AR16

Code No: 16EC2103

Geethanjali College of Engineering and Technology (Autonomous), Hyderabad

II B.Tech (CSE/EEE/ECE I Semester (Supplementary) End Examinations, Apr 2018

Switching Theory and Logic Design

Time: 3 hours **Max. Marks: 70**

Part–A (10 x 2 = 20)

1. a) Convert the Decimal number $(7562.45)_{10}$ to Octal.
   b) What is the significance of Parity bit?
   c) Define Prime Implicant.
   d) Using K-map, Minimize the function f (x, y, z) = Σ (3, 5, 6, 7).
   e) Distinguish between PLA and PAL.
   f) Give expressions for Sum and Carry of Half-Adder.
   g) Draw the minimal contact network for the symmetric function $S_{1,2}(X_1, X_2, X_3)$.
   h) Is an XOR function a threshold function? Justify.
   i) Draw the truth table of JK Flip flop.
   j) Distinguish between ring counter and twisted ring counter.

Part–B (10 x 5 = 50)

2. a) Simplify the Boolean functions to a minimum number of literals. (6)
      i) xy + x'z + yz ii) ABC + A'B + ABC' iii) A'BC + AC
   b) Prove that the dual of the exclusive-OR is EXCLUSIVE-NOR. (2)
   c) Determine the radix r, when $(BEE)_r = (2699)_{10}$ (2)

(OR)

3. a) Express the Boolean function F = xy + x'z in canonical sum of products form. (2)
   b) Given the Boolean function F(x, y, z) = x'y + xyz', derive the algebraic expression for F'. (2)
   c) Design a 3-bit even parity checker circuit. (6)

4. a) Using Map method, determine the minimal Product of Sums expression for the following function.

$$F(w, x, y, z) = \pi (0, 4, 10, 12, 14) + \pi_{\Phi} (6, 7, 8, 9, 11, 15).$$ (4)

b) Simplify the following function using Tabular method

$$F(A, B, C, D) = \Sigma(1, 2, 3, 5, 7, 9, 10, 11, 13, 15)$$ (6)

(OR)

5. a) Simplify the following function using k-map method.

$$F (a, b, c, d) = \sum (0, 1, 2, 4, 5, 8, 10, 11, 14)$$

b) Find all the Prime implicants for the following Boolean function and determine which are essential.

$$F (a, b, c, d) = \sum(0, 2, 3, 5, 7, 8, 10, 11, 14, 15)$$

6. a) Design a 4-input priority Encoder with a minimum number of gates. (5)

b) Implement the following Boolean function using 4-to-1 multiplexer. (5)

$$F(x, y, z) = \sum (1, 2, 6, 7)$$

(OR)

7. a) Give the truth table of a full adder and derive expressions for sum and carry. (4)

b) Design a 4 x 16 decoder using 3 x 8 decoders only. (6)

8. a) By examining the linear in-equalities, determine whether the following function is a Threshold function, and if so, find the corresponding weight–threshold vector for $f (x_1, x_2, x_3) = \sum (1, 2, 3, 7)$. (5)

b) Determine whether the following function is symmetric. If so, identify its a-number(s) and variables of symmetry. (5)

$$F (a, b, c) = \sum (0, 2, 3, 4, 5, 7)$$

(OR)

9. a) By examining the linear in-equalities, determine whether the following function is a Threshold function, and if so, find the corresponding weight–threshold vector for $f (x_1, x_2, x_3) = \sum (0, 2, 4, 5, 6)$

b) For the following function, find a contact network realization with minimum number of contacts $S_{0, 1, 3} (w, x, y, z)$. (5)

10. Design a Synchronous counter that counts the sequence 0, 1, 3, 6, 7, 5, 4, 2 using T Flip flops. (10)

(OR)

11. Design a twisted ring counter using a 3-bit shift register. (10)

AR16

Code No: 16EC2103

Geethanjali College of Engineering and Technology (Autonomous), Hyderabad

II B.Tech (ECE/CSE/EEE) I Semester (Regular) End Examinations, November 2018

Switching Theory and Logic Design

Time: 3 hours | Max. Marks: 70

Answer all the questions

Part–A (10 x 2 = 20)

1 a) i.)The solutions to the quadratic equation $x^2 - 11x + 22 = 0$ are $x = 3$ and $x = 6$. What is the base of the numbers? 2M

ii.)How many parity check bits must be included with the data word to achieve single-error correction and double-error detection when the data word contains 16 bits

b) i)What is the decimal equivalent of $(1101010)_2$ in sign magnitude form 2M

ii)What is the binary equivalent of $(105.15)_{10}$?

c) Simplify the Boolean function F(A, B, C, D) = Π (1, 3, 6, 9, 11, 12, 14) in PoS form. 2M

d) Given F = A'C'+ ABC + AC' simplify the Boolean function to three literals using Boolean Algebra postulates. 2M

e) Realize two input Ex-OR gate with 2x1 MUX. No other gates are available. 2M

f) Implement Half adder circuit with appropriate decoder and OR gates. 2M

g) Identify the functions given i) f(a,b,c)=a'b'c + ab'c' + a'bc' 2M

ii) f(a,b,c) = a'b'c + ab'c' whether symmetrical or partially symmetrical.

h) Represent the function $f = x'y' + xz$ as a switching cube 2M

Hint: Canonical forms may be useful.

i) How do you convert SR FF as D flip flop. 2M

j) Identify the counter given in the Fig 1 2M

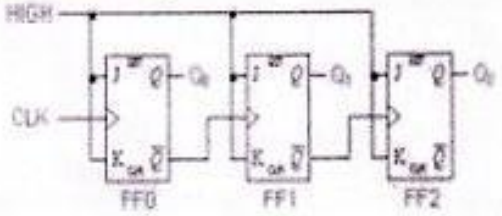


Fig (1)

Part–B (5 x 10 = 50)

2 a) Convert decimal + 49 and + 29 to binary using the signed 2's complement representation and use 8 bits to accommodate the numbers. Then perform the binary equivalent of (+29) + (-49), (-29) + (+49) and (-29) + (-49). Convert back the answers to decimal and verify they are correct. 4M

b) Implement the following function 6M

F = x'y + xy' + yz using the following two level logic realization

i) NOR - NOR ii) NAND - NAND

OR

3 a) Draw the output waveform at X shown in Fig 2. Repeat with the input B at High always. 5M

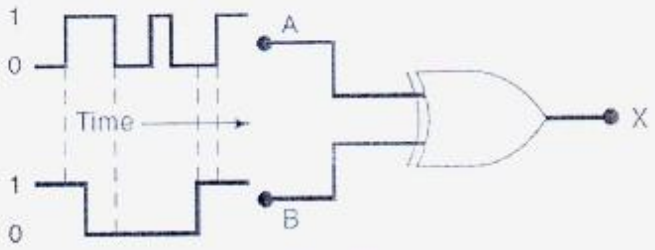


Fig (2)

b) Realize Ex-OR gate with minimum number of NAND gates and minimum number of NOR gates separately. 5M

