ADVANCED JAVA

Section-1

1) What is inheritance? Explain various types of inheritance with examples.
2) Explain concept of multi-threading with example.
3) What is Applet? How it is useful?
4) What do you mean by making URL connections? How URL connection class is used to retrieve information?
5) Describe implementation of server and advance socket programming.

Section-2

6) Explain Row Sets and Cached row sets with example.
7) What is JDBC? Explain its use and its various classes.
8) Explain LDAP. LIST out its application areas.
9) Explain role of client server architecture.
10) Explain remote method invocation (RMI) with SOAP in detail. How parameters are passed in remote methods.

Section-3

11) Explain insertion and deletion of list values.
12) What is java string? How to implement a tree using java string?
13) What is importance and use of strokes in AWT?
14) How styled components are implemented in java?
15) Explain:
   a. image manipulation
   b. DRAG and DROP
   d. Rendering Hints

Section-4

16) Explain beans writing process and bean property types. Discuss naming pattern.
17) How byte code verification is done?
18) Explain:
   a. Tabbed panes
   b. customizer
19) Write short note on
   a. Digital signature
   b. Class Loader
   c. Encryption.
   d. Code signing
1) What is multimedia? Write its framework and applications.
2) Explain various multimedia authoring tools. How they help in making multimedia projects?
3) Explain ADSL. Describe animation techniques.
4) Difference between aliasing and anti-aliasing. When do we use anti-aliasing?
5) What do you mean by color pallets? Discuss in reference to 3D drawing.
6) Explain video on demand and process of morphing in detail.
7) What is the need for data compression in multimedia system? List the various steps and its types.
8) Describe features and objectives of JPEG. Also explain its architectures.
9) Explain rendering.
10) Explain speech recognition and generation.
11) Explain standards of MPEG compression methods.
12) Discuss structure of encoder for MPEG layers 1 & 2.
13) Difference between lossy and lossless compression. Write advantages and disadvantages of both.
14) Write short note on:
   a. GIF
   b. PNG
   c. BMP
   d. TIFF
15) Discuss dynamic and static Huffman coding with example.
16) Describe features of MIDI standards and digital video.
17) What is Digital signal processing? Describe stereo phonic and quadraphonic signal processing.
18) Write short note on time based media representation.
19) Explain applications of VR environment. Explain intelligent VR software systems.
20) Write short note on:
   a. Desktop virtual reality
   b. Intelligent multimedia system.
   c. VROS
   d. Visually coupled system.
   e. Multimedia servers and databases.
1) Describe virtual to real mapping.
2) Compare hardwired control with micro programmed control. Discuss their advantages and disadvantages.
3) What is Orthogonal Instruction set and their operations? Explain L/S, RM, R+M set architectures.
4) Compute the areas in rbe with and without aspect mismatch adjustment of 32 KB direct mapped cache with 256-bit lines and 20 bit tag
5) A 2.3 cm² die can be fabricated on a 15 cm wafer at a cost of rs.5000 or on a 20 cm wafer at cost of rs.6000. Compare the effective cost per die for defect densities of 0.4 defect/cm² and 0.9 defects per cm².
6) Assume a wafer has diameter of 20 cm and cost rs. 4000 for particular production run. Compute cost per die area=2.3 cm² for 1 cm² if ρD = 1 defect/ cm²

Section-2

7) Explain various cache write policies.
8) What is Real to virtual address translation scheme.
9) Explain fully associative mapping scheme for cache memory.
10) Explain Assembly cache, Split cache, I & D cache and two level cache in detail.
11) Suppose following parameters for L1 cache with 4kb and L2 cache with 61 kb. Cache miss rate is 4kb 0.10 misses per ref
     64kb 0.20 misses per ref
     1 refr/I
     3 cycles L1 miss, L2 hit
     10 cycles total time L1 miss, L2 miss.
     What is excess CPI due to cache misses?
12) In two level cache we have:
     L1 size 8 kb with 4w set associating, 16B lines (WNTWA)
     L2 size 64kb, direct mapping, 64B lines and CBWA
     Suppose the miss in L1, hit in L2 delay in 3 cycles and the miss in L1, miss in delay is 10 cycles. The processor makes 1.5 references/I:
     a) What are L1 and L2 miss rates?
     b) What is expected CPI loss due to cache misses?

Section-3

13) Explain Hellerman’s and Rau’s model in detail.
14) What is Open and closed queue models in detail?
15) What is Processor modeling using Queueing Theory?
16) Differentiate SRAM and DRAM. Explain Architecture of memory chip.

Section-4
17) Why memory coherence is essential in shared memory multiprocessor. Explain the various approaches and protocols to maintain this.

18) What are multiple issue machines? Compare them with vector processors.

19) Explain Vector instructions and operations in detail. What factors affect the performance of Vector processors?

