

Q1: Choose the correct answer:

1. Which of the following statement is true?
 - a) LZW method Easy to implement, Fast compression, Lossless technique and Dictionary based technique
 - b) LZW method Easy to implement, Slow compression, Lossless technique and Statistical based technique
 - c) LZW method Easy to implement, Fast compression, Lossy technique and Dictionary based technique
 - d) LZW method Easy to implement, Fast compression, Lossless technique and Statistical based technique.
2. Lossless compression is called _____compression
 - a) Temporal b) Reversible c) Permanent d) Irreversible
3. The _____ of a set of data is a measure of the amount of information contained in it, its calculations used to get a theoretical bound on how much that data can be compressed
 - a) Mean b)Energy c) Entropy d) Transparency
4. _____the ratio of the output to the input file size of a compression algorithm, i.e. the compressed file size after the compression to the source file size before the compression.
 - a) Aspect Ratio Calculator b) Picture aspect ratio
 - c) Decompression Ratio d) Compression Ratio
5. _____ Criteria can be used to quantify a loss of information in digital file after compression.
 - a) Objective fidelity b) Coding c) Decoding d) Histogram
6. JPEG stands for:
 - a) Joint Pixels Extended graphic
 - b) Joint Photographic Extended Group
 - c) Joint Photographic Experts Graphic
 - d) Joint Photographic Experts Group

7. A source image file (256 x 256 pixels) with 65536 bytes is compressed into a file with 16384 bytes, the compression ratio is:-
- a) $1/4$, the compression factor is 4, and the saving percentage is 25%.
 - b) $1/2$, the compression factor is 2, and the saving percentage is 50%.
 - c) $1/4$, the compression factor is 4, and the saving percentage is 75%.
 - d) $3/4$, the compression factor is 4, and the saving percentage is 75%.
8. Developers and implementers of lossy image compression methods need a standard metric to measure the quality of reconstructed images compared with the original ones, so greater resemblance between the images implies:
- a) Smaller root mean square error (RMSE) and, as a result, smaller peak signal to noise ratio (PSNR).
 - b) Larger Smaller root mean square error (RMSE) and, as a result, larger peak signal to noise ratio (PSNR).
 - c) Larger root mean square error (RMSE) and, as a result, smaller peak signal to noise ratio (PSNR).
 - d) Smaller root mean square error (RMSE) and, as a result, larger peak signal to noise ratio (PSNR).

Q2What are the types of data compression methods, identify the difference between them?

Q3 Choose the correct answer:

1. For which of the following data mining techniques is it easiest to determine the important attributes leading to a target classification?
 - A. Support Vector Machine
 - B. Decision Tree Classifier
 - C. K-means Clustering
 - D. Bayesian Classification

2. Which of the following is an example of a supervised data mining technique?
 - A. hierarchical clustering
 - B. self-organizing map
 - C. decision tree classifier
 - D. k-means clustering

3. Which of the following data mining techniques would be LEAST useful when a correct classification can only be determined by considering the interaction of two or more attributes.
 - A. Neural Network
 - B. Support Vector Machine
 - C. Decision Tree
 - D. Bayesian Classifier

4. Over 80% of all introns in human genes contain a GT-AG specific sequence pattern. Which data mining technique could most effectively make use of this statistic to predict gene sequences?
 - A. Decision tree classifier
 - B. Support Vector Machine
 - C. K-means clustering
 - D. Bayesian classifier

5. A goal of data mining includes which of the following?
 - A. To explain some observed event or condition
 - B. To confirm that data exists
 - C. To analyze data for expected relationships
 - D. To create a new data warehouse

6. A data warehouse is which of the following?
 - A. Can be updated by end users.

- B. Contains numerous naming conventions and formats.
- C. Organized around important subject areas.
- D. Contains only current data.

7. In data mining, events that are linked over time are referred to as:

- A. associations.
- B. sequences.
- C. classifications.
- D. clusters.

8. Data mining can allow a firm to develop:

- A. specific marketing campaigns for different customer segments.
- B. intuitive user interfaces.
- C. DSS based on the Web.
- D. multiple distributed systems.

Q4 What are the steps involved in KDD process.

