

DipIETE – CS

Time: 3 Hours

JUNE 2014

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. A program at the time of its execution is called _____.

- | | |
|---------------------|--------------------|
| (A) Dynamic Program | (B) Static Program |
| (C) Binded Program | (D) A Process |

b. The Hardware mechanism that enables a device to notify the CPU is called _____.

- | | |
|-----------------|-------------------|
| (A) Polling | (B) Interrupt |
| (C) System Call | (D) None of these |

c. Most modern software applications enable you to customize and automate various features using small custom-built “miniprograms” called:

- | | |
|--------------|-----------------|
| (A) macros | (B) code |
| (C) routines | (D) subroutines |

d. Virtual Memory is commonly implemented by _____.

- | | |
|-------------------|-------------------|
| (A) Segmentation | (B) Swapping |
| (C) Demand Paging | (D) None of these |

e. The operating system manages _____.

- | | |
|--------------------------|------------------|
| (A) Memory | (B) Processor |
| (C) Disk and I/O devices | (D) All of these |

f. A binary semaphore

- | | |
|--------------------------------------|---------------------------------------|
| (A) has the values one or zero | (B) is essential to binary computers |
| (C) is used only for synchronisation | (D) is used only for mutual exclusion |

g. _____ OS pays more attention on the meeting of the time limits.

- (A) Distributed (B) Network
(C) Real time (D) Online

h. Debugging is:

- (A) creating program code.
(B) finding and correcting errors in the program code.
(C) identifying the task to be computerized.
(D) creating the algorithm.

i. Which statement is valid about interpreter?

- (A) It translates one instruction at a time
(B) Object code is saved for future use
(C) Repeated interpretation is not necessary
(D) All of these

j. The translator program used in assembly language is called

- (A) Compiler (B) Interpreter
(C) Assembler (D) Translator

PART A

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

- Q.2** a. What are the basic functions of an Operating System? (4)
- b. Explain the batch processing systems. (4)
- c. Explain the following terms: (any **TWO**)
(i) Time sharing OS
(ii) Multiprogramming systems
(iii) Real time OS
(iv) SPOOLING (4+4)
- Q.3** a. What are deadlock prevention techniques? (6)
- b. Describe the FCFS scheduling algorithm. (4)
- c. What do you mean by deadlock avoidance? (6)
- Q.4** a. What is Context Switch? (4)
- b. Explain the allocation methods of disk space. (6)

- c. Explain the critical section problem. (6)
- Q.5** a. Briefly describe 'paging' in memory management. (6)
- b. Explain the virtual memory concept. (5)
- c. What is fragmentation? Explain different types of fragmentation. (5)

PART B

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

- Q.6** a. What are the benefits of using "language processors"? (5)
- b. What do you understand by the term System Software? (3)
- c. What are the various *language processing* activities in the domain of system software? What do you understand by *cross-compilation*? (4+4)
- Q.7** a. What is parsing? Write down the drawback