ROLL NO. _____

Code: DC61 Subject: OPERATING SYSTEMS & SYSTEMS SOFTWARE

DipIETE – CS (Current Scheme)

Time: 3 Hours **JUNE 2015** **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 the best alternative in the following: (2×10)

a. Switching the CPU to another Process requires to save state of the old process and loading new process state is called as

(A) Process Blocking **(B)** Time Sharing
(C) Context Switch **(D)** None of these

b. A static partitioned memory management system has a total of six partitions. If one is allocated to the operating system, this will allow a total of

(A) Five user jobs **(B)** Thirty-two user jobs
(C) Six user jobs **(D)** Thirty-six user jobs

c. A Dead-lock in an Operating System is

(A) Desirable process **(B)** Definite waiting process
(C) Undesirable process **(D)** All of these

d. Mutual exclusion problem occurs between

(A) Two disjoint processes that do not interact
(B) Processes that share resources
(C) Processes that do not use the same resources
(D) None of these

e. _____ is a technique of temporarily removing inactive programs from the memory of computer system.

(A) Swapping **(B)** Semaphore
(C) Spooling **(D)** Scheduler

f. Which of the following scheduling policy is well suited for time shared operating system?

(A) Shortest job first **(B)** First come first serve
(C) Round robin **(D)** Elevator

g. PCB of all running process reside in which of the following?

(A) RAM **(B)** Cache
(C) Hard disk **(D)** None of these

h. Time sharing provides

(A) Disk management **(B)** Concurrent execution
(C) File system management **(D)** All of these

i. Starvation can be avoided by which of the following statements.

(A) 1 only **(B)** 1 and 2 only
(C) 2 only **(D)** None of these

j. _____ is a technique of improving the priority of process waiting in Queue for CPU allocation

(A) Starvation **(B)** Revocation
(C) Aging **(D)** Relocation

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

Q.2 a. There are different ways in which resources can be shared by a set of programs. Discuss them briefly. **(8)**

b. Discuss briefly about four fundamental states for a process. **(8)**

Q.3 a. Many tasks are involved in process scheduling. State them briefly. **(8)**

b. Write down the conditions that are necessary for deadlocks to arise. Also discuss about one fundamental approach which is generally used for handling deadlocks. **(4+4)**

Q.4 a. Write down the properties of a CS Implementation. How will you illustrate a CS implementation using a binary semaphore with the help of figure? **(4+4)**

b. Discuss briefly about the UNIX file system. **(8)**

Q.5 a. During the execution of a program, the memory allocated to it contains various components. Discuss them briefly. **(8)**

b. Discuss briefly the kernel actions to implement memory protection with the help of suitable figure. **(8)**

PART B

Answer at least TWO questions. Each question carries 16 marks.

Q.6 a. What do you mean by language processing? Describe language processing activities. **(8)**

b. How the data structures used for language processors are classified? Explain. **(8)**

Q.7 a. Describe parsing and what are two fundamental approaches to parsing? Draw parse tree and abstract syntax tree for the source string a+b*c. **(8)**

b. What is macro-expansion? List the key notions concerning macro expansion. Write an algorithm to outline the macro-expansion using macro-expansion counter. **(8)**

Q.8 a. What is assembler and also write about task performed by the passes of a two pass assembler? **(6)**

b. Describe data structure of the assembler **(10)**

Q.9 a. What is the difference between Compiler and Interpreter? Define static as well as dynamic memory allocation. **(4+4)**

b. Explain various parameter passing techniques. **(8)**