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Code No: R31053 **R10** **Set No: 1**

JNT University Kakinada
III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015
ADVANCED DATA STRUCTURES
(Com. to CSE AND IT)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions
All Questions carry equal marks
*****

1. a) Discuss about open hashing with examples.
   b) What is skip list? How to insert an element into a skip list?

2. Write the node structure for AVL tree? Write an algorithm for inserting an element into AVL tree.

3. a) Discuss about Lazy Binomial Queues.
   b) Write an algorithm for creating Priority Queues.

4. What are different graph traversal techniques? Explain.

5. a) Discuss about Kruskal's algorithm.
   b) Write an algorithm for Warshall's algorithm.

6. Consider the following numbers
   23, 56, 11, 38, 29, 47, 68, 17, 44
   a) Show the sequence of steps after applying Quick sort.
   b) Show the sequence of steps after applying Heap sort.

7. Explain about Digital Search trees with examples.

8. Explain about the following terms
   a) Fixed field buffers
   b) Read and write operations on files
   c) Special characters on files

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Code No: R31053 **R10** **Set No: 2**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

ADVANCED DATA STRUCTURES

(Com. to CSE AND IT)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

*****

1. a) Analyze the successful and unsuccessful search cases in closed hashing.
   b) What is rehashing? Discuss.

2. What is AVL Tree? Write an algorithm to delete an element into an AVL tree.

3. a) What is Binomial Queue? Discuss.
   b) What operations that can be performed on Binomial Queues? Explain.

4. Discuss various Graph storage representations with examples.

5. a) Write an algorithm for Dijkstra's algorithm.
   b) Discuss about the prim's algorithm.

6. Consider the following numbers

   23, 56, 11, 38, 29, 47, 68, 17, 44

   a) Show the sequence of steps after applying merge sort.
   b) Show the sequence of steps after applying Heap sort.

7. Discuss about various pattern matching algorithms with examples.

8. Explain about the following terms
   a) Field and record organization
   b) Open and close operations
   c) Fixed filed buffers

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Code No: R31053 **R10** **Set No: 3**

III B.Tech. I Semester Regular/Supplementary Examinations, Dec/Jan -2015

ADVANCED DATA STRUCTURES

(Com. to CSE AND IT)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

*****

1. a) Discuss about closed hashing with examples.
   b) Discuss about various Hashing functions with examples.

2. Discuss about 2-3 tree? Explain how to insert and delete an element from the 2-3 tree.

3. a) What is complete binary tree? What are the applications of priority Queue?
   b) How to delete an element from priority queue? Discuss.

4. a) What is DFS? Write an algorithm for DFS.
   b) What is Graph? How edges will be added and deleted from the Graph?

5. What are different Minimum Cost Spanning Trees algorithms? Explain with examples.

6. Consider the following numbers

   213, 556, 121, 398, 269, 437, 658, 172, 434

   a) Show the sequence of steps after applying Radix sort.
   b) Show the sequence of steps after applying Quick sort.

7. a) What is Patricia? Discuss.
   b) Discuss about Multi-way trie.

8. Explain about the following terms
   a) Read operation
   b) Open operation
   c) Fixed length for fields

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Code No: R31053 **R10** **Set No: 4**

III B.Tech. I Semester Regular/Supplementary Examinations, Dec/Jan -2015

ADVANCED DATA STRUCTURES

(Com. to CSE AND IT)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

*****

1. a) Analyze the insertion and deletion operations in closed hashing.
   b) What is hash table? Discuss about the hashing techniques.

2. What is balancing condition? Discuss about the single and double rotations with examples.

3. What is binary heap? Write an algorithm to insert an element into the priority queue.

4. a) What is BFS? Write an algorithm for BFS.
   b) What is Graph? How vertex will be inserted and deleted from the Graph?

5. a) Discuss about the time complexity for the Minimum Cost Spanning Tree algorithms
   b) Write an algorithm for Floyd's.

6. Discuss about Quick sort. Discuss about the best, average and worst case time complexity for the Quick sort.

7. a) Discuss about the Boyer-Moore algorithm.
   b) What is Binary Trie? Discuss.

