

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

FIRST YEAR [BATCH 2017-20]

B.A./B.Sc. SECOND SEMESTER (January – June) 2018

Mid-Semester Examination, March 2018

Date : 15/03/2018

COMPUTER SCIENCE (General)

Time : 11 am – 12 noon

Paper : II

Full Marks : 25

[Use a separate Answer Book for each group]

Group – A

1. Answer **any one** question : [1×2·5]
 - a) How does dynamic memory allocation help in managing data? [2·5]
 - b) What operations can be performed on stacks? [2·5]
2. Answer **any two** questions : [2×5]
 - a) Define algorithm. Write down the characteristics of an algorithm. [2+3]
 - b) Write an algorithm to find out the distance between two numbers in an array. [5]
 - c) Write an algorithm for searching an element in a singly linked list. [5]

Group – B

3. Answer **any one** question : [1×2·5]
 - a) Explain different types of interrupts with example. [2·5]
 - b) Differentiate between function call and system call. [2·5]
4. Answer **any two** questions : [2×5]
 - a) Explain Peterson's solution to critical section problem and show how it achieves mutual exclusion when two processes request to enter their critical sections at same time. [3+2]
 - b) Consider the following set of processes that need to be scheduled on a single CPU. All the times are given in milliseconds.

Process Name	Arrival Time	CPU Execution Time
A	0	6
B	3	2
C	5	4
D	7	6
E	10	3

Calculate average turnaround time for these processes using SRTF algorithm. [5]

- c) i) Explain “Zombie process”. [2]
ii) Describe the internals when a process is created using fork() system call. [3]