

DipIETE – CS (OLD SCHEME)

Code: DC14
Time: 3 Hours

Subject: SYSTEM SOFTWARE & OPERATING SYSTEMS
Max. Marks: 100

JUNE 2011

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. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

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

a. A program in the state of execution is called _____

- (A) Process (B) Instruction
(C) Procedure (D) Function

b. Memory utilization factor shall be computed as follows:

- (A) Memory in use/allocated memory.
(B) Memory in use/total memory connected.
(C) Memory allocated/free existing memory.
(D) Memory committed/total memory available.

c. An assembler is

- (A) programming language dependent.
(B) syntax dependant.
(C) machine dependant.
(D) data dependant

d. Nested Macro calls are expanded using the

- (A) FIFO rule (First in first out) (B) LIFO (Last in First out)
(C) FILO rule (First in last out) (D) None of the above

e. A linker program

- (A) places the program in the memory for the purpose of execution.
(B) relocates the program to execute from the specific memory area allocated to it.
(C) links the program with other programs needed for its execution.
(D) interfaces the program with the entities generating its input data

- f. A UNIX device driver is _____
- (A) Structured into two halves called top half and bottom half
(B) Three equal partitions
(C) Unstructured
(D) None of the above
- g. Number of jobs done in specified time period is called _____
- (A) Throughput (B) Turnaround time.
(C) Dispatch (D) Scheduler.
- h. Breaking of program into its logical segments is known as _____
- (A) Fragmentation. (B) Segmentation.
(C) Physical address. (D) Logical address.
- i. SSTF stands for _____
- (A) Shortest-Seek-time-first scheduling
(B) small - small-time-first
(C) simple-seek-time-first
(D) small-simple-time-first scheduling
- j. Translator for low level programming language were termed as _____
- (A) Assembler (B) Compiler
(C) Linker (D) Loader

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

- Q.2** a. What is parsing? Write down the drawback of top down parsing of backtracking. (5)
- b. Describe the four step approach to develop a design specification for an assembler. (11)
- Q.3** a. What are the four necessary conditions of deadlock prevention? (4)
- b. What are threads? Why are they required? (3)
- c. Describe the steps in a non-blocking protocol. (9)

- Q.4** a. Explain about the Search data structure in brief. (4)
- b. What is a race condition? Explain how does a critical section avoid this condition. (6)
- c. Distinguish between Pure and Impure Interpreters. (6)
- Q.5** a. List the steps needed to perform page replacement. (4)
- b. Explain about different techniques with which a file can be shared among different users. (8)
- c. What are the fundamental steps in program development? Explain about program testing and debugging in brief. (4)
- Q.6** a. Draw the state diagram of a process from its creation to termination, including all transitions, and briefly elaborate **every state** and **every transition**. (8)
- b. What is response ratio? (2)
- c. Describe the three major issues in code generation for expressions. (6)
- Q.7** a. Explain the differences between macros and subroutines. (5)
- b. Write short notes on the following: (8)
- (i) YACC. (ii) Debug monitors.
- c. Define 3 events concerning resource allocations. (3)
- Q.8** a. Define an operating system. (2)
- b. What are the 3 aspects of a message delivery protocol? What are blocking & non-blocking protocols? (7)
- c. Define an IO Buffer. How is it achieved? (7)
- Q.9** a. What are the advantages of code optimization? Explain optimizing transformations. (7)
- b. Describe (3)
- (i) Problem-oriented and procedure-oriented language (3)
- (ii) Encryption of data (3)
- (iii) Three techniques for protection of user files (3)