8. Explain about the following terms
   a) write operation
   b) close operation
   c) file structure concepts

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Code No: R31051 **R10** **Set No: 1**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

COMPILER DESIGN

(Computer Science and Engineering)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

*****

1. (a) With a neat diagram, explain in detail the different phases of a compiler.
   (b) What is the difference between a compiler and an interpreter?

2. (a) Explain the functions of Lexical analyzer with its implementations.
   (b) Give the regular expressions and transition diagram for the following tokens
   (i) Identifiers (ii) Unsigned Number (iii) Relational operators

3. (a) Define Parser. Explain about the role of parser.
   (b) Explain Left Recursion and show how it is eliminated?
   Eliminate Left Recursion from the following grammar.
   E->E+T|T , T->T*F|F, F->(E)|id

4. (a) What is handle pruning? Explain the same with the grammar
   E->E+E|E*E|(E)|id and the input string is id1+id2*id3$.
   (b)What are the differences between LL(1) parsing and LL(k) parsing?

5. Given the following grammar
   S->BB, B->aB|b
   Construct sets of (i) LR(1)items (ii) canonical LR(1) parsing table.

6. (a) Briefly explain the concept of Syntax Directed Definition.
   (b) Give the Syntax Directed Definition to process a simple variable declaration in C and construct annotated parse tree for the input int a,b,c;

7. (a)Explain the issues involved in code generation.
   (b) Write Quadruple representation for a+a*(b-c)+(b-c)*d
   (c)What is DAG? Construct a DAG for the expression in question (b)

8. Write short notes on
   (a) Peephole optimization
   (b) Register allocation by graph coloring
   (c) YACC

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Code No: R31051 **R10** **Set No: 2**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

COMPILER DESIGN

(Computer Science and Engineering)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

*****

1. (a) Define Language processor? Differentiate between Assembler, Interpreter and Compiler.
   (b)Explain with neat diagram, the various phases of a compiler. Mention the input and output for each phase.

2. (a) Define Lexical analysis. Explain why the analysis portion of a compiler is separated into lexical analysis and parsing phases.
   (b) Write a transition diagram to recognize the token relop (corresponding to relational operators in c++ language)

3. (a) Explain Left Recursion and describe the algorithm for eliminating the Left Recursion from a grammar.
   (b) Explain error recovery in predictive parsing.

4. (a) Construct SLR(1) parsing table for the following grammar.
   E->E*T|T, T->T+F|F, F->id
   (b) What is a Shift Reduce parser? Explain with an example, the stack implementation of a shift reduce parser.

5. Construct LALR parsing table for the following grammar
   S'->S, S->CC, C->cC|d

6. (a) What is an activation record? Explain the purpose of each item in the activation record with an example.
   (b) With example, explain different parameter passing techniques.

7. (a) Translate the following into three-address code.
   While (A<B)do
   If (C<D) then X=Y+Z
   (b)What are basic blocks? Explain in detail DAG representation of basic blocks.

8. (a) Explain any five kinds of code optimization techniques.
   (b) Explain how garbage collection is done using reference count.

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Code No: R31051 **R10** **Set No: 3**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

COMPILER DESIGN

(Computer Science and Engineering)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

*****

1. (a) What are the functions of pre-processing? Explain.
   (b) Explain the phases of compilation with example.

2. (a) Define the terms Tokens, Patterns, and Lexemes.
   (b)Write the transition diagram for an unsigned integer.
   (c)Define Regular Expression. List out the algebraic laws for regular expressions r,s, and t.

3. (a) What is Left Factoring. Write an algorithm for left factoring a grammar.
   Do left factorization for the following grammar
   S->iEtS | iEtSeS | a, E->b
   (b) What is the role of a parser and Explain the different types of parsing techniques.

4. (a) Define Shift /Reduce and Reduce /shift conflicts, Write an example grammar which has both Shift/Reduce and Reduce/Reduce conflicts while parsing with SLR(1) and prove it by constructing SLR(1) parsing table.
   (b) Differentiate between LR and LL parsers.

5. (a) Construct LR(0) items for the “Dangling-Else” grammar.
   (b) Explain error recovery in LR parsing.

6. (a) Explain stack and heap allocation strategies with the help of necessary diagrams. Also highlight their differences.
   (b) Give a scheme for runtime allocation for C like languages along with the structure of activation record.