Q5 Choose the right answer:

- 1) Round robin scheduling is essentially the preemptive version of-----.
a) FIFO b) Shortest job first c) Shortest remaining d) Longest time first
- 2) A page fault occurs -----.
a) when the page is not in the memory b) when the page is in the memory
c) when the process enters the blocked state d) when the process is in the ready state
- 3) What is a shell ?
a) It is a hardware component b) It is a command interpreter
c) It is a part in compiler d) It is a tool in CPU scheduling
- 4) Routine is not loaded until it is called. All routines are kept on disk in a relocatable load format. The main program is loaded into memory & is executed. This type of loading is called -----.
a) Static loading b) Dynamic loading c) Dynamic linking d) Overlays
- 5) What is the memory from 1K - 640K called -----.
a) Extended Memory b) Normal Memory c) Low Memory d) Conventional Memory
- 6) Virtual memory is -----.
a) An extremely large main memory
b) An extremely large secondary memory
c) An illusion of extremely large main memory
d) A type of memory used in super computers.
- 7) The process related to process control, file management, device management, information about system and communication that is requested by any higher level language can be performed by -----.
a) Editors b) Compilers c) System Call d) Caching

Q6 What would be the effect of a large number of page faults by a process on that process's page allocation on a non preemptive operating system?

Q7 Select the correct answer:

1- Many spatial filters are implemented with convolution masks.

Because

- a. Conceal or remove noise.
- b. Highlight edges and details within the image.
- c. Provides a result that is a weighted sum of the values a fixed and its neighbors.
- d. Brightness adjustment is often used.

2-The PPM format includes PBM (binary) , PGM (gray-scale) , PPM (color) and PNM (handles any of the previous types). The headers of these image file format contain a that identifies the file type , the image width and height , the number bit per pixel for each band.

- a. Vector image .
- b. Magic number .
- c. Key points .
- d. Header.

3- phenomenon called contouring appears in the image as

- a. Spatial reduction.
- b. real edge.
- c. quantization of the spatial coordinates .
- d. False edges or lines as gray- level quantization.

4- The..... is an algorithm that will take a collection of edge points, as found by an edge detector, and find all the lines on which these points lie.

- a. Hough transform.
- b. Edge operator performance
- c. Frei-chen masks.
- d. Laplacian operators

5-..... Are image segmentation methods by which individual elements are placed into groups , these groups are based on some measure of similarity with the group.

- a. Boundary deletion.
- b. Clustering techniques.
- c. Boundary detection.
- d. Morphological filters.

6-The differs from others transforms in that the basis functions are not sinusoids. The basis functions are based on square or rectangular waves with peak of ± 1 .

- a. Discrete cosine transform.
- b. Walsh _ hadmard transform.
- c. Fourier transform.
- d. Wavelet transform.

7- In order to perform the wavelet transform with convolution filters, a special types of convolution calledmust be used.

- a. High – frequency information.
- b. Quadrature mirror filters.
- c. Circular convolution.
- d. Fourier transform.

Q8Write the main stages for the compression system model .

Q9: Choose the correct answer:

- 1- How many LFSR in Geffe stream cipher generator?
a) 4
b) 3
c) 2
d) 5
- 2- One of the following numbers is not prime.
a) 91
b) 97
c) 141
d) 149
- 3- Lu-Lee is _____ Cipher method?
a) Stream
b) Block
c) Public-Key
d) Classical
- 4- $11^7 \text{ mod } 13 = ?$
a) 10
b) 2
c) 3
d) 8
- 5- From the following sets, which one is the reduced Euler function of 24
a) {1,5,7,11,13,17,19,23}
b) {1,5,6,11,15,17,22,23}
c) {1,5,7,11,14,17,19,23}
d) {1,5,7,10,13,17,21,23}
- 6- S-Box in DES block cipher has _____ I/O bits.
a) 8 x 4
b) 6 x 4
c) 6 x 3
d) 8 x 5
- 7- Find X value if $(3 * X \text{ mod } 23 = 10)$
a) 13
b) 11
c) 9
d) 17

Q10 Define the firewall and list the types of it.

