

2021

(November)

B.Sc(IT) 3rd Semester

ITOL: 215

(Theoretical Foundation of Computing: Assignment)

Total marks: 50

- Q. 1: a. Give a detailed discussion on the following finite automaton: 20
- i. DFA
 - ii. NFA

Or

b. Discuss any two theoretical machines with their corresponding outputs. Also discuss the equivalence between these two machines. 20

- Q. 2: a. Give a detailed discussion on language processors. 5
- b. Give an overview on the relation between finite automata and regular expressions. 10

Or

c. Construct a finite automaton accepting the string

i. $(a+b)^*(aa+bb)(a+b)^*$ 5

d. What is context free grammar? How do they contribute towards building of compilers?

Explain. 10

- Q. 3: a. What are the three different ways to simplify the context-free grammars? Explain them with examples. 15

Or

b. Write down the characteristic features of Push Down automata (PDA). Why is PDA stronger than Finite Automata? Explain. 15

2021
(November)
BCA/B.SC(IT) 3rd Semester
Data Structure Using C
ITOL-124/211
Total Marks -50
Assignment

I. Answer *anytwo* from the following questions: 15 x 2 =30

Q1. a) Explain the theory behind Binary Search and also write a program for implementing it. 2+10 =12

b) Explain the difference between linear and non-linear data structure. 3

Q2. Write algorithms for traversing a circular linked list, insertion of node in the beginning and deletion of a node at the end. 5+ 5 +5 =15

Q3. a) Write a program to implement a stack as a singly link list. 10

b) List application of queues in Computer Science. 5

Q4.a) What is hashing? Explain the Linear Probing with the help of an example. 2 + 8 =10

b) Explain the sequential file organization. 5

II. Answer *anytwo* from the following questions: 10 x 2 = 20

1) Write a program to sort an array using quicksort. 10

2) What is a binary tree? Explain all the three techniques of binary tree traversal with a suitable example. 2 + 8 =10

3) What is overflow and underflow in a singly linked list? Differentiate between Linked list and an array. 5+5= 10

4) Write a program to illustrate the traversal of a matrix and find the sum of it's elements.

10

2021
(November)
BCA/B.Sc.(IT) 3rd Semester
ITOL: 213
(Operating System: Assignment)
Total marks: 50

- Q. 1: a. Write down the major objectives of operating system. 5
- b. Write down some activities that the operating system performs. 5
- c. Give the conceptual architecture of a computer system and explain how the operating system functions and interacts with system. 10

Or

- c. Discuss how the concurrency control takes place in operating system. 5
- d. Give a conceptual detail of context switching of processes. 5
- e. Discuss the concept of multithreading in terms of user level threads and kernel level threads. 10
- Q. 2: a. Give a detailed discussion on the various conditions for deadlocks to occur. Also give reference to suitable figures. 15

Or

- b. Discuss the various strategies for handling deadlock. 15
- Q. 3: a. Give a detailed discussion on process address space. 5
- b. Explain any three page replacement algorithms. 10

Or

- c. What is operating system security? Explain 5
- d. Give a detailed overview of interrupt handling. 10

BCA/B.Sc-IT 3rd Semester
(Assignment)

Paper: ITOL-214(System Analysis And Design)

Total Marks: 50

Answer any five from the following questions.

- a) What is a system? Explain the characteristics of a system. 3+7=10
- (b) What is Flow Chart? Explain with an example. 3+7=10
- (c) What is DFD (Data Flow Diagram)? Explain the different types of DFD. 3+7=10
- (d) What is software testing? Differentiate between white box testing and black box testing. 3+7=10
- (e) What is file organization? Explain the two prime types of file organizations. 3+7=10
- (f) What are the advantages of questionnaires? Explain with the help of examples. 3+7=10
- (g) What is tangible cost? Explain the principles of cost-benefit analysis with the help of examples. 3+7=10
- (h) What is SDLC (System Development Life Cycle)? Explain the phases of SDLC. 3+7=10