

G.PULLAIAH COLLEGE OF ENGINEERING & TECHNOLOGY

(Accredited by NAAC with 'A' Grade of UGC, Approved by AICTE, New Delhi & Permanently Affiliated to JNTUA, Ananthapuramu)

(Recognized by UGC under 2(f) & 12(B) & ISO 9001: 2008 Certified Institution)

(I B.Tech II Semester (R15) I-MID Descriptive Examination March 2017)

DATA STRUCTURES ((15A05201)

(COMPUTER SCIENCE & ENGINEERING)

TIME: 90 MINUTES

Date:08/03/17

MAX MARKS: 30

PART-I(2*5=10M)

SET NO: I

Q.NO	Questions	Marks	Unit	CO	Cognitive Level
1	A Define time complexity and space complexity	2 M	I	C118.1	Remember
	B Define linked list and specify types of linked lists	2 M	I	C118.1	Understand
	C Define Data structure and specify its classification with examples	2 M	I	C118.1	Understand
	D Define the data structures stack and queue	2 M	II	C118.1	Remember
	E Define array and pointer	2 M	I	C118.1	Remember

PART-II(2*10=20M)

2) A) Write short notes on Asymptotic notations with suitable examples.

5 M	I	C118.1	Remember
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2) B) Explain the memory representation of lower triangular matrix with a suitable example.

5 M	I	C118.3	Analyze
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(OR)

3) A) Explain the insertion of a new node into a single linked list at various possible positions

5 M	I	C118.3	Analyze
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3) B) Mention the advantages and disadvantages of linked list.

5 M	I	C118.3	Analyze
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4) A) Write a C program to implement stack data structure using arrays

5 M	II	C118.2	Create
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4) B) Write an algorithm to convert the given infix expression to postfix form

5 M	II	C118.2	Create
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(OR)

5) Write a C program to implement circular queue using arrays

10 M	II	C118.2	Create
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PART-I(2*5=10M)

SET NO:II

Q.NO	Questions	Marks	Unit	CO	Cognitive Level
1	A Define algorithm and specify its characteristics	2 M	I	C118.1	Understand
	B Mention the differences between single linked list and double linked list	2 M	I	C118.2	Understand
	C Define Circular queue and specify its advantage over linear queue	2 M	II	C118.1	Remember
	D Define self-referential structure with an example	2 M	I	C118.1	Understand
	E Define Sparse matrix with an example	2 M	I	C118.1	Remember

PART-II(2*10=20M)

2) A) Compare array and linked list

5 M	I	C118.3	Analyze
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2) B) Explain the row-major order and column major order representation of a lower triangular matrix with an example

5 M	I	C118.3	Analyze
-----	---	--------	---------

(OR)

3) A) Explain the insertion of a new node into a double linked list at various possible positions

5 M	I	C118.2	Create
-----	---	--------	--------

3) B) Mention the advantages of pointers.

5 M	I	C118.1	Remember
-----	---	--------	----------

4) A) Write a C program to implement stack data structure using linked list.

5 M	II	C118.2	Create
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4) B) Write an algorithm to evaluate the given postfix expression.

5 M	II	C118.2	Create
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(OR)

5) Write a C program to implement circular queue using linked list

10 M	II	C118.2	Create
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PART-I(2*5=10M)

SET NO:III

Q.NO	Questions	Marks	Unit	CO	Cognitive Level
1	A Define the data structure queue and specify its types	2 M	II	C118.1	Remember
	B Define array and specify its types with an example for each	2 M	I	C118.1	Understand
	C Define Big-Oh notation	2 M	I	C118.1	Understand
	D Specify the node structures of single linked list and double linked list	2 M	I	C118.1	Understand
	E Define Hashing	2 M	II	C118.1	Remember

PART-II(2*10=20M)

2) **A)** Define Sparse matrix and list its types with an example for each

5 M	I	C118.1	Remember
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2) **B)** Explain the row-major order and column major order representation of a upper triangular matrix with an example

5 M	I	C118.3	Analyze
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(OR)

3) **A)** Write a C function to traverse and count the number of nodes present in a single linked list

5 M	I	C118.2	Create
-----	---	--------	--------

3) **B)** Write a C program to illustrate pointers with two dimensional array with an example

5 M	I	C118.2	Create
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4) **A)** Explain any five hashing functions with a suitable example for each

5 M	II	C118.1	Remember
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4) **B)** Evaluate the given postfix expression ABC*D/+ where A=2,B=3,C=4,D=6

5 M	II	C118.1	Apply
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(OR)

5) Write a C program to implement linear queue using linked list

10 M	II	C118.2	Create
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PART-I(2*5=10M)

SET NO: IV

Q.NO	Questions	Marks	Unit	CO	Cognitive Level
1	A Define Deque and mention its types	2 M	II	C118.1	Understand
	B Mention any 2 differences between stack and queue data structures	2 M	II	C118.3	Analyze
	C Define Omega notation	2 M	I	C118.1	Understand
	D Define Bucket and Home bucket	2 M	II	C118.1	Understand
	E Define Collision with an example	2 M	II	C118.1	Remember

PART-II(2*10=20M)

2) Explain the memory representation of sparse matrix using arrays and linked list

(OR)

10 M	I	C118.1	Understand
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3) A) Write a C function to traverse and count the number of nodes present in double linked list

5 M	I	C118.2	Create
-----	---	--------	--------

3) B) Define sparse matrix and list its types with an example for each

5 M	I	C118.1	Understand
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4) A) Convert the given infix expression to postfix using stack

$$(A+B)^{C^D}E-F/G$$

5 M	II	C118.2	Apply
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4) B) Evaluate the given postfix expression ABC*D/+ where

$$A=2, B=3, C=4, D=6$$

5 M	II	C118.2	Apply
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(OR)

5) A) List the applications of stack data structure.

5 M	II	C118.1	Remember
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5) B) List the applications of queue data structure.

5 M	II	C118.1	Remember
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