4 a) Realize the Boolean function with minimum number of NOR gates after simplification 5M
$F(A, B, C, D) = \Sigma (0, 6, 8, 13, 14) + \Sigma_{\Phi} (2, 4, 10)$

b) What is essential prime implicant. Find all the Essential prime implicants for the function given below 5M
$F (A, B, C, D) = \Sigma (0, 2, 3, 5, 7, 8, 9, 10, 11, 13, 15)$

OR

5 Simplify the following function $F (A, B, C, D) = \Sigma (0, 1, 2, 5, 8, 9, 10)$, using tabulation method and implement with NAND gates only. Assume both the complemented and uncomplemented variables are available as inputs. 10M

6 a) Implement the following Boolean function with a 8x1 Multiplexer and external gates. 5M
$F (A, B, C, D) = \Sigma (1, 3, 4, 11, 12, 13, 14, 15)$

b) Realize the following Boolean functions using PAL. 5M
$W (A, B, C, D) = \Sigma (2, 12, 13)$
$X (A, B, C, D) = \Sigma (7, 8, 9, 10, 11, 12, 13, 14, 15)$

OR

7 a) Find the Boolean function realized by the Multiplexer shown in the Fig 3 5M

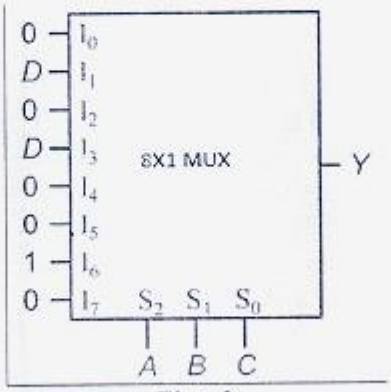


Fig : 3

b) Realize a code converter that converts BCD to Excess -3 with PLA. 5M

8	a)	Realize the contact network with minimum number of contacts for the symmetric function $S_{1,4}(w, x, y, z)$	4M
	b)	Realize the symmetric function $S_{2,4,6}(x_1, x_2, \ldots, x_7)$ using full adders and other gates	6M
		OR	
9	a)	Determine whether the function f (a, b, c, d) = Σ (1, 2, 3, 8, 9, 10, 11, 12, 14) is unate or not and show its minimal form.	3M
	b)	For the switching function given below, find a two–element cascade realization of threshold logic. $F(x_1, x_2, x_3, x_4) = \Sigma (2, 3, 6, 7, 8, 9, 13, 15)$	7M
10	a)	Design a sequence detector which can detect 1010 using D FFs. Overlapping is permitted.	6M
	b)	Design a 3 – bit twisted ring counter	4M
		OR	
11	a)	Design a serial binary adder	6M
	b)	Design a decade counter using T Flip-Flops.	4M

Code No: 16EC2103 **AR16**

Geethanjali College of Engineering and Technology (Autonomous), Hyderabad

II B Tech (CSE/EEE/ECE) I Semester Supplementary Examinations, Apr/May 2019

Switching Theory and Logic Design

Time: 3 hours **Answer all Questions** **Max. Marks: 70**

Part–A (10 x 2 = 20)

1 a. Define dual of a function and give an example.
b. Prove that (A+B) (A+C) = A+BC
c. State De Morgan's theorems.
d. Define proposition as applicable in boolean algebra and give an example
e. Define prime implicant and give an example
f. Write the truth table of half-subtractor, and obtain expressions for difference and borrow
g. Define threshold function
h. Define symmetric function and give an example
i. Distinguish clearly between combinational logic and sequential logic
j. Give the truth table of JK Flip-flop and then obtain its excitation table

Part–B (5 x 10 = 50)

2. a. Prove that $X'Y + XZ + YZ = X'Y + XZ$. 03M
b. Simplify the expression T (X, Y, Z) = $X'Y'Z + YZ + XZ$ using redundant literal theorem. 03M
c. Obtain the canonical sum of products form of an expression for the function
F (X, Y, Z) = $X'Y + XZ$. 04M

OR

3. a. Given $AB' + A'B = C$, prove that $AC' + A'C = B$. 03M
b. Prove that the dual the function given by F (A, B, C) = AB + BC + AC is the function itself (Self dual function). 03M
c. Obtain the canonical sum of products form of an expression for the function
F (X, Y, Z) = $X'Y + Z' + XYZ$. 04M

4. a. Using K-Map, Simplify the function F (W, X, Y, Z) = Σ (4, 5, 8, 12, 13, 14, 15) and minimal obtain sum-of-products expression. 05M
b. Using K-Map, Simplify the function F (W, X, Y, Z) = π (4, 5, 8, 12, 13, 14, 15) and obtain minimal product-of-sums expression. 05M

OR

5. Using tabular method, for the function F (W, X, Y, Z) = Σ (0, 1, 2, 3, 5, 7, 12, 13, 14, 15) obtain Prime implicants, essential prime implicants and all minimal expressions. 10M

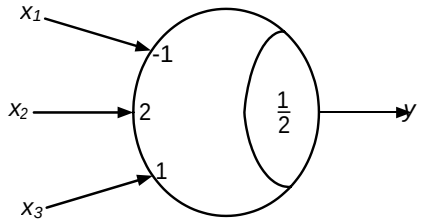
6. a. Write the truth table for a full adder, obtain expressions for its sum and carry outputs. Design the circuit of full adder using two half-adders and an OR gate. 05M

b. Design a four-bit BCD to Excess-3 code converter and implement the same using two-level AND-OR logic. 05M

OR

7. Write the truth table for a full subtractor, obtain expressions for its difference and borrow outputs. Design the circuit of using a 3x8 decoder and OR gates. 10M

8. a. For the threshold element shown below, obtain the minimal sum-of-products expression for the output y. 05M



b. Determine whether the function F (w, x, y, z) = Σ (0, 1, 3, 5, 8, 10, 11, 12, 13, 15) is symmetric, and if so, identify its a-numbers and the variables of symmetry. 05M

OR

9. a. Define unate function. 02M
   b. Determine whether the function F (x, y, z) = Σ (3, 5, 6, 7) is function unite. 02M
   c. Realize the symmetric function $S_{1,3}(x_1, x_2, x_3)$ using relay contacts. 03M
   d. Determine whether the function F (w, x, y, z) = Σ (1, 2, 4, 7) is symmetric, and if so, identify its a-numbers and the variables of symmetry. 03M

10. a. Draw the circuit of JK flip-flop, its truth table and explain race around condition. 04M

    b. Draw the circuit of JK Master-Slave (M/S) flip-flop and explain how race around condition is avoided in this case. 06M