7. (a) Explain any five kinds of code optimization techniques.
   (b) Define the terms quadruple, triples and indirect triples. Give their representation for the assignment statement A=B*(C-D) by generating an appropriate three address code.

8. (a) Explain the technique of inter procedural optimization.
   (b) Explain register allocation with an example.

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Code No: R31051 **R10** **Set No: 4**

JNT University Kakinada
III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015
COMPILER DESIGN
(Computer Science and Engineering)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions
All Questions carry equal marks
*****

1. (a) Differentiate between pass and phase of a compiler. List some applications of compiler technology.
   (b)Show the translation made by each of the phases of the compiler for the statement Position = initial + rate*60 Where position, initial and rate are real numbers.

2. (a) With an example, explain the concept of Lexical Errors.
   (b) What are the reasons for separating Lexical analysis from Parsing.

3. Give an algorithm for constructing predictive parsing table. Apply this algorithm for the following grammar to obtain parsing table.
   S->iEtSS'|a, S'->eS|€, E->b

4. (a) Consider the following grammar, S->AS|b, A->SA|a . Construct the SLR parsing table for the grammar. Show the actions of the parser for the input string "abab".
   (b) Distinguish between Top-Down parsing and Bottom-Up parsing .

5. (a) Briefly explain the construction of Canonical LR(1) parsing table.
   (b)Differentiate between CLR and LALR parsing techniques.

6. (a) Give the Syntax Directed Definition to process a simple variable declaration in C and construct dependency graph for the input float x,y,z.
   (b) What do you mean by calling sequence? Explain the actions performed during function call and return.

7. Write about various machine independent code optimization techniques with suitable examples for each.

8. Write short notes on
   (a) Instruction Scheduling
   (b) Symbol table organization
   (c) Design goals for garbage collectors

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Code No: R31054 **R10** **Set No: 1**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

COMPUTER GRAPHICS

(Com.to CSE and IT)

Time : 3 hours Max. Marks: 75

Answer any Five Questions

All Questions carry equal marks

*****

1. a) Differentiate DDA and Bressenham's line drawing algorithms
   b) Consider three different raster systems with resolutions of 640 by 400, 1280 by 1024,and 2560 by 2048. What size frame buffer (in bytes) is needed for each of these systems to store 12 bits per pixel? How, much storage is required for each system if 24 bits per pixel are to be stored?

2. Explain flood fill algorithm with an example.

3. Prove that the multiplication of transformation matrices for each oi the following sequence of operations is commutative:
   (a) Two successive rotations.
   (b) Two successive translations.
   (c) Two successive scalings.

4. Demonstrate Sutherland-Hodgeman polygon clipping algorithm with an example.

5. Derive blending functions for a B-spline surface of degree 3x3.

6. Develop an algorithm for converting an object defined in one coordinate reference to any other coordinate system defined relative to the first system.

7. Write the depth buffer algorithm and demonstrate with an example.

8. Write short notes
   a) Generation of in-betweens key frames using linear interpolation
   b) Raster animation
   c) Back face detection

*****

Code No: R31054 **R10** **Set No: 2**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

COMPUTER GRAPHICS

(Com.to CSE and IT)

Time : 3 hours Max. Marks: 75

Answer any Five Questions

All Questions carry equal marks

*****

1. a) Derive mid point circle algorithm.
   b) Suppose an RGB raster system is to be designed using an 8-inch by 10-inch screen with a resolution of 100 pixels per inch in each direction. If we want to store 6 bits per pixel in the frame buffer, how much storage (in bytes) do we need for the frame buffer?

2. Explain boundary fill algorithm with an example.

3. Prove that a uniform scaling **($S_x = S_y$)** and a rotation form a commutative pair of operations but that, in general, scaling and rotation are not commutative operations.

4. Compare the number of arithmetic operations performed in the Cohen-Sutherland and the Liang-Barsky line-clipping algorithms for two different line orientations relative to a clipping window.

5. Derive the parametric form of Hermite's cubic spline given the boundary conditions a) Two end points and b) Two end slopes.

