.16 Object-oriented software engineering analysis may be described with special manner. List only the steps of this manner.