OR

11. a. Design an asynchronous decade counter using JK M/S flip-flops 05M
    b. Draw the circuit of three-bit serial in serial out shift register and explain its operation by considering data 101. 05M

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li ***B.Tech*** rrr rcr csr) I Semester (Regular) End Examinations, Nov/Dec 2019

DIGITAL DESIGN

Time: 3 hon rs Answer **All** Questions **May Marks: 70**

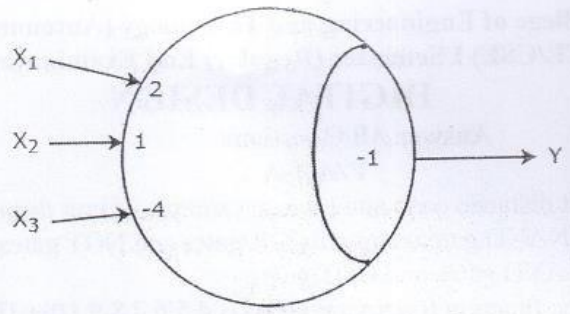
PART-A 10 X 2M = 20M

I	a.	Define unit distance code and give an example of unit distance code.	2M
	b.	Represent NAND gate using only OR gates and NOT gates and NOR gate usins f ly AND gates and NOT *ates.	2M
	c.	Simplify the function f(w,x,y,z) lI(1,2,3,4,5,6,7,8,9.10)* H (11,l2,l3,14,l5)	2M
	d.	**Stac** De1\4organ's **Theorems.**	2M
	e.	**Represent** Half adder **using** AOI logic gates.	2M
	f	Realize Full Adder using 3x8 Decoder and OR gates.	2M
	g.	List any one limitation and one capability of Threshold Logic.	2M
	h.	Write the truth table of St, (x, y, z)	2M
	i.	Distinguish betweenring countcr and Johnson counter.	2M
	j.	Explain race around condition.	2M

PART-B 5 X 10M = 50M

2	a	Identify the correct bit to append to make both of the following have odd parity? The ASCII chamcter for "a" is 1100001 and for "A" is 1000001.	2M
	b	Show that the NAND and NOR are universal gates	4M
	C.	Convert 3 bit binary code to gray code.	4M
		OR	
3	a	Generate Harming code for 1101101.	5M
	b	Subtract (28)is with (42)c using 2's complement method	3M
	c	Indicate the following numbers into base given	
		i. (63 .32)io- ( )2	lM
		ii. (2856)i,)i	IM
4	a	Find the simplified Boolean function f Z (2, 6, 8, 9, 10, 11, 14, lS) using Quine-McClukey tabular method.	8M
	b	Show that AB + AC + BC = AB + AC	2M
		OR	
5	a	Simplify f(a, b, c, d) = (0, 3, 5, 7, 10, I I, 12, 13, 14, 15) using Karnaugh Map.	5M
	b	Find the minimal sum of products for the given function f(w,x,y,z)=x(l,4,5,6,ll,I2,13,l4,15)	5M
6	a	Implement the SUM ofa Full Adder using multiplexer of appropriate size.	5M
	b	Implement f(A, B, C, D) — Z $1, 2, 7, 8, II, 13, 14) using 4xl6 Decoder and only one logic gate.	5M
		OR	
7	a	Design 2-bit comparator using logic gatcs.	5M
	b	DCSifin a three bit parity checker for odd parity.	5M
8	a	Identify whether tlJe given function is symmetric or Non-symmelric F(x, y, z) Z (1, 2, 4, 7). I f it is syrrrrnetric, find its "a" numbers and variables of symmetry.	6M

b Find the simplified Boolean function for the following Threshold gate. 4M



OR

9 a Determine whether the given function is unate. If so, find a minimal threshold logic realization for 6M
f (x1, x2, x3, x4) = ∑(0,2,4,6,7,10,12,14,15)

b Using the expansion theorem, express the function as symmetric function. 4M
$A'S_{0,1,4}(B,C,D,E)+ AS_{0,3,4}(B',C',D',E')$

10 Design 1001 sequence detector using D Flip-Flops. 10M

OR

11 a Explain the working of JK flip-flop constructed using NAND gates and draw its truth table. 5M

b Design a decade counter (Ripple counter). 5M

Key

Course Code: 18EC2102 AR1

Geethanjali College of Engineering and Technology (Autonomous), Hyderabad

II B.Tech (CSE/ECE/EEE/IT) I Semester (Regular/Supplementary) End Examinations, FEB 2

DIGITAL DESIGN

Time: 2.5 hours — Answer All Questions — 5 X 14M = 70M

1 Identify the transmitted data for message bits (1110), into 7-bit even parity hamming code.

OR

2 Represent the Canonical SOP and Canonical POS Form for the Boolean function F= (B+C) (A+B+D)(A+$\bar{B}$).

3 Simplify f(a,b,c,d)= Π M(1,2,4,6,8,9) using Karnaugh Map method (product of sums)

OR

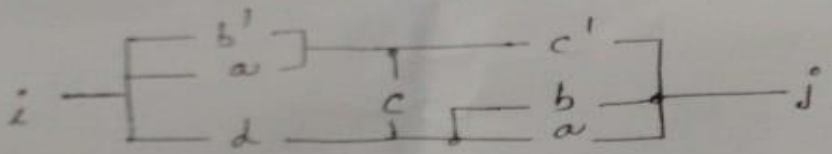
4 Simplify the following expression to sum of product using Tabulation Method F(W,X,Y,Z)=Σm(0,4,8,10,12,13,15)+d(1,2)

5 Design a Full subtractor using logic gates.

OR

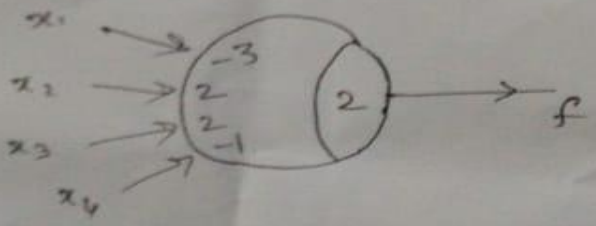
6 Implement the function f(A,B,C,D) = $\sum m(1,2,7,8,11,13,14,15)$ using i) 16:1 MUX ii) 8:1 MUX

7 Write the tiesets and cutsets for the given contact network.



OR

8 Write the boolean equation for the given Threshold logic.



9 State Race Around condition. Explain how Master Slave JK flip flop eliminates this problem.

OR

10 Explain the operation of a three bit Twisted Ring counter

Key.