6. Derive the transformation matrix to reflect an object about an arbitrarily selected plane

7. Write scan line algorithm for visible surface detection and explain with an example.

8. Write short notes
   i. Animation specification implementing the acceleration-deceleration calculation
   ii. Computer animation languages
   iii. 3-D clipping

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Code No: R31054 **R10** **Set No: 3**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

COMPUTER GRAPHICS

(Com.to CSE and IT)

Time : 3 hours Max. Marks: 75

Answer any Five Questions

All Questions carry equal marks

*****

1. a) Derive mid point circle algorithm.
   b) How long would it take to load a 640 by 400 frame buffer with12 bits per pixel, if 10^5 bits can be transferred per second? How long would it take to load a 24-bit per pixel frame buffer with a resolution of 1280 by 1024 using the dame transfer rate?

2. Explain scanline fill algorithm with an example.

3. Show that transformation matrix for a reflection about the line y = x, is equivalent to a reflection relative to the x axis followed by 2 counterclockwise rotation of 90^o.

4. Carefully discuss the rationale behind the various tests and methods for calculating the intersection parameters u_1 and u_2 in the Liang-Barsky line-cllpping algorithm.

5. Determine the blending functions for uniform, periodic B-spline curves of degree 3.

6. Derive the transformation matrix for scaling an object by scaling factor **si** In a direction defined by the directional angles α, β, γ.

7. Describe BSP tree methods in detail with examples.

8. Write short notes
   a) Animation specification involving accelerations .
   b) Motion specifications in animation.
   c) Homogeneous coordinates

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Code No: R31054 **R10** **Set No: 4**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

COMPUTER GRAPHICS

(Com.to CSE and IT)

Time : 3 hours Max. Marks: 75

Answer any Five Questions

All Questions carry equal marks

*****

1. a) Demonstrate Bressenham's line algorithm for the line with end points (2,3) and 12,15).
   b) Suppose we have a computer with 32 bits per word and a transfer rate of 1 mip (one million instructions per second). How long would I take to fill the frame buffer of a 300-dpi (dot per inch) laser printer with a page size *of* 8 Inches by 11 inches?

2. Describe different inside and outside tests with suitable examples.

3. Show that transformation matrix, for a reflection about the line y = -x, is equivalent to a reflection relative to the y axis followed by a counterclockwise rotation of 90^0 .

4. Derive the window-to-viewport transformation equations by first scaling the window to the slze of the viewport and then translating the scaled window to the viewport position.

5. Derive the blending functions for a Bezier surface 3x3

6. Prove that the multiplication of three dimensional transformation matrices for each of the following sequence of operations is commutative:
   (a) Any two successive translations.
   (b) Any two successive scaling operations.
   (c) Any two successive rotations about any one of the coordinate axes.

7. Describe Area sub-division and octree methods with examples.

8. Write short notes
   i. Key frame systems.
   ii. General computer animation functions
   iii. Parallel and perspective projections.

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Code No: R31052 **R10** **Set No: 1**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

COMPUTER NETWORKS

(Com. to CSE AND IT)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

*****

1. a) What is meant by data communication? Give the characteristics of an efficient data communication system.
   b) Explain various types of addresses. Give their role in data communication systems.

2. a) What is the role of virtual circuits in frame relay? How the frame relays use different types of networks?
   b) What is multiplexing? In what situations it can be used?

3. a) What is framing? Why it is implemented in Data Link Layer?
   b) Explain the working of stop- and- wait flow control protocol.

4. a) Discuss about the configuration and control fields of HDLC.
   b) Give the mechanism of Go-back N ARQ technique.

5. a) Describe the differences between p-persistent CSMA and non persistent CSMA.
   b) What is channelization? Explain various channelization protocols.

6. a) Compare the data rates for Standard Ethernet, Fast Ethernet, Gigabit Ethernet and Ten-Gigabit Ethernet.
   b) Discuss the three types of mobility in a wireless LAN.

7. a) What is Bluetooth? Explain its architecture.
   b) Compare the following:
      - an uplink with downlink.
      - hard handoff with soft handoff

8. a) What are connecting devices? Give the classification of connecting devices.
   b) What is a loop problem in learning bridge? How it can be simplified?

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Code No: R31052 **R10** **Set No: 2**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

COMPUTER NETWORKS

(Com. to CSE AND IT)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

*****

1. a) What are the two forms of data representations? Explain in detail any two coding schemes used for data representations.
   b) Explain the layered architecture of TCP/IP suite. Mention the different protocols working in each layer.

2. a) Explain how TDM works. Why is statistical time division multiplexing more efficient than TDM?
   b) Explain different types of switching techniques along with their advantages and disadvantages.