20) Write short note on
   a. Partitioning
   b. Vector Processor
   c. VLIW
CSE 5th Sem

Q1. What is an applet? Explain life cycle of an applet.

Q2. Explain the concept of function overriding with an example.

Q3. Write a program to create the first ten Fibonacci Series.

Q4. Explain Exception Handling in JAVA.

Q5. Differentiate bio package and interfaces in JAVA.

Q6. What is style sheet? Explain various style specification in both HTML and CSS by keeping views of site design. Discuss various benefits of both style specifications.

Q7. Explain the meta tags and semantic tags. Also explain the event handling in JAVA Script.

Q8. Explain tags:
   (a) Anchor
   (b) Frame
   (c) Table
   (d) Meta
Q10 Write the source code of JavaScript. Write a JavaScript program for a calculator.

Q11 What is JSP and explain its architecture. How JSP is different from ASP and CGI?

Q12 Explain input/output operations on the WWW.

Q13 What is ASP and explain its architecture.

Q14 Compare Microsoft .Net technology with competing technology.

Q15 Explain delivering multimedia over web pages.

Q16 Explain the concept of VRML idea.

Q17 Write short notes on:
   a) UDDI
   b) Session
   c) Assembly
   d) CTS and CTS
Question 1: Describe Biological Neural Network and Artificial Neural Network.

Question 2: Explain the application of Artificial Neural Network.

Question 3: Compare and contrast biological neurons with ANN.

Question 4: What are the models of Artificial Neural Network and explain McCulloch neuron to design logic networks of AND & OR logic function.

Question 5: Explain learning rules.
- Hebbian learning rule
- Delta learning rule

Question 6: Explain Bidirectional Associative Memory.

Question 7: Explain error back propagation training algorithm.

Question 8: Explain the single layer continuous perceptron training algorithm for linearly separable classification.

Question 9: What is associative memory? Explain its types.
Implement the single discrete perceptron training algorithm for c=1 that provides the following classification to four patterns:

\[ X_1 = [11], \quad X_3 = [3, 1], \quad d_1 = d_2 = \text{class 1} \]
\[ X_2 = [0.5, 1], \quad X_4 = [-2, 1], \quad d_2 = d_4 = \text{class 2} \]

Perform the training task by starting with initial weight vector \( w = [-2, 5, 1.75]^T \).

10. Make an arbitrary feed forward 

3 neurons in I/P layer, 2 in hidden and 2 in O/P layer. Explain the concept of input vector, output vector, connection matrix, signal.


13. Differentiate between auto association and history association. Design a bi-directional associative memory to encode the following patterns:

\[ A_1 = 1000001 \]
\[ A_2 = 0110000 \]
\[ A_3 = 0001011 \]
\[ B_1 = 11000 \]
\[ B_2 = 10100 \]
\[ B_3 = 0110 \]

and check if for \( A_3 \).

14. Role Explain the term:

(a) Role learning factor
(b) Linear associator
(c) Clustering
(d) Memory based learning
Important Questions

CSE + ECE 3rd Sem

Q1. What are data structures? Define all types of data structures.

Q2. What is "stack"? How a stack can be represented in memory. Also describe various application of stack.

Q3. What is infix, postfix, and prefix expressions. Write an algorithm to evaluate postfix expression.

Q4. What is searching. Describe the types of searching with algorithm and suitable example.

Q5. Write a program that takes a list pointed by list and traverses it in such a manner that after travel the links of the visited nodes become reversed.

Q6. What is Array. Discuss two all operations on array with suitable examples.

Q7. What is Sorting? Explain types of Sorting and explain Merge Sort with suitable example.

Sort the given list using any type of sorting which is mention.

12, 19, 1, 5, 74, 81, 25, 49, 37, 2.
Question 8. What is a Circular Queue? Write an algorithm for insertion and deletion in a Circular Queue.

Question 9. Explain these terms:
- Priority Queue
- AVL tree
- Threaded Binary tree
- B-Tree
- Skip List

Q-10. What is a Binary tree? Write an algorithm to count the number of nodes in a Binary tree.

Q-11. What is a Binary Search tree?

Create a Binary tree with the nodes 1, 12, 15, 90, 45, 80, 70, 10, 47. Write an algorithm to search a value in a Binary Search tree.

Q-12. Explain advantages and disadvantages of Threaded Binary tree.

Q-13. What is a Graph? Explain types of Graph.

Q-14. Explain all types of Representation of Graph.

Draw a directed graph that corresponds to the following adjacency matrix:

<table>
<thead>
<tr>
<th></th>
<th>V0</th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>V0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>V1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Q. 15 What is traversing? Explain graph traversing technique with a suitable example and algorithm.