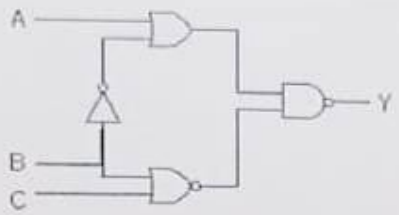
Course Code: 18EC2102

AR18

Geethanjali College of Engineering and Technology (Autonomous), Hyderabad
II B.Tech (CSE/EEE/ECE/IT) I Semester (Supplementary) Examinations, August 2021

DIGITAL DESIGN

Time: 3 hours **Answer any five questions** 5 X 14M = 70M

1	a	Prove NAND and NOR as universal Gates	7M
	b	i. $(23)_8$= (?)$_2$; ii. $(927.112)_{10}$=(?)$_{BCD}$; iii. 2's compliment of 11100————; iv. $(1100)_{GRAY}$= (?)$_2$; v. $(1110)_2$=(?)$_{Excess-3}$	7M
2	a	 Find the minimized expression for the circuit shown above.	7M
	b	Convert the following Boolean function into Standard SoP form. F = P'Q + Q'R + P'Q'+ P'Q'R'	7M
3	a	State any five Boolean Laws used to simplify the functions.	7M
	b	Simplify the following Boolean Function using K-Map method. f(W,X,Y,Z)=∑m(2,6,8,9,10,11,14,15)	7M
4	a	Simplify (AB'+A'B)'(A+B) using Boolean theorems.	7M
	b	Simplify the following Boolean Function using Quine-McClukey tabular method. F(W, X ,Y, Z) = ∑m(0,3,5,6,7,10,12,13) +∑d(2,9,15)	7M
5	a	Explain the operation of Priority Encoder	7M
	b	Design 3:8 Decoder using 2:4 Decoder.	7M
6	a	Identify whether the given function is symmetric or Non -symmetric F(x, y, z) = S (1, 2, 4, 5).	7M
	b	Explain the limitations and capabilities of Threshold Logic.	7M
7	a	Draw the excitation table of SR Flip Flop and T Flip Flop	7M
	b	Explain the operation of 4-bit ripple counter	7M
8	a	Explain the operation of JK Flip Flop with the help of truth table.	7M
	b	Design a Sequence Detector to detect the sequence 1010 using either Mealy machine or Moore Machine	7M

Course Code: 18CS2101 AR18

Geethanjali College of Engineering and Technology (Autonomous), Hyderabad
II B.Tech (CSE) I Semester (Regular) End Examinations, Nov/Dec 2019

Advanced Data Structures

Time: 3 hours Answer All Questions Max. Marks: 70

PART-A 10 X 2M = 20M

1 a. What are the factors which affects the running time of an algorithm?
b. List out the frequently used four operations which play a major role in data structure ?
c. What are the operations of queue?
d. Suppose for a circular queue [0..11] if front =10 and rear=3 find out how many no of elements presents in queue?
e. List out the advantages of Binary Tree ADT?
f. What is Heap sort?
g. Distinguish between B Tree and BST?
h. What are splay trees?
i. Compare the advantages of separate chaining and linear probing?
j. What is the significance of pattern matching algorithm?

PART-B 5 X 10M = 50M

2. a) What are the limitations of array data structures ? How limitations of an array can be avoided by linked list? 5M
b) Write an algorithm to insert a node at the front in circular list? 5M

OR

3. a) What is asymptotic notations ? Describe about Big Oh (O) notation? 5M
b) Let S is a linked list. Write a pseudo code called JBR to create two linked lists J and R . J should contain all elements in odd positions of S and R contained the remaining elements . Your Pseudo code should not change list S. Calculate time complexity also? 5M

4 a) Write algorithms for push and pop operations in stack 5M
b) Implement addq and deleteq functions which are used to add and delete the elements in the circular queue respectively? 5M

OR

5 a) Explain the operations of Deque 5M
b) Define Properties of circular queue ? How will you check whether queue is full or empty? 5M

6a) Give an algorithm for Quick sort and derive its time complexity? 5M
b) Show that the maximum no of nodes in a binary tree of height h is $2^{h+1}-1$ 5M

OR

7a) Write an algorithm for Radix sort 5M
b) Using the following traversals construct the corresponding binary tree 5M
INORDER : HKDBILEAFCMJG
PREORDER: ABDHKEILCFGJM

8a) suppose n data items A1,A2,... A_N are already sorted i.e A1<A2<A_N (5M)
i) Assuming the items are inserted in order into an empty BST. Describe the final tree
ii) What is the depth of D for the tree T?
iii) Compare D with the average depth AD of Binary search tree BST with n nodes for n = 50.
b) What is AVL tree? Write an algorithm to insert an item into AVL tree. Explain LR rotation with an example? 5M

OR

9a) Explain Red Black trees with various operations applied on them? 5M
b) Construct B-Tree of order 5 with the following elements 22, 45, 65, 67, 78, 89, 87, 65, 54, 43, 32, 57, 48, 39, 26, 37, 60, 40, 20 5M

10a) Draw the graph represented by given adjacency matrix. Also find DFS for the obtained graph? 5M

	A	B	C	D	E
A	0	0	1	0	1
B	0	0	1	1	0
C	1	1	0	0	0
D	0	1	0	0	1
E	1	0	0	1	0

b) Discuss linear Probing for collision avoidance in hashing? 5M

OR

11 a) Explain the concept of pattern matching with an example? 5M
b) Consider the following 4 digit employee numbers 1040, 1786,1678,2020,1834 5M
Find the 2 digit hash address of each number using division method with m=79.

AR16

Code No: 16MCS102

Geethanjali College of Engineering and Technology (Autonomous), Hyderabad
M.Tech I Year I Semester Examinations, Feb 2017

Advanced Data Structures and Algorithms

Computer Science and Engineering

Answer all Questions

Time: 3 hours **Max. Marks: 70**

Part-A (5*4=20 Marks)

a) Use the Master Theorem to asymptotically solve the recurrence: T(n)=2T(n/2)+n^3. You may assume T(n) is constant for n<=2.

b) What is Max Heap? Explain its operations and applications.

c) What is Splay Tree? Explain its operations and applications.

d) Draw the suffix tree for S=abbab#.

e) What is Knapsack decision problem? Explain with an example.

