ROLL NO. _____

Code: DC61/DC110
Subject: OPERATING SYSTEMS & SYSTEMS SOFTWARE

DipIETE – CS (Current & New Scheme)

Time: 3 Hours | **June 2018** | **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. Virtual memory is
(A) An extremely large main memory
(B) An extremely large secondary memory
(C) An illusion of extremely large main memory
(D) A type of memory used in super computers

b. Throughput of a system is
(A) Number of programs processed by it per unit time
(B) Number of times the program is invoked by the system
(C) Number of requests made to a program by the system
(D) None of these

c. Deadlock prevention is a set of methods
(A) To ensure that at least one of the necessary condition can not hold
(B) To ensure that all of the necessary condition do not hold
(C) To decide if the requested resources for a process have to be given or not
(D) To recover from a deadlock

d. With paging there is no ----------fragmentation
(A) Internal **(B)** External
(C) Both A & B **(D)** None of these

e. A semaphore is a share integer variable
(A) That can not drop below zero **(B)** That can not be more then zero
(C) That can not drop below one **(D)** That can not be more than one

f. The translator which perform macro expansion is called a
(A) Macro Processor **(B)** Macro pre processor
(C) Micro pre processor **(D)** Loader

g. Parsing is also known as
(A) Lexical analysis **(B)** Syntax analysis
(C) Semantic analysis **(D)** Code generation

h. In a two pass assembler the object code generation is done during the
(A) Second pass **(B)** First pass
(C) Zeroth pass **(D)** Not done by assembler

i. 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
(C) Links the program with other programs needed for its execution
(D) Interfaces the program with the entities generating its execution

j. Which of the following is not a feature of compiler?
(A) Scans the entire program first and then translate it into machine code
(B) When all the syntax errors removed, execution takes place
(C) Show for debugging
(D) Execution time is more

PART A (Operating Systems)
Answer at least TWO questions. Each question carries 16 marks.

Q.2 a. Clearly differentiate between multiprogramming and timesharing operation system. **(6)**

b. Explain Process states and Process Control Block. **(6)**

c. What are threads? Explain. **(4)**

Q.3 a. What are the criteria for scheduling ? Explain each. **(5)**

b. How a deadlock can be prevented? Explain. **(5)**

c. Write an algorithm for deadlock detection. **(6)**

Q.4 a. Explain any Classical Process synchronization problem in detail. **(6)**

b. Explain working of Semaphores. **(4)**

c. Explain all disk space allocation methods?. **(6)**

Q.5 a. Explain paging in detail. **(8)**

b. What is demand paging? Explain page replacement algorithms with example. **(4+4)**

PART B (System Software)
Answer at least TWO questions. Each question carries 16 marks.

Q.6 a. What do you understand by language processing? **(4)**

b. Explain Language processor Development Tools. **(8)**

c. Explain search data structures. **(4)**

Q.7 a. Write a short note on parsing by explaining any technique for it**.** **(8)**

b. Explain Macro expansion with suitable example. **(8)**

Q.8 a. Explain working of Pass I of assembler with flowchart. **(8)**

b. Explain working of Pass II of assembler **(8)**

Q.9 a. What is difference between compilers and interpreters? **(4)**

b. Explain compilation of expressions with the help of A Toy Code Generator for expressions? **(12)**