(b) Write add and delete functions for queue with example. 7

(c) Discuss abstract and user-defined data types. 4

4. Write and explain insertion sort algorithm or bubble sort algorithm with a suitable example. 10

P-1(1+1+1)G/11

2011

COMPUTER SCIENCE (General)

Second Paper

Full Marks : 50 Time : Two Hours

The figures in the margin indicate full marks.

Answer question No. 4 and any *two* from the rest.

1. (a) Explain 'Queue', 'Priority queue' and 'Dequeue' with proper example. 6

(b) Write an algorithm to evaluate a post fix expression. 6

(c) "A stack is a FILO list"—explain. Write PUSH and POP operations with relevant examples. 8

2. (a) Discuss sequential and index sequential file organisations and compare them. 14

(b) Transform each of the following postfix expressions to infix : 6

AB + C – DEF – + *

and PQ + R*

3. (a) Define synonyms, collision and overflow in the context of hashing. 9

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(c) Sort the following integers by using bubble sort technique. 8

4 8 1 12 7 2

4. Write short notes on any *two* of the following : 5×2=10

(a) Physical storage media

(b) File organization

(c) Data dictionary storage.

P-I(1+1+1)G/12

2012

COMPUTER SCIENCE (General)

Second Paper

Full Marks : 50 Time : Two Hours

The figures in the margin indicate full marks.

Answer question No. 4 and any *two* from the rest.

1. (a) Differentiate between STACK and QUEUE. 4

(b) Write an algorithm to convert infix expression into post fix expression. 8

(c) Take an example of a post fix expression and evaluate it. 6

(d) What is Dequeue? 2

2. (a) Write down the algorithm for binary search. 8

(b) What is sorting? Explain selection sort with the help of an example. 2+6=8

(c) Explain Hashing. 4

3. (a) What linked list? Explain singly and doubly linked list. 2+6=8

(b) Discuss abstract and user-defined data types. 4

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5. (a) What is the difference between binary search and linear search? 3

(b) Write an algorithm to search an item from a list, using binary search technique. 7

6. (a) Convert the following infix expression into post fix expression using stack :

$$P-(Q*R+(S/T))*U$$ 8

(b) What is Garbage collection? 2

7. (a) Sort the following integers by using selection sort technique.

3 4 12 2 17 30 5

(b) Sort the following integer using selection sort.

2, 1, 11, 3, 5, 6 5

2013

COMPUTER SCIENCE (General)

Second Paper

Full Marks : 50 Time : Two Hours

The figures in the margin indicate full marks.

Answer any *five* questions.

1. (a) What is stack? What are "PUSH" and "POP" operations? 2+3=5

(b) What do you mean by primitive data structures? How do you measure the time complexity of an algorithm? 2+3=5

2. Write an algorithm to insert an element into single linked list. 10

3. (a) Give an algorithm for Bubble sort. Find out the efficiency of the algorithm. 8

(b) Define B-tree. 2

4. (a) Define a data file. Explain Index sequential organization. 2+5=7

(b) Compare sequential and direct access file organizations. 3

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(i) Insert a number.

(ii) Delete a number. 3+3=6

4. (a) Write down some applications of STACK data structure. 3

(b) With examples state the advantages of using a recursive function. 2

(c) Write an algorithm to implement stack using linked list. 5

5. (a) What is an array ? 1

(b) Write down memory representation of an array. 2

(c) Write down an algorithm for two dimensional matrix multiplication. 7

6. (a) Write down an algorithm for selection sort. 6

(b) Compute time possible complexity of selection sorting algorithm. 4

7. (a) How you can measure the performance of a sorting algorithm? 4

(b) Write down an algorithm to search an item from a list using linear search technique. 4

(c) What are the differences between linear search and binary search ? 2

P-I (1+1+1) G / 14

2014

COMPUTER SCIENCE (General)

Second Paper

Full Marks : 50 Time : Two Hours

The figures in the margin indicate full marks.

Answer any *five* questions. 10×5=50

1. (a) Convert the following infix expression to a postfix expression :

$$A+C*(D+E\div(F-G))$$ 7

(b) Describe divide and conquer technique. 3

2. (a) Write algorithms to perform following actions on a circular doubly Linked-List ?

(i) insert a number to the list.

(ii) delete a number from the list with example. 3+3=6

(b) Describe 'call by reference' technique. 4

3. (a) Write down the essential properties of a FIFO (First in First out) data structure. 4

(b) Write algorithms to perform following actions on a FIFO data structure.

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5. (a) Write two advantages of linked list over array.

(b) Write an algorithm to insert an element in a doubly, linked list. 3+7

6. (a) Define a data file.

(b) Mention the different characteristics of a sequential file organization. 2+8

7. Write short notes on (any *two*) : 5×2=10

(a) Physical storage media.

(b) Data dictionary storage.

(c) Circular queue.

2015

COMPUTER SCIENCE (General)

Second Paper

Full Marks : 50 Time : Two Hours

The figures in the margin indicate full marks.

Answer any *five* questions. 10×5=50

1. Write an algorithm to convert infix expression into postfix expression. Describe with an example. 10

2. (a) What is linked list ? Explain singly and doubly linked list.

(b) Write an algorithm to delete the last element of the singly linked list. (2+4)+4

3. (a) Discuss abstract data type.

(b) Sort the following integers by using Insertion sort technique : 12, 72, 25, 08, 94, 37, 42. 2+8

4. (a) Define : Queue and Dequeue.

(b) Write an algorithm to implement queue using linked list. 4+6

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