Part-B (5*10=50 Marks)

1. (a) Suppose we perform a sequence of stack operations on a stack whose size never exceeds 'k'. After every 'k' operations, we make a copy of the entire stack for backup purpose. Show that the cost of 'n' stack operations, including copying the stack, is O(n) by assigning suitable amortized costs to the various stack operations. 10M

OR

(b) Describe and analyze "Quick sort", both the average case complexity, as well as the worst case complexity. 10M

2. (a) Illustrate the operation of building a "Binomial Heap" on each of the following three arrays and illustrate how to merge them into a single Binomial Heap.
A: 5,3,17,10,50,20,6,22,8; B: 9,7,13,21,12; C: 15,11,18,24. 10M

OR

(b) Consider inserting the keys 10, 22, 31, 4, 15, 28, 17, 88, 59 into a hash table of length m=11 using open addressing with the auxiliary hash function h'(k)=k. Illustrate the result of inserting these keys using linear probing, quadratic probing with c1=1 and c2=3, and using double hashing with h1(k)=k and h2(k)=1+(k mod (m-1)). 10M

8.a) Differentiate between ArrayList and Vector.
b) List the methods of Stack class. [5+5]

OR

9. Write a JDBC program to search for an attribute in a table and display the entire tuple to the user. For example, display all the details of the student given his/her roll number. [10]

10.a) Is Applet more secure than application program? Justify your answer.
b) Design a user interface to collect data from the student for admission application using swing components. [5+5]

OR

11. Write a program to demonstrate various keyboard events with suitable functionality. [10]

---ooOoo---

3. (a) Start with an empty Red Black Tree and insert the following keys in the given order: 41, 38, 31, 12, 19, 8, 11, 24. Draw the tree immediately after insertion of each element with rebalancing rotation or color change. 5M

(b) What are the properties of Red Black Trees? Explain. 5M

OR

(c) Insert the following sequence of elements into an AVL tree, starting with an empty tree: 10, 20, 15, 26, 30, 16, 18, 14. 5M

(d) What is B-tree? How do you construct the B-tree? Explain with an example. 5M

4. (a) Describe an algorithm that accepts two strings T1 and T2 of sizes m and n respectively and find their longest common substring in O(m+n) time.
[Hint: Build a Suffix Tree that stores the suffixes of both the strings.] 5M

(b) Explain how to use Suffix Trees to check if a string S is present as a substring in another string T. 5M

OR

(c) Explain with analysis an Approximation Algorithm for the Travelling Salesperson problem when the cost function satisfies the triangle inequality. 5M

(d) Explain with an example to illustrate the concept of Vertex Coloring. 5M

5. (a) Show that any language in NP can be decided in time O(2^(n^k)) 5M

(b) Prove that the class NP is closed under union and intersection. 5M

OR

(c) Describe a proof that CLIQUE is NP-complete. 10M

16. University Question Papers of Previous years

AR18

Course Code: 18CS2203

Geethanjali College of Engineering and Technology (Autonomous), Hyderabad

II B.Tech (CSE) II Semester (Regular) End Examinations, Nov 2020

Database Management Systems

Time: 2 hours | Answer All Questions | 5 X 14M = 70M

1 Illustrate Entity Relationship diagram for college management system.

OR

2 Discuss DDL, DML and DCL.

3 Explain various set operations with suitable examples.

OR

4 Discuss in brief about the Relational Calculus.

5 Explain first, second, third and Boyce-Codd normal forms with example.

OR

6 Explain fourth and fifth normal forms with suitable examples.

7 Define a Transaction. List and explain desirable properties of Transaction.

OR

8 Implementation of Lock –Based Protocols in DBMS.

9 Write a short note on Extendable Hashing.

OR

10 Write a short note on B+ Trees?

18/4/19 - AN.

Course Code: 16CS2203 **AR16**

Geethanjali College of Engineering and Technology (Autonomous), Hyderabad
II B.Tech (CSE) II Semester (Regular/Supplementary) End Examinations, Apr/May 2019

DATABASE MANAGEMENT SYSTEMS

Time: 3 hours **Answer All Questions** **Max. Marks: 70**

PART-A **10 X 2M = 20M**

1 a. Explain different levels of data abstractions.
b. Explain the concept of Aggregation.
c. Explain joins in relational algebra.
d. List aggregate functions.
e. Explain about views in detail.
f. Describe the problems caused by redundancy.
g. Explain multiple granualarity of locking.
h. Explain the concept of shadow paging.
i. Mention the operations that are performed on files.
j. What is dead lock? How it is detected?

PART-B **5 X 10M = 50M**

2 a. Describe the Structure of DBMS. 4M
b. Explain Hierarchical, Network and Relational data models. 6M

OR

3 a. Explain the responsibilities of database administrator. 3M
b. A company database needs to store information about employees (ssn, salary, phone_no); departments (dno, dname, budget) and children of employees (name, age). Employees work in departments; each department is managed by an employee. Design *ER diagram* and construct database that captures this information. 7M

4 a. Explain the functioning of a corelated nested query. 6M
Write the following SQL queries for the given schema.
Sailors (Sid, sname, rating, age); Boats (Bid, Bname, color);
Reserves (Sid, Bid, Day)
a. Find the names of sailors who have reserved boat 103?
b. Find the names of sailors who have reserved all boats?
b. Define trigger and explain types of triggers. 4M

OR

5 a. Illustrate Group by and Having clauses with examples. 4M
b. Explain Relational calculus. 6M
Write the following Relational Calculus queries for the given schema.
Sailors (Sid, sname, rating, age); Boats (Bid, Bname, color); Reserves (Sid, Bid, Day)
i) Write a TRC query to find the names of sailors who have reserved boat 103?
ii) Write a DRC query to find the names of sailors who have reserved boat 103?

6 a. Describe properties of decomposition in detail with examples 5M
b. Compute the closure of the following set of functional dependencies for a relational schema. R(A,B,C,D,E). F={A-->BC, CD-->E, B-->D, E-->A}. 5M

OR

7 a. What is normalization? Explain 2NF, 3NF, BCNF Normal forms. 6M
b. Explain multi-valued dependencies 4NF and 5NF with examples. 4M

8 a. Explain ACID properties of a transaction and illustrate how atomicity and durability are achieved. 5M

b. Explain ARIES algorithm. 5M

OR

P.T.O

9 a. What is serializability. Explain about conflict Serializability. 5M
b. Explain 2PL and strict 2PL protocol in detail? 5M

10 a. Explain B+ tree with example. 5M
b. Write in detail about Hash based Indexing and Tree based Indexing. 5M

OR

11 a. Compare and Contrast Extendible Hashing with Linear Hashing? 5M
b. Explain ISAM method. 5M

Course Code: 16CS2203 **AR16**

Geethanjali College of Engineering and Technology (Autonomous), Hyderabad
II B.Tech (CSE) II Semester (Supplementary) End Examinations, Nov 2019

DATABASE MANAGEMENT SYSTEMS

Time: 3 hours **Answer All Questions** **Max. Marks: 70**

PART-A **10 X 2M = 20M**

1 a. State the purpose of database management systems?
b. Explain about data independence?
c. Explain basic operations of relational algebra?
d. Explain triggers.
e. List closure set of properties?
f. Explain problems caused by redundancy?
g. Explain transaction states.
h. Explain Thomas write rule?
i. Explain about heap file organization?
j. Explain types of ordered indexing?