3. a) Explain various error detection methods with the help of suitable examples.
   b) Describe various design issues of data link layer.

4. a) Explain the mechanism of selective repeat ARQ technique.
   b) There are three types of data transfer modes defined by HDLC. What are they? Explain them.

5. a) What is meant by vulnerable period? Show that the vulnerable time period of slotted ALOHA is half of the pure ALOHA.
   b) Explain the working of Carrier Sense Multiple Access protocol.

6. a) What are the advantages of dividing an Ethernet LAN with a bridge? Give the relationship between a switch and a bridge.
   b) Briefly discuss about the addressing mechanism of IEEE 802.11.

7. a) Discuss about Bluetooth protocol stack with neat diagram.
   b) What are the different types of orbits? Which type of orbit does a GEO satellite have? Explain.

8. a) Describe the function of a repeater with an example.
   b) What is a learning bridge? Explain the process of learning with a neat diagram.

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Code No: R31052 **R10** **Set No: 3**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

COMPUTER NETWORKS

(Com. to CSE AND IT)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

*****

1. a) Discuss different types of data transmission method also discuss about various network models.
   b) What is Open Systems Interconnect (OSI) reference model? What are the principles used in defining the OSI layers.

2. a) Compare and contrast TDM, STDM and FDM.
   b) How the message switching implemented in circuit switching networks? Explain with an example.

3. a) What do you understand by Hamming distance? Describe the role of minimum Hamming distance in error detection and error correction.
   b) Reliability of CRC is better than that of simple parity and LRC. Justify.

4. a) Give the frame structure of HDLC. Explain each field.
   b) Describe the services provided by PPP protocol. Also, list some services which does PPP does not provide.

5. a) What is meant by random access method? Give examples of random access protocols.
   b) Compare and contrast TDMA with CDMA. Which one is preferable? When?

6. a) What are the common Fast Ethernet implementations? Give the purpose of NIC.
   b) Give the architecture of IEEE 802.11. Explain its components.

7. a) Describe about the two types of links between a Bluetooth primary and a Bluetooth secondary.
   b) How transmitting and receiving be implemented in cellular systems? Describe about frequency reuse principle.

8. a) What is a spanning tree? Describe the process to find the spanning tree with an example.
   b) Discuss the issues involved in connecting different LANs using bridges.

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Code No: R31052 **R10** **Set No: 4**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

COMPUTER NETWORKS

(Com. to CSE AND IT)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

*****

1. Explain various layers of OSI model and give details about their functioning.

2. a) Explain the concept of multiplexing. Why is multiplexing more cost effective?
   b) Is circuit switching preferred over packet switching? Why?

3. a) List and explain various services provided by data link layer to network layer.
   b) What is framing? Discuss various framing methods.

4. a) Explain the frame format and transition phases of PPP.
   b) Compare various sliding window protocols of data link layer.

5. a) What is the need of multiple access protocol? List the categories of multiple access protocols.
   b) Compare and contrast TDMA with FDMA.

6. a) List the differences between a unicast, multicast and broadcast address.
   b) Why there is no need for CSMA/CD on a full-duplex Ethernet LAN? Explain.

7. a) How much time in a Bluetooth one-slot frame is used for the hopping mechanism? What about a three-slot frame and a file-slot frame.
   b) Give the features of various satellite networks.

8. a) Give the differences between the following:
   - Hub and repeater
   - Bridge and router

   b) Can a bridge filter the traffic? Why is filtering important? Explain.

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Code No: R31055 **R10** **Set No: 1**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

MICROPROCESSORS AND MULTICORE SYSTEMS

(Computer Science and Engineering)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

*****

1. a) What are the differences between 8086 and 8088 microprocessor?
   b) Find the physical address for the following base & offset address
   i) 5642::7895 ii)7458::FECD iii) 7235:: AC45 iv) ABCD::ABCD

2. a) List the major steps in developing an assembly language program
   b) What is the main advantage of a top down design approach to solving a programming problem.

3. Write an assembly language program in 8086 processor flow chart and algorithm to find number of ones and zeros in a 10 words which are locating from 5000H address onwards in a data segment. Store the number ones in a 6000H location and store the number of zeros in a 8000H location

4. Write an assembly language program in 8086 processor flow chart and algorithm to compare to strings, if strings are equal store EEH in a location 7089H otherwise store FFH.

