



US – 420

**II Semester B.A./B.Sc. Examination, May 2017**  
**(Semester Scheme) (2011-12 and Onwards) (Repeaters)**  
**COMPUTER SCIENCE – II**  
**Data Structures and Operating System**

Time : 3 Hours

Max. Marks : 70

**SECTION – A**

I. Answer **any ten** questions. **Each** question carries **1** mark : **(10×1=10)**

- 1) Mention any two data structure operations.
- 2) List two advantages of arrays.
- 3) What is a pointer ?
- 4) Define priority queue.
- 5) Define binary tree.
- 6) What are operations on stack ?
- 7) Define a graph.
- 8) State any two functions of operating system.
- 9) What is the use of PCB ?
- 10) Define a process.
- 11) What is seek time ?
- 12) What is binary semaphore ?

**SECTION – B**

II. Answer **any five** questions. **Each** question carries **3** marks : **(5×3=15)**

- 13) State the necessary conditions for a dead lock to occur.
- 14) Explain FCFS CPU scheduling algorithm.
- 15) What is batch operating system ?
- 16) Write an algorithm for PUSH operation on stack.
- 17) Convert the following infix notation to prefix :  
 $A + B \wedge C + D * E - G * H$
- 18) List tree traversal technique.
- 19) Write an algorithm to insert a node at the end of the linked list.

P.T.O.



## SECTION - C

- III. Answer **any five** question. **Each** question carries **7** marks : **(5×7=35)**
- 20) What is queue ? Explain the types of queue with example. 7
  - 21) Give any three examples of linear data structure and explain them. 7
  - 22) Write a program to concatenate two strings using pointer. 7
  - 23) What is recursion ? Write the recursion program to solve towers of Hanoi problem. 7
  - 24) Define process. Explain different states of process with a neat diagram. 7
  - 25) Explain any two disk scheduling algorithms. 7
  - 26) Explain FIFO and LRU page replacement algorithm. 7
  - 27) Define file. Explain operation on files. 7

## SECTION - D

- IV. Answer **any one** question. It carries **10** marks : **(10×2=20)**
- 28) a) Explain context – switching with an example. 5  
b) Explain the following :
    - 1) Fragmentation. 3
    - 2) Compaction. 2
  - 29) a) With a diagram, define root, leaf, degree, child and sibling. 5  
b) Write a program to sort 'n' elements using Bubble sort. 5