PART-B **5 X 10M = 50M**

2 a. Compare and Contrast file Systems with database systems? 4M
b. Explain additional features of the ER-Model? 6M

OR

3 a. Explain about different types of Data models with examples? 5M
b. Distinguish strong entity set with weak entity set? Draw an ER diagram to Illustrate weak entity set? 5M

4 a. Explain correlated nested queries? 6M
Write the SQL queries for the following from the following relations.
Sailors (Sid, sname, rating, age)
Boats (Bid, Bname, color)
Reserves (Sid, Bid, Day)
i) Write a query to find the names of sailors who have reserved a red boat.
ii) Write a query to find the names of sailors who have not reserved a red boat.
b. Explain about Tuple Relational calculus in detail? 4M

OR

5 a. Illustrate different set operations in Relational algebra with an example? 6M
b. Consider the following relational schema. 4M
Employee (empno,name,office,age)
Books(isbn,title,authors,publisher)
issue(empno, isbn,date)
Write the following queries in relational algebra.
i) Find the names of employees who have borrowed a book Published by Pearson.
ii) Find the names of employees who have borrowed all books Published by McGraw-Hill.

6 a. Explain about Schema refinement and normalization in Database design. 4M
b. Explain about Join dependencies and Fifth normal form. 6M

OR

7 a. Define normalization? Explain 3NF, BCNF Normal forms. 6M
b. Explain lossless join decomposition with example. 4M

8 a. Explain how Atomicity and Durability is implemented. 4M
b. Explain the Need of Serializability? Explain view and conflict Serializability. 6M

OR

9 a. Explain concurrency control and Time stamp based protocol. 6M
b. Explain Log based recovery. 4M

10 a. Explain B+ trees and Dynamic Index Structure. 6M
b. Explain ISAM. 4M

OR

11 a. Demonstrate searching a given element in B+ trees with an example. 5M
b. Differentiate between primary and secondary indexing. 5M

Code No: 124CQ

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, December - 2017

DATABASE MANAGEMENT SYSTEMS

(Common to CSE, IT)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) What are five main functions of a database administrator? [2]
b) List and explain the database system applications. [3]
c) Define a trigger. What are the differences between row level and statement level triggers? [2]
d) How are queries expressed in SQL? [3]
e) List the benefits of BCNF and 3NF. [2]
f) Write the Properties of Decompositions. [3]
g) Why is recoverability of schedules desirable? [2]
h) Suppose that there is a database system that never fails. Is a recovery manager required for this system? [3]
i) How is data organized in a hash based index? [2]
j) Give a brief note on Static Hashing. [3]

PART - B

(50 Marks)

2.a) What is a partial key? How is it represented in ER diagram? Give an example.
b) Define query. Explain the data manipulation language in detail. [5+5]

OR

3.a) Explain how to build ER model for university with entities department, instructor, student, and class. Instructors and students belong to one department only. Instructors and students related to a class with many to many relations. Assume suitable attributes. Explain how the ER model can be translated to relations.
b) List and explain the design issues of entity relationship. [5+5]

4. Consider the following schema
instructor (ID, name, dept_name),
teaches (ID, course_id, sec_id, semester, year),
section (course_id, sec_id, semester, year),
student (ID, name, dept_name),
takes (ID, course_id, sec_id, semester, year, grade)
Write the following queries in SQL
a) Find the names of the students not registered in any section
b) Find the names of the instructors not teaching any course
c) Find the total number of courses taught department wise
d) Find the total number of courses registered department wise. [10]

OR

5.a) Make a comparison between the tuple relational calculus and domain relational calculus.

b) What are nested queries? What is correlation in nested queries? Explain. [5+5]

6. Discuss how schema refinement through dependency analysis and normalization can improve schemas obtained through ER design. [10]

OR

7. Why is a table whose primary key consists of a single attribute automatically in 2NF when it is in 1NF? Explain. [10]

8. Discuss about log based recovery with immediate update and deferred update with suitable examples. [10]

OR

9. When a transaction is rolled back under timestamp ordering, it is assigned a new timestamp. Why can it not simply keep its old timestamp? [10]

10.a) Give a brief note on Indexed Sequential Access Methods.

b) Make a comparison between the primary index and a secondary index. [5+5]

OR

11. Where does a DBMS store persistent data? How does it bring data into main memory for processing? What DBMS component reads and writes data from main memory, and what is the unit of I/O? [10]

Code No: 124CQ/114CQ

R15/R1

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, May - 2017

DATABASE MANAGEMENT SYSTEMS

(Common to CSE, IT)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) What is DBMS? What are the goals of DBMS? [2]
b) Explain about DDL and DML languages. [3]
c) Explain views in SQL language. [2]
d) Explain domain relational calculus. [3]
e) Define loss less join decomposition with example. [2]
f) What is the difference between 3NF and BCNF? [3]
g) What is locking Protocol? [2]
h) When are two schedules conflict equivalent? What is conflict serializable schedule? [3]
i) Why are tree-structure indexes are good for searches, especially range selections. [2]
j) What is the main difference between ISAM and B+ tree indexes? [3]

PART-B

(50 Marks)

2.a) What are the main components in a DBMS and briefly explain what they do.
b) Explain the following:
i) View of Data ii) Data Abstraction iii) Instances and Schemas. [5+5]

OR

3.a) Develop ER-Diagram for a hospital with a set of patients and a set of medical doctors. Associated with each patient a log of the various tests and examinations conducted.
b) What is relation? Differentiate between a relation schema and relation instance define the term arity and degree of a relation? What are domain constraints? [5+5]

4.a) Explain the fundamental operations in relational algebra with examples.
b) Explain the following Operators in SQL with examples:
i) SOME ii) IN iii) EXCEPT iv) EXISTS [5+5]

OR

5.a) Let R=(ABC) and S=(DEF) let r(R) and s(S) both relations on schema R and S. Give an expression in the Tuple relational calculus that is equivalent to each of the following.
i) $\sigma_{B=19}(r)$ ii) $\prod_{A,F}(\sigma_{C=D}(r \times s))$ iii) $r \cap s$
b) What are integrity constraints? Define the terms primary key constrains and foreign key constraints. How are these expressed in SQL? [5+5]

6.a) What is normalization? What are the conditions are required for a relation to be in 2NF, 3NF and BCNF explain with examples.

b) Compute the closer of the following set of functional dependencies for a relation scheme. R(A,B,C,D,E) F={A→BC, CD→E, B→D,E→A}
List out the candidate keys of R. [5+5]

OR

7.a) What are the conditions are required for a relation to be in 4NF and 3NF explain with examples.

b) Compute the closer of the following set of functional dependencies for a relation scheme. R(A,B,C,D,E,F,G,H), F={ AB→C, BD→EF, AD→G,A→H}
List the candidate keys of R. [5+5]

8.a) What is transaction? Explain the ACID Properties of transactions.

b) Explain the Check point log based recovery scheme for recovering the database. [5+5]

OR

9.a) Describe the steps in crash recovery in ARIES.

b) Explain the *Time Stamp - Based Concurrency* Control protocol. [5+5]

