ROLL NO. _____

Code: DC61 **Subject: OPERATING SYSTEMS & SYSTEMS SOFTWARE**

DipIETE – CS

Time: 3 Hours **DECEMBER 2012** **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. An interpreter is a language processor which bridges _____ without generating a machine language program

(A) Execution gap **(B)** Semantic gap
(C) Specification gap **(D)** Domain gap

b. The PCB stands for _____

(A) Program Control Board **(B)** Process Control Block
(C) Program Controlling Block **(D)** None of these

c. A program in execution is called

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

d. Which of the following is true?

(A) Block cipher technique is an encryption technique.
(B) Steam cipher technique is an encryption technique
(C) Both **(A)** and **(B)**
(D) Neither of **(A)** and **(B)**

e. The expansion of nested macro calls follows

(A) FIFO rule **(B)** LIFO rule
(C) LILO rule **(D)** priority rule

f. An operating system contains 3 user processes each requiring 2 units of resource R .The minimum number of units of R such that no deadlocks will ever arise is

(A) 4 **(B)** 3
(C) 5 **(D)** 6

g. The syntax of the assembler directive EQU is

(A) EQU <address space> **(B)** <symbol>EQU<address space>
(C) <symbol>EQU **(D)** None of these

h. The following is not a layer of IO management module

(A) PIOCS (Physical Input Output Control System)
(B) LIOCS (Logical Input Output Control System)
(C) FS (File System)
(D) MCS (Management Control System)

i. Jobs which are admitted to the system for processing is called

(A) long-term scheduling **(B)** short-term scheduling
(C) medium-term scheduling **(D)** queuing

j. Relocatable programs

(A) cannot be used with fixed partitions
(B) can be loaded almost anywhere in memory
(C) do not need a linker
(D) can be loaded only at one specific location

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

Q.2 a. Describe how batch Processing Systems work? **(4)**

b. Define the following:
(i) Process (ii) Process Control Block
(iii) Multi programming (iv) Time sharing. **(12)**

Q.3 a. Explain any three policies for process scheduling that uses resource consumption information. What is response ratio? **(8)**

b. Describe the mixed approach to Deadlock handling. **(8)**

Q.4 a. Define the concept of Semaphore with an example. **(4)**

b. Describe the Directory Structures. **(12)**

Q.5 a. Describe the concept of garbage collection through an example. **(6)**

b. What is virtual memory using segmentation? Describe with the help of a diagram. **(10)**

PART B

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

Q.6 a. What is the meaning of ambiguity in grammatic specification? How is this ambiguity eliminated? **(8)**

b. Discuss the two allocation data structures stacks & heaps. **(8)**

Q.7 a. What is the difference between Top Down Parsing and Bottom Up Parsing? **(6)**

b. Explain macro definition, macro call and macro expansion? **(4)**

c. Explain about self relocating programs in brief. **(6)**

Q.8 a. Specify the tasks performed by passes of a two pass assembler. **(8)**

b. What are the advantages of Assembly Language? **(8)**

Q.9 a. Define the following:
(i) Compiler
(ii) Interpreter
Clearly giving differences between the two. **(8)**

b. What is the difference between Pure and Impure interpreters? **(8)**