Roll No.

BCA-10

Operating System

Bachelor of Computer Applications (BCA–11/16/17)

Third Semester, Examination, 2018

Time : 3 Hours

Max. Marks: 80

Note: This paper is of eighty (80) marks containing three (03) Sections A, B and C. Learners are required to attempt the questions contained in these Sections according to the detailed instructions given therein.

Section-A

(Long Answer Type Questions)

- **Note :** Section 'A' contains four (04) long answer type questions of nineteen (19) marks each. Learners are required to answer *two* (02) questions only.
- 1. Define Operating Systems and discuss its role from different perspectives.
- (a) Explain the process state transition diagram used in multiprogramming environment. Describe the fields in a Process Control Block (PCB). What is switching overhead ?

- 3. (a) Explain briefly file system architecture and file management function.
 - (b) What is race condition ?
 - (c) Discuss Peterson's algorithm is achieving mutual exclusion using semaphores.
- 4. Differentiate between contiguous and non-contiguous memory allocation. Illustrate briefly about the various contiguous memory allocation schemes with examples.

Section-B

(Short Answer Type Questions)

- **Note :** Section 'B' contains eight (08) short answer type questions of eight (08) marks each. Learners are required to answer *four* (04) questions only.
- 1. List the main difference and similarities between threads and process.
- 2. Write short notes on the following :
 - (a) Time sharing
 - (b) Mutual exclusion
 - (c) Working set model
 - (d) Relocation and Protection

- 4. What are semaphores ? Explain *two* primitive Semaphore operations. What are its advantages ?
- 5. Explain the difference between long-term and short-term and medium term schedulers.
- 6. Explain IPC. What are the different methods used for logical implementations of message passing systems ?
- 7. Give the pros and cons of a fixed head disk and a moving head disk.
- 8. (a) Explain the goal of scheduling.
 - (b) Compare preemptive scheduling and nonpreemptive scheduling.

Section-C

(Objective Type Questions)

- **Note :** Section 'C' contains ten (10) objective type questions of one (01) mark each. All the questions of this section are compulsory.
- 1. A Process Control Block (PCB) does not contain which of the following ?
 - (a) Code
 - (b) Stack
 - (c) Bootstrap program
 - (d) Data

- 2. The of multiprogramming is :
 - (a) The number of processes executed per unit time
 - (b) The number of processes in the ready queue
 - (c) The number of processes in the I/O queue
 - (d) The number of processes in memory
- 3. A single thread of control allows the process to perform :
 - (a) Only one task at a time
 - (b) Multiple tasks at a time
 - (c) Only two tasks at a time
 - (d) All of the mentioned
- 4. Dynamic loading is :
 - (a) Loading multiple routines dynamically
 - (b) Loading a routine only when it is called
 - (c) Loading multiple routines randomly
 - (d) None of the mentioned
- 5. The _____ swaps processes in and out of the memory.
 - (a) Memory manager
 - (b) CPU
 - (c) CPU manager
 - (d) User

- 6. The processes that are residing in main memory and are ready and waiting to execute are kept on a list called :
 - (a) job queue
 - (b) ready queue
 - (c) execution queue
 - (d) process queue
- 7. For mutual exclusion to prevail in the system :
 - (a) at least one resource must be held in a non-sharable mode
 - (b) the processor must be a uniprocessor rather than a multiprocessor
 - (c) there must be at least one resource in a sharable mode
 - (d) All of the mentioned
- 8. A process can be terminated due to :
 - (a) Normal exit
 - (b) Fatal error
 - (c) Killed by another process
 - (d) All of the mentioned
- 9. What is interprocess communication ?
 - (a) communication within the process
 - (b) communication between two processes
 - (c) communication between two threads of same process
 - (d) None of the mentioned

- 10. Process are classified into different groups in :
 - (a) shortest job scheduling algorithm
 - (b) round robin scheduling algorithm
 - (c) priority scheduling algorithm
 - (d) multilevel queue scheduling algorithm