10.a) Explain Deletion and insertion operations in ISAM with examples.

b) How does *Extendable hashing* use a directory of buckets? How does it handles insert and delete operations. [5+5]

OR

11.a) Explain how insert and delete operations are handled in a static hash index.

b) Explain deletion and insertion operation in *B+ trees*. [5+5]

---ooOoo---

Code No: 114CQ **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, May - 2016
DATABASE MANAGEMENT SYSTEMS
(Common to CSE, IT)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

PART - A **(25 Marks)**

1.a)	Discuss about DDL.	[2]
b)	Write brief notes on altering tables and views.	[3]
c)	Describe about outer join.	[2]
d)	What is meant by nested queries?	[3]
e)	What is second normal form?	[2]
f)	Describe the inclusion dependencies.	[3]
g)	What is meant by buffer management?	[2]
h)	What is meant by remote backup system?	[3]
i)	Discuss about primary indexes.	[2]
j)	What is meant by linear hashing?	[3]

PART - B **(50 Marks)**

2.	Explain the relational database architecture.	[10]
	OR	
3.	State and explain various features of E-R Models.	[10]
4.	Explain Tuple relational calculus.	[10]
	OR	
5.	Discuss about domain relational calculus.	[10]
6.	What is meant by functional dependencies? Discuss about second normal form.	[10]
	OR	
7.	Explain fourth normal form and BCNF.	[10]
8.	What is meant by concurrency control?	[10]
	OR	
9.	Discuss about failure with loss of nonvolatile storage.	[10]
10.	What is meant by extendable hashing? How it is different from linear hashing?	[10]
	OR	
11.	What are the indexed data structures? Explain any one of them.	[10]

Code No: 16CS2103 **AR16**

Geethanjali College of Engineering and Technology (Autonomous), Hyderabad
II B.Tech (CSE) I Semester End Examinations, Nov/Dec 2017

Object Oriented Programming through Java

Time: 3 hours **Max. Marks: 70**

Part–A (10 x 2 = 20)

1. a) Explain the difference between abstraction and encapsulation
   b) Give the syntax of control structures "for" and "while" with an example for each.
   c) How to prevent a class from being inherited by another class.
   d) What is the difference between abstract class and an interface?
   e) Define Exception and demonstrate the usage of any one Exception.
   f) Differentiate between process based and thread based multitasking
   g) What are the packages used for AWT and Swings?
   h) Mention four Event Classes in java.awt.event package.
   i) Compare Type1 and Type2 JDBC drivers vis-à-vis their applications.
   j) List four byte stream classes.

Part–B (10 x 5 = 50)

2. Explain primitive data types and types of operators in java.

(OR)

3. What are operator and method overloading? Explain with suitable examples.

4. a) Define inheritance. Explain any two types of inheritance with examples.
   b) Define an interface. Explain with an example program the use of interface.

(OR)

5. What are abstract classes? Demonstrate their implementation with suitable examples.

6. Name two checked and two unchecked exceptions. Show usage of try, catch and finally.

(OR)

7. a) Explain life cycle of a Thread.
   b) "In JAVA, a sub class of another class can only be run as a thread through Runnable interface". Justify.

8. Apply border, grid and flow Layout mechanisms in the development of GUI.

(OR)

9. Develop a java program to display labels username and password corresponding to two text fields. Also add two buttons SignIn and SignUp. Use JFrame, JButton, JLabel and JTextField classes

10. Give the steps in connecting to a Database. Develop a program that inserts your roll number, name and age into database table named Student.

(OR)

11. Develop a java program to copy contents of one file to another file using character streams.

100

Code No: 133BM **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year I Semester Examinations, November/December - 2017

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

(Common to CSE, IT)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a) Differentiate between print() and println() methods in Java. [2]
b) What are symbolic constants? Explain with examples. [3]
c) What are the methods available in the character streams? [2]
d) What is the significance of the CLASSPATH environment variable in creating/using a package? [3]
e) What is the difference between error and an exception? [2]
f) What is synchronization and why is it important? [3]
g) What is the significance of Legacy class? Give example. [2]
h) What is the purpose of String Tokenizer class? Explain. [3]
i) What are the differences between JToggle buttion and Radio buttion? [2]
j) What is an adapter class? Explain with an example. [3]

PART-B

(50 Marks)

2.a) What is meant by byte code? Briefly explain how Java is platform independent.
b) Explain the significance of public, protected and private access specifiers in inheritance. [5+5]

OR

3.a) Explain different parts of a Java program with an appropriate example.
b) How does polymorphism promote extensibility? Explain with example. [5+5]

4.a) Explain the process of defining and creating a package with suitable examples.
b) Give an example where interface can be used to support multiple inheritance. [5+5]

OR

5.a) What is the accessibility of a public method or field inside a nonpublic class or interface? Explain.
b) Describe the process of importing and accessing a package with suitable examples. [5+5]

6.a) Differentiate between Checked and UnChecked Exceptions with examples.
b) Write a program to create four threads using Runnable interface. [5+5]

OR

7.a) What are the different ways to handle exceptions? Explain.
b) How many ways are possible in java to create multiple threaded programs? Discuss the differences between them. [5+5]

8.a) Differentiate between ArrayList and a Vector? Why ArrayList is faster than Vector? Explain.
b) How an Hashtable can change the iterator? Explain. [5+5]

OR

9.a) Explain the Bit Set and Calander classes in detail.
b) Discuss the differences between HashList and HashMap, Set and List. [5+5]

10.a) List and explain different types of Layout managers with suitable examples.
b) How to move/drag a component placed in Swing Container? Explain. [5+5]

OR

11.a) Discuss about different applet display methods in brief.
b) What are the various components of Swing? Explain. [5+5]

---oo0oo---

Code No: 124CX

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, December - 2017
JAVA PROGRAMMING
(Common to CSE, IT)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a) Define data abstraction. [2]
b) What is the size of char data type? Why does it differ from C language? [3]
c) What is the use of anonymous inner class? [2]
d) What is a package? How to define it and access it? [3]
e) Differentiate between error and exception. [2]
f) How to assign priorities to threads? [3]
g) List the functions of Stack class. [2]
h) What is the need of JDBC type 3, type 4 drivers? [3]
i) What are the sources for item event? [2]
j) Give the hierarchy for swing components. [3]

PART-B

(50 Marks)

2.a) What feature of Java makes it platform independent and portable?
b) Is Java a robust language? Justify your answer. [5+5]

OR

3.a) Differentiate between a class and object.
b) Demonstrate constructor overloading concept. [5+5]

4. What is inheritance? Explain different forms of inheritance with suitable program segments and real world example classes. [10]

OR

5.a) Differentiate between interface and abstract class.
b) What is meant by dynamic method dispatch? [5+5]

6.a) Write a program to illustrate the use of multiple catch blocks for a try block.
b) What are the uses of 'throw' and 'throws' clauses for exception handling? [5+5]