5. a) Describe the purpose of the 8086 interrupt vector table.
   b) Briefly describe the operation of type 0, type 1, type 2, type 3, type 4 interrupts.

6. List the assembler directives of 8086 and write its importance of 8086 programs.

7. a) What is the importance of memory access time.
   b) Explain how the timer output pins are used.

8. a)Describe the differences between the 80386DX and the 80386SX
   b) Write flags operations of 80386 processor.

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Code No: R31055 **R10** **Set No: 2**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

MICROPROCESSORS AND MULTICORE SYSTEMS

(Computer Science and Engineering)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

*****

1. a) Discuss about the series of signals that can generate at address fetching bus, data bus and control bus during the fetching of instruction.
   b) Draw the flag register and indicate flag names write its uses.

2. a) What are the steps to take development of 8086 program?.
   b) Write coding part for framing of instruction MOV DX,[797H]

3. Write an assembly language program in 8086 processor flow chart and algorithm to arrange a series of word numbers in a ascending order which is located from starting address of 5060H in data segment.

4. Write an assembly language program in 8086 processor flow chart and algorithm using recursive procedure calculate factorial of numbers 1 to 5.

5. a) Why must you use an IRET instruction rather than the regular RET instruction at the end of an interrupt service procedure.
   b) Discuss about software and hardware interrupts in 8086 microprocessor.

6. Explain the operation of ENDP, ENDS, EQU, ASSUME, EVEN, EXTRN, ORG assembler directives.

7. a) What is the difference between the interrupt poll and interrupt poll status register.
   b) What is the purpose of the end-of-interrupt (EOI) register.

8. a)Draw the memory map of the 80386 when operated in the i) protected mode ii) real mode
   b) Write differences between Pentium and 80386 processor.

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Code No: R31055 **R10** **Set No: 3**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

MICROPROCESSORS AND MULTICORE SYSTEMS

(Computer Science and Engineering)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

*****

1. Draw the block diagram of 8086 microprocessor and explain the BIU and EU parts. Write importance of Queue register.

2. a) Find the syntax error in the following instructions
   i) ADD AL,7909H ii) ROR BX,04H iii) MUL AL,BL iv) LOOP CX
   b) Describe how an assembly language program is developed and debugged using syntax tools.

3. Write an assembly language program in 8086 processor flow chart and algorithm to find two numbers BCD addition two numbers BCD subtraction and two numbers BCD multiplication. Input numbers are available at 7979H address and 8989H address locations.

4. Write an assembly language program in 8086 processor flow chart and algorithm using recursive procedure calculate mathematical expression ncr value

5. a) Draw basic block diagram showing an 8259 connected to an 8086 indicate important pin names.
   b) What is the purpose of over flow interrupt from which address it utilizes this interrupt.

6. Explain the operation of ENDP, ENDS, EQU, ASSUME, EVEN, EXTRN, ORG assembler directives.

7. a) Write advantages and disadvantages of paging.
   b) Explain the procedure of converting linear address into physical address.

8. Draw and explain the architecture of Pentium processor and explain memory management in in Pentium.

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Code No: R31055 **R10** **Set No: 4**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

MICROPROCESSORS AND MULTICORE SYSTEMS

(Computer Science and Engineering)

Time: 3 Hours Max Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

*****

1. a) Draw the memory chart for 8086 microprocessor indicate segments range and write purpose of segments.
   b) Write addressing modes of 8086 with examples.

2. a) Show the results that will be in the affected registers or memory locations after each of the following instructions executes.

   i) ADD AL,BL
   MOV [5678],AL

   ii)MOV CL,FF
   RAR AX,CL

   iii) MOV AL, [BX]
   ADD AL, 07H
   DAA

   iv) ADD BL,DH
   JS JNTUK

   b) Describe the function of assembly directives of 8086 microprocessor.

3. Write an assembly language program in 8086 processor flow chart and algorithm to find sum of even parity 8 bit numbers, which is located from 4562H location onwards. Store the sum value in 4050H location.

4. a) List three methods of passing parameters to a procedure and give the advantages and disadvantages of each method.
   b) Write a procedure which produces a delay of 7.9 ms when run on the 8086 microprocessor to take 5.6 MHz frequency.