Q11 Choose the correct answer:

1. Which routing principle is correct?
 - A. If one router has certain information in its routing table, all adjacent routers have the same information.
 - B. Routing information about a path from one network to another implies routing information about the reverse.
 - C. Every router makes its routing decision alone, based on the information it has in its routing table.
 - D. Every router makes its routing decision alone, based on the information it has in its routing table and its neighbor routing table.
2. Which process occurs to network traffic so that quality of service strategies work correctly?
 - A. Priorities are assigned to each classification of application data.
 - B. Web traffic is always assigned to a high priority queue for processing.
 - C. Digital movies are always assigned to the high priority queue for processing.
 - D. Priorities have no effect on traffic.
3. Which type of addressing is found at the OSI layer2?
 - A. logical
 - B. IP
 - C. Port
 - D. MAC
4. Which term describes a specific set of rules that determines the formatting of messages and the process of encapsulation used to forward data?
 - A. Segmentation
 - B. Protocol
 - C. Multiplexing
 - D. QoS

5. Which layers of the OSI model makeup the application layer of the TCP/IP model?
 - A. Application
 - B. Application and presentation
 - C. Data link, presentation, and application
 - D. Session, presentation, and application
6. Which address type has all host bits set to 1?
 - A. Network
 - B. Broadcast
 - C. Host
 - D. unicast
7. what do network hosts use data link layer addresses for?
 - A. Remote delivery
 - B. Local and remote delivery
 - C. Local delivery
 - D. None of the above.

Q12

What are the advantages of using fiber optic cable over copper cable?

Q13 Choose ONE answer from following statements:

1. A multiprocessor system is an interconnection of two or more processors with.....
 - a. Processor and another processor
 - b. Input devices and internal memory
 - c. Memory and I/O equipment

2. Parallel processing based on major methods which are used:
 - a. The internal organization and interconnection structure
 - b. Flow of information through the system
 - c. All the above

3. Classification method in parallel processing divides systems into:
 - a. Four main system depends on number instruction and data item
 - b. Instruction stream that read from memory
 - c. Operations executed on data in CPU

4. Uniprocessor (SISD- single IS and single DS) represented as :
 - a. Single computer (CPU + Memory + Control unit)
 - b. Instructions executed sequentially and multiple functional unit
 - c. Processor with multiple function

5. SIMD single IS and multiple DS contains :
 - a. PES supervised control unit and shared memory with modules
 - b. Different instructions for same data stream
 - c. O/P of one processor

6. MIMD multiple IS and DS it's a computer execute many programs
At the same time, it's either :
 - a. A network of multiprocessor (tightly) or multicomputer (loosely)
 - b. Interconnect several independent processors
 - c. Cross Bar switch

7. The advantages of array processor are:
 - a. Highly execute large vector matrix of data and efficient process
 - b. Using Private memory with each processor
 - c. Availability of more than one processors

8. With in MIMD the parallelism can be achieved in:
 - a. Independent operate and job divided into multiple
 - b. Loosely coupled system and skeleton processor
 - c. Each processor with own cash memory

Q14 What we mean by linear pipline ? And what are the computer Sequence of steps to process each instruction pipline?

Q15: Choose the correct answer:

- 1.-----is the process of computing several steps of a problem solving procedure before executing any of them.
a. Testing b. Designing c. Programming d. Planning

2. The ----- process centers on the detection of differences between the current state and the goal state.
a. means-ends analysis b. start-end analysis c. top-down analysis d. most-ends analysis

3. ----- learning is learning patterns/concepts from input, with no specific output.
a. Supervised b. Unsupervised c. Adaptive d. Machine

4. ----- makes a decision through a sequence of tests for certain properties.
a. Decision test b. Decision rules c. Decision tree d. Decision space

5. ----- = $I(C) - E(P)$.
a. des (P) b. gain(P) c. root(P) d. ID3(P)

6. ----- is a flat area of the search space in which a number of states have the same best value
a. local maxima b. plateau c. ridge d. brick

7. The second type of activation function in the ANN is a -----.
a. linear type b. saturating linear c. symmetric d. hard limiter

8. A ----- is a search procedure modelled on the mechanics of natural selection rather than a simulated reasoning process.
a. heuristic algorithm b. genetic algorithm c. learning algorithms d. activation function

Q16 Learning algorithms may be characterized along several dimensions. By short answer what is the framework for symbol-based learning.