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 ex[press 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) $y = c_1 + xc_2 + x^2c_3$,    c) $y = c_1 + xc_2$

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

   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 $b_n =$ ……

   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) $f(t)=\sin t$,    (b) $f(t)=\cos t$,    (c) $f(t)=\sinh t$. 
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: Select the correct answer:

1. The power of a ------------ comes from the ability to relate different information in a spatial context and to reach a conclusion about this relationship.
   a. SDLC  b. GIS  c. DFD  d. BPR

2. --------- is the longest phase in the SDLC.
   a. Design  b. implementation  c. analysis  d. maintenance.

3. --------- testing use simulated data.
   a. Alpha  b. Beta  c. Theta  d. real

4. A device that manages file operations and is shared by each client PC attached to a -----
   a. WAN  b. MAN  c. INTRANET  d. LAN

5. One copy of the --------- is on the file server and concurrently running copies are on client PCs.
   a. client  b. Server  c. DBMS  d. software

6. --------- must account for every data element on a system input or output.
   a. logical DB design  b. physical DB design  c. dummy DB design  d. DB design

7. --------- A picture of the movement of data between external entities and the processes and data stores within a system.
   a. FDF  b. DFD  c. DDF  d. FFD

8. Each question in a --------- can include both verbal and non-verbal information.

Q10: Design a block diagram for the functions of information systems.
Q11: Select the correct answer:

1. ........ is the physical path over which a message travels.
   a. protocol
   b. medium.
   c. Signal.
   d. all of the above.

2. Frequency of failure and network recovery time after a failure are measures of the ............ of the network.
   a. performance
   b. security
   c. feasibility
   d. reliability

3. In a ............ topology, if there are (n) devices in a network, each device has (n – 1) port for cables
   a. mesh
   b. star
   c. bus
   d. ring

4. In a ............connection, more than two devices can share a single link.
   a. Point-to-point
   b. multipoint
   c. primary
   d. secondary

5. The end-to-end delivery of the entire message is the responsibility of the ............ layer.
   a. network
   b. transport
   c. session
   d. presentation

6. description and encryption of data are the responsibility of the ............ layer.
   a. physical
   b. Data link
   c. presentation
   d. session

7. Pulse Code Modulation (PCM) is an example of ........ Coding.
   a. Digital-to-digital
   b. Digital-to-analogue
   c. analogue -to-analogue
8. multiplexing involves ................
   a. One path and one channel
   b. One path and multiple channels
   c. multiple paths and one channel
   d. multiple paths and multiple channel

Q1 2: Which is more efficient, circuit switching or virtual circuit switching, explain in details?
Q13: choose the correct answer:

1- The problem statement should include all of the following EXCEPT --------------.
   a. Input
   b. Output
   c. Processing
   d. Storage

2- The business management process has changed from function management to --------
   --------.
   a. Process
   b. Product
   c. Consumer
   d. Service

3- -------------- are used to solve extremely complex problem like mapping of human
   genome, forecasting weather an modelling complex process like nuclear fission.
   a. Mini computer
   b. Super computer
   c. Mainframe computer
   d. Desktop computer
   e.

4- In which of the following function of MIS, reports are generated based on the
   enterprise need.
   a. Planning
   b. Prediction
   c. Data processing
   d. Data storage

5-which of the following feasibility study is measure of how comfortable the
   management and users are with the technology?
   a. Schedule feasibility.
   b. Operational feasibility
   c. Economic feasibility
   d. Technical feasibility

6- Translating the problem statement into a series of sequential steps describing what the
   program must do is known as:
   a. Coding.
   b. Debugging.
c. Creating the algorithm.
d. Writing documentation

7- Debugging is:
a. Creating program code.
b. Finding and correcting errors in the program code.
c. Identifying the task to be computerized.
d. Creating the algorithm.

8- ------------ managers are responsible for meeting the targets and goals set by the top management.
   a. Personnel
   b. Functional
   c. Production
   d. Administration

Q14: Define an Information System from both Technical and Business perspective.
Q15: choose the correct answer:

1. Which of the following is true concerning a global transaction?
A. The required data are at one local site and the distributed DBMS routes requests as necessary.
B. The required data are located in at least one nonlocal site and the distributed DBMS routes requests as necessary.
C. The required data are at one local site and the distributed DBMS passes the request to only the local DBMS.
D. The required data are located in at least one nonlocal site and the distributed DBMS passes the request to only the local DBMS.

2. Replication should be used when which of the following exist?
A. When transmission speeds and capacity in a network prohibit frequent refreshing of large tables.
B. When using many nodes with different operating systems and DBMSs and database designs.
C. The application's data can be somewhat out-of-date.
D. All of the above.

3. A distributed database has which of the following advantages over a centralized database?
A. Software cost
B. Software complexity
C. Slow Response
D. Modular growth

4. Which of the following is not one of the stages in the evolution of distributed DBMS?
A. Unit of work
B. Remote unit of work
C. Distributed unit of Work
D. Distributed request

5. A distributed database can use which of the following strategies?
A. Totally centralized at one location and accessed by many sites
B. Partially or totally replicated across sites
C. Partitioned into segments at different sites
D. All of the above

6. A transparent DBMS?
A. Can not hide sensitive information from users.
B. Keeps its logical structure hidden from users.
C. Keeps its physical structure hidden from users.
D. Both B and C.
7. A homogenous distributed database is which of the following?
   A. The same DBMS is used at each location and data are not distributed across all nodes.
   B. The same DBMS is used at each location and data are distributed across all nodes.
   C. A different DBMS is used at each location and data are not distributed across all nodes.
   D. A different DBMS is used at each location and data are distributed across all nodes.

8. Storing a separate copy of the database at multiple locations is which of the following?
   A. Data Replication
   B. Horizontal Partitioning
   C. Vertical Partitioning
   D. Horizontal and Vertical Partitioning.

Q16. What do we mean by data replication? State the advantages and disadvantages of data replication.