5. Write the algorithm and the program for an interrupt service procedure which turns an LED connected to bit D0 at port A ON for 25s and OFF for 1 min. assume 1 hz interrupt signal is connected to NMI input of 8086 microprocessor.

6. Explain the operation of PROC, SHORT, NAME, OFF SET, PUBLIC, SEGMENT, TYPE assembler directives.

7. Draw the block diagram of 80286 processor and explain each block.

8. a) Draw the internal structure of the Pentium pro microprocessor and briefly explain.
   b) Draw the Pentium Pro dispatch and execution unit (DEU) and briefly explain.

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Code No: R31056 **R10** **Set No: 1**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

OPERATING SYSTEMS

(Com.to CSE and IT)

Time : 3 hours Max. Marks: 75

Answer any Five Questions

All Questions carry equal marks

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1	a)	What are the major theoretical advances in the development of operating systems? Explain.	[8]
	b)	What is a systems call? Explain various system call operations in detail.	[7]
2	a)	Explain various techniques used for inter process communication.	[8]
	b)	Explain the process creation, Process switching and process termination functions in process management.	[7]
3	a)	What is meant by monitor? How it is different from semaphore? And also explain various operations used in monitor.	[7]
	b)	Write and explain the solution for bounded buffer Producer-Consumer problem using monitors.	[8]
4	a)	What is memory management? What are the intended requirements satisfied by it? Explain.	[8]
	b)	Explain the process of converting logical address-0000010111011110 in to physical address(Assume that left most 6- bits are used for page number and remaining for offset)	[7]
5	a)	Explain FIFO, LRU and Second-chance page replacement algorithms with an example reference string.	[8]
	b)	What is demand paging? Why it is called as lazy swappers? Explain in detail.	[7]
6		Execute Banker's algorithm for the following snapshot for processes p0 to p4 and Resources A to D .Allocation [2 0 1 2, 1 0 0 0, 1 3 5 4, 0 6 3 2 , 0 0 1 4] Max[2 0 1 2, 2 7 5 0, 2 3 5 6, 0 7 5 2 , 0 7 5 6] Available[2 4 2 1] find the safe sequence. If a request from p1 arrives [1 4 2 0] can the request be granted?	[15]
7	a)	Explain different allocation methods for f allocating disk space in detail.	[7]
	b)	Explain in detail about operations that are to be performed on a directory and also describe the most common schemes for defining the logical structure of a directory.	[8]
8	a)	Explain the performance characteristics of mass-storage devices.	[8]
	b)	What is disk scheduling? Compare various scheduling algorithms and suggest best algorithm for your own snapshot.	[7]

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Code No: R31056 **R10** **Set No: 2**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

OPERATING SYSTEMS

(Com.to CSE and IT)

Time : 3 hours Max. Marks: 75

Answer any Five Questions

All Questions carry equal marks

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1	a)	Discuss what is meant by operating system as resource manager in detail.	[8]
	b)	Explain Microkernel and multithreading operating system designs with advantages and disadvantages.	[7]
2	a)	What is meant by preemptive scheduling? Explain various preemptive scheduling algorithms arrived at different time intervals. Assume at least 5 processes.	[8]
	b)	Draw and explain the transitions of process state diagram with blocked suspended and ready suspended.	[7]
3	a)	What is semaphore? What is its importance in providing process synchronization?	[8]
	b)	Write and explain the solution for Reader-Writer classical synchronization problem using binary semaphores.	[7]
4	a)	Explain various types of memory portioning with advantages and disadvantages with example.	[8]
	b)	Differentiate nested page tables from inverted page tables.	[7]
5	a)	Consider the following page reference string 2,3,4,5,3,2,6,7,3,2,3,4,1,7,1,4,3,2,3,4,7. Compare the number of page faults with frame sizes 3,4 and 5 with any replacement algorithm , suggest the improvements to reduce number of page faults.	[8]
	b)	What is Translation Look aside Buffer? What is its importance in virtual memory? Explain.	[7]
6	a)	Explain Banker's deadlock-avoidance algorithm with an illustration.	[8]
	b)	What is the usage of resource allocation graph? Draw an example resource allocation graph which shows the deadlock and explain the necessary conditions.	[7]
7	a)	Discuss about implementing local file systems and directory structures file system implementation in detail.	[8]
	b)	What is a directory? Explain in detail about implementation of directory.	[7]
8	a)	Discuss the relative advantages and disadvantages of sector sparing a d slipping in RAID levels.	[8]
	b)	Describe in detail about tertiary storage structure.	[7]