OR

7.a) What is the difference between a thread and a process?
b) How to achieve synchronization among threads? Write suitable code. [5+5]

8.a) What is a vector? How does it differ from array, list?
b) Write a program to count number of words in a given sentence. [5+5]

OR

9.a) Write a program to copy the contents of file1 to file 2. Read the names of files as command line arguments.
b) Write about driver manager class for database connectivity. [5+5]

10.a) Why swing components are preferred over AWT components?
b) What is an adapter class? What is their role in event handling? [5+5]

OR

11.a) Explain the life cycle of an applet.
b) What are the various layout managers used in Java? [5+5]

---ooOoo---

Code No: 114CX **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, October/November - 2016
JAVA PROGRAMMING
(Common to CSE, IT)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a)	Define polymorphism.	[2]
b)	Why is Java known as platform independent?	[3]
c)	Differentiate between abstract class and interface.	[2]
d)	How to create and access a package?	[3]
e)	List the thread states.	[2]
f)	What keywords are essential in handling user-defined exception?	[3]
g)	What is the use of String Tokenizer class?	[2]
h)	Write about the random access file operations.	[3]
i)	What are the merits of swing components over AWT?	[2]
j)	What is an adapter class? What is its significance? List the adapter classes.	[3]

PART-B

(50 Marks)

2. What are the drawbacks of procedural languages? Explain the need of object oriented programming with suitable program. [10]

OR

3.a) Does Java support multi way selection statement? Justify your answer.
b) Describe type promotion rules of Java. [5+5]

4.a) Explain multilevel inheritance with the help of abstract class in your program.
b) Can inheritance be applied between interfaces? Justify your answer. [5+5]

OR

5.a) What is meant by dynamic method dispatch? Explain with a program.
b) Illustrate the use of static nested classes. [5+5]

6. What is an exception? How are exceptions handled in Java programming? Explain with suitable program. [10]

OR

7. Describe the need of thread synchronization. How is it achieved in Java programming? Explain with a suitable program. [10]

8.a) Differentiate between ArrayList and Vector.
b) List the methods of Stack class. [5+5]

OR

9. Write a JDBC program to search for an attribute in a table and display the entire tuple to the user. For example, display all the details of the student given his/her roll number. [10]

10.a) Is Applet more secure than application program? Justify your answer.
b) Design a user interface to collect data from the student for admission application using swing components. [5+5]

OR

11. Write a program to demonstrate various keyboard events with suitable functionality. [10]

---ooOoo---

Code No: 114CX

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, May-2015
JAVA PROGRAMMING
(Common to CSE, IT)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

Part- A

(25 Marks)

1.a) What is data abstraction? [2M]
b) List string manipulation functions of Java String class. [3M]
c) Differentiate between interface and abstract class. [2M]
d) Explain the use of 'final' keyword. [3M]
e) Differentiate between thread and process. [2M]
f) List any six built-in exceptions in Java. [3M]
g) What is the difference between array and vector? [2M]
h) List the byte stream classes. [3M]
i) What are the containers available in swing? [2M]
j) Compare Applets with application programs. [3M]

Part-B

(50 Marks)

2.a) Explain the basic concepts of object oriented programming.
b) What is the usage of enumerated data type? Give examples. [5+5]

OR

3.a) Discuss Java jump statements.
b) Write about garbage collection in Java.
c) Explain the use of 'this' keyword. [3+3+4]

4.a) Explain method overriding with a suitable example program.
b) With suitable program segments describe the usage of 'super' keyword. [5+5]

OR

5.a) What is a nested class? Differentiate between static nested classes and non-static nested classes.
b) How to define a package? How to access, import a package? Explain with examples. [5+5]

6.a) With a suitable Java program explain user-defined exception handling.
b) What is meant by re-throwing exception? Discuss a suitable scenario for this. [5+5]

OR

7.a) Does Java support thread priorities? Justify your answer with suitable discussion.
b) Describe producer-consumer pattern using inter-thread communication. [5+5]

8.a) Give an account of Random collection class
b) Discuss the methods of Stack class
c) What is the need of Generics? [3+3+4]

OR

9.a) Discuss the four types of JDBC driver with suitable diagrams.
b) Write a JDBC program to update the amount balance in an account after every withdrawal. Assume the necessary database table. [5+5]

10.a) What is the significance of layout managers? Discuss briefly various layout managers.
b) Give an overview of JButton class. [5+5]

OR

11.a) Explain delegation event model.
b) Write an Applet to draw a smiley picture accept user name as a parameter and display welcome message. [5+5]

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Code No: 09A40503 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B.Tech II Year II Semester Examinations, June-2014
OBJECT ORIENTED PROGRAMMING
(Common to CSE, IT)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

1.a) Write in detail on interfaces and abstract classes in Java.
b) Write in detail on the features of OO programming.

2.a) Write a static recursive method for returning the sum of digits of an integer.
b) Write in detail on methods of String class.

3.a) Write in detail on member access rules.
b) Write a Java program to print the sum of the numbers that are supplied as command line arguments.

4.a) Write a Java program to reverse the contents of a text file.
b) Write briefly on Reader and Writer classes.

5.a) Write a Java program to read a text file and print the number of unique words.
b) Write briefly on Exception handling.

6.a) Write in detail on annotations with examples.
b) Write a Java program to create multiple threads.

7. Write a Java program to implement an AWT based calculator with basic operations.

8.a) Write briefly on event sources, event classes and event listeners in Java.
b) Write briefly on Adapter classes.

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R09

Code No: 09A40503

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B.Tech II Year II Semester Examinations, November/December 2013
OBJECT ORIENTED PROGRAMMING
(Common to CSE, IT)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

1.a) What is a class and object? Is there any relationship between them? Explain.
b) What is a member function and data members? Explain briefly. [8+7]

2.a) What is the order of invoking constructors for the classes that make up the hierarchy? Explain.
b) Discuss the need for overridding methods. [8+7]

3.a) Define multiple inheritance. Does Java Support multiple inheritance? Justify your answer.
b) Write java program to implement the multilevel Inheritance. [8+7]

4.a) Discuss in detail about nested Interfaces.
b) What happens when an Interface is partially implemented? Explain. [8+7]

5.a) Discuss with a sample Java program explaining the need of defining multiple catch clauses.
b) What is meant by nested try statements? When will they be used? Explain it with a sample Java program. [8+7]

6. What are the various methods defined in the Thread class? Explain their usage with a sample Java program. [15]

7.a) What are the advantages of Layout managers? Explain the different Layout Managers AWT supports.
b) What is preferred size of a component and how it is related to the Layout Managers? [8+7]

8.a) Discuss various constructors and methods that are defined in the JComboBox class and JComponent class.
b) Write a sample Java program to show how to create Combo boxes and labels. [8+7]

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