

DipIETE – CS (Current & New Scheme)

Time: 3 Hours

June 2019

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions, selecting at least TWO questions from each Part. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

Q.1 Choose the correct or best alternative in the following: (2×10)

- a. Two popular strategies for resource allocation are _____ and _____
 - (A) CPU sharing and Memory sharing
 - (B) Sequential sharing and concurrent sharing
 - (C) Partition of resources and allocation from a pool
 - (D) Resource Preemption and resource deallocation
- b. The nature of the batch processing dictates use of _____ scheduling algorithm
 - (A) FCFS
 - (B) Round Robin
 - (C) Priority
 - (D) Shortest Job First
- c. Which state does not present in state transitions for process?
 - (A) Ready
 - (B) Blocked
 - (C) Running
 - (D) Sleeping
- d. When a job of 30 kB is fit into partition of block size 50 kB, then the internal fragmentation is _____
 - (A) 10 kB
 - (B) 20 kB
 - (C) 30 kB
 - (D) 50 kB
- e. A _____ server always processes a scheduled request to completion.
 - (A) Non-Preemptive Server
 - (B) Preemptive Server
 - (C) Scheduler
 - (D) Ready Queue
- f. The producer process waits when the buffer is
 - (A) Full
 - (B) Empty
 - (C) Filled with at least one item
 - (D) None of these
- g. _____ rules govern the formation of valid lexical units in the source language
 - (A) Lexical Rules
 - (B) Syntax rules
 - (C) Semantic rules
 - (D) Grammatical rules

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- h. Which among the following is true with respect to precedence relations for grammar
- (A) A low priority operator precedes a low priority operator appearing to its left or right
 - (B) A high priority operator precedes a low priority operator appearing to its left or right
 - (C) A high priority operator precedes a high priority operator appearing to its left or right
 - (D) A low priority operator precedes a low priority operator appearing to its left or right
- i. Pass II of Second pass assembler
- (A) Synthesizes the target program
 - (B) Synthesizes the source program
 - (C) Builds the symbol table
 - (D) Performs LC processing
- j. _____ technique analyses the use of data in a program to collect information for the purpose of optimization
- (A) Data flow coding
 - (B) Data flow analysis.
 - (C) Demand paging
 - (D) Virtual memory

PART A**Answer at least TWO questions. Each question carries 16 marks.**

- Q.2** a. Define a process. What are the different information stored in Process Control Block? (6)
- b. Differentiate between Time Sharing system and multiprogramming system with its advantages and disadvantages. (6)
- c. Write a note on user level thread and kernel level thread. (4)
- Q.3** a. Explain Banker's algorithm with suitable example. (10)
- b. Differentiate between multilevel scheduling and multilevel adaptive scheduling. (6)
- Q.4** a. Explain Readers and Writers problem using semaphore. (8)
- b. Write a short note on the actions to be performed during a file deletion operation if link exist in the FS directory hierarchy. (8)
- Q.5** a. Explain page replacement algorithm along with its policies. How optimal page replacement is carried out? (8)
- b. Differentiate between internal and external fragmentation. What is the use of the memory compaction? (8)

PART B**Answer at least TWO questions. Each question carries 16 marks.**

- Q.6** a. What are the various language processing activities? Explain in brief. (6)
- b. Explain various allocation data structures with suitable example (10)

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- Q.7** a. Write an algorithm for operator precedence grammars. (8)
- b. Write a note on self-relocating programs (8)
- Q.8** a. Explain pass structure of assemblers? How do you design a two pass assembler? (8)
- b. With neat diagram, explain the data structure of the assembler to convert the source program to target program. (8)
- Q.9** a. Explain various parameter passing mechanisms with suitable example. (8)
- b. Write a short note on the following (4+4)
- Buffering and Spooling
 - Compiler and Interpreter.