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Code No: R31056 **R10** **Set No: 3**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

OPERATING SYSTEMS

(Com.to CSE and IT)

Time : 3 hours Max. Marks: 75

Answer any Five Questions

All Questions carry equal marks

*****

1	a)	Explain what is meant by interleaving and overlapping with respect to multiprogramming and multi processing. Assume system have two user processes.	[8]
	b)	Draw and explain OS layered architecture and its services.	[7]
2	a)	Write and explain various scheduling criteria's with respect to long and short term scheduling.	[7]
	b)	Explain typical elements of process control strictures.	[8]
3	a)	What is critical section problem? Write and explain Peterson's solution for it.	[8]
	b)	Explain what is mutual exclusion and support provided by hardware approaches.	[7]
4	a)	What is paging? Explain the hardware support given for paging.	[8]
	b)	Discuss various page placement algorithms with an example.	[7]
5	a)	Consider the following page reference string 2,3,4,5,3,2,6,7,3,2,3,4,1,7,1,4,3,2,3,4,7. Calculate the number of page faults with LRU, FIFO and optimal page replacement algorithms with frame size of 3.	[8]
	b)	What is thrashing? Explain effect of it with an example.	[7]
6	a)	Explain the two solutions of recovery from deadlock.	[8]
	b)	Consider deadlock situation in dining philosopher's problem. Discuss how necessary conditions indeed hold in sitting and also how they are avoided?	[7]
7	a)	Describe in detail about variety of techniques used to improve the efficiency and performance of secondary storage.	[8]
	b)	Explain about free space management in detail.	[7]
8	a)	Discuss about stable storage implementation in detail.	[8]
	b)	Write about different disk scheduling algorithms with examples.	[7]

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Code No: R31056 **R10** **Set No: 4**

JNT University Kakinada

III B.Tech. I Semester Regular/Supplementary Examinations, Dec - 2014/Jan -2015

OPERATING SYSTEMS

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Time : 3 hours Max. Marks: 75

Answer any Five Questions

All Questions carry equal marks

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1	a)	In detail write about the evolution of operating systems.	[8]
	b)	Differentiate interrupt, trap and system call in detail with examples.	[7]
2	a)	Differentiate preemptive and non preemptive algorithms. And also compare the performance of scheduling algorithms for 5 processes.	[8]
	b)	What is multi threading? Write a short note on various multithreading models.	[7]
3	a)	What is process synchronization? How to achieve it through software solution? Explain.	[8]
	b)	Explain the structure of monitor? And also explain how it supports synchronization?	[7]
4	a)	Why some times paging and segmentation combined into one scheme? Explain paged segmentation.	[8]
	b)	Explain the most commonly used techniques for structuring the page table.	[7]
5	a)	What is Belady's anomaly? Explain with an example page replacement algorithm for the given reference string 2,3,4,5,3,2,6,7,3,2,3,4,1,7,1,4,3,2,3,4,7. Assume frame size of 3 and 5.	[8]
	b)	Write and explain various strategies used to allocate the frames for pages from virtual memory.	[7]
6		Execute Banker's algorithm for the following snapshot for processes p0 to p4 and Resources A to D .Allocation [2 0 1 2, 1 0 0 0, 1 3 5 4, 0 6 3 2 , 0 0 1 4] Max[2 0 1 2, 2 7 5 0, 2 3 5 6, 0 7 5 2 , 0 7 5 6] Availble[2 4 2 1] find the safe sequence. If a request from p1 arrives [1 4 2 0] can the request be granted?	[15]
7	a)	What are the advantages and disadvantages of recording the name of the creating program with the file's attributes (as is done in the Macintosh operating system)?	[8]
	b)	Discuss in detail about different file access methods .	[7]
8	a)	Could a RAID Level 1 organization achieve better performance for read requests than a RAID Level 0 organization (with non-redundant striping of data)? If so, how?	[8]
	b)	In detail explain the structure of disk with a neat diagram.	[7]

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