Q. 16 Write an algorithm to insert and delete an element from a double linked list.

Q. 17 How file can be managed in C? Explain with an example.

Q. 18 What is tree traversal? Explain all types with an algorithm.

Given preorder, inorder and postorder.
Most Important Questions & Solution

B. Tech 7th Sem (CSE), Distributed Operating System

Paper: CSE-423-F

Section - A

1. What is group communication? What are the various design issues for it? What is group addressing? (20)
2. What do you mean by RPC? List & explain five classes of failures that can occur in RPC systems. (20)
3. Explain bus based multiprocessors & Multicomputers. (10)
4. Explain ATM (10)
5. What do you mean by distributed operating system? Explain its Goals. (10)

Section - B

6. What is Deadlock? How it can be handled in distributed system? Explain. (20)
7. Write in detail about mutual exclusion (20)
8. Explain Election algorithms in detail. (10)

Section - C

9. Differentiate between workstation & processor pool mode. (10)
10. What are the implementation issues for processor allocation (10)
11. What is resource sharing & Feeding (10)
8.12 Differentiate between stateless and stateful servers (10)

8.13 What are the latest trends in distributed file systems? (10)

8.14 What are real-time distributed systems? Discuss (10)

8.15 What are the latest trends in distributed file systems? (10)

Section D

8.16 What is the need of consistency in distributed system? Explain consistency models. (20)

8.17 Write a detailed note on process management in MACH. (10 or 20)

OR

Explain MACH its process management & communication in MACH (20)

8.18 Explain Unix emulation in MACH (10)
Q: 1 Define Equivalence Relation, partitions, partial ordering relation & hence determine whether the relation:
\[ R = \{ (a, b) \in \mathbb{R}; a - b \leq 1 \} \] 
(i) a partial order Relation  
(ii) an equivalence Relation  
(iii) Anti- symmetric Relation

Q: 2 Prove De Morgan's Laws:
(i) \((A \cup B)^c = A^c \cap B^c\)
(ii) \((A \cap B)^c = A^c \cup B^c\)

Q: 3 Let \( A = \{ 1, 2, 3, 4, 5 \} \) & \( R \) be relation on \( A \times A \) given by \( R = \{ (1, 2), (1, 3), (1, 4), (2, 3), (2, 4), (3, 4) \} \)
Check if \( R \) is (i) Reflexive  (iii) Asymmetric  (v) Transitive  
(ii) Symmetric  (iv) Antisymmetric

Q: 4 Define tautology, contradiction, contingency & hence determine whether the following proposition is a tautology, contingency & a contradiction:
(i) \( p \rightarrow (p \rightarrow 2) \)
(ii) \( p \rightarrow (2 \rightarrow p) \)
(iii) \( p \wedge \neg p \)
(iv) \( p \vee \neg(p \wedge q) \)
Q: 5 With the help of suitable examples define permutation, combination, AP, GP & AG Series.

Q: 6 Solve the recurrence relation:
   \[ a_n = a_{n-1} + a_{n-2}, \quad n \geq 2 \]
   with initial conditions \( a_0 = 1 \) \& \( a_1 = 1 \).

Q: 7 Solve the recurrence relation:
   \[ a_n - 7a_{n-1} + 10a_{n-2} = 0 \]
   by the method of generating functions with initial conditions \( a_0 = 3 \), \( a_1 = 3 \).

Q: 8 State & prove Lagrange's Theorem.

Q: 9 Explain the following terms with suitable examples:
   (i) Groups
   (ii) Homomorphism in Groups
   (iii) Automorphism in Group
   (iv) Normal Sub-group

Q: 10 Define the following with suitable example:
   (i) Integral Domain
   (ii) Normal subgroup
   (iii) Cyclic group

Q: 11 With the help of suitable examples, explain what are rings.

Q: 12 Find the shortest path from A to Z.

Q: 13 Define Multi graph & weighted graph with example.

Q: 14 Explain the algorithm of preorder, inorder, postorder of tree.

Q: 15 For the following graph find different subgraphs.

Discuss DDA Line Drawing Algorithm with example.

What is meant by antialiasing? Explain various methods used to develop antialiasing routines.

Explain the difference between parallel & perspective projection.

Explain briefly:

(i) 3D-clipping
(ii) 3D-scaling
(iii) 3D-translation

Explain depth buffer method for hidden surface detection.

Explain Painter’s Algorithm.

What are the various techniques used for image processing.

Explain Bezier curves & properties of Bezier curves.

Write & Explain Sutherland-Cohen algorithm for line clipping.

Write the steps required to transform a world coordinate into window to view space. Write all equations.
Q.12 What are principal vanishing points for standard perspective transformation?

Q.13 Perform 45° rotation of triangle A(0,0), B(1,1), C(5,2) about point P(-1,-1).

Q.14 Explain illumination Models & Shading Models.

Q.15 Explain Bresenham’s Circle drawing algorithm with example.

Q.16 Write a short note on:
   i) Polygon Filling Algorithm
   ii) Filled Area Algorithm
   iii) Boundary Filled Algorithm

Q.17 Explain Area sub-division algorithm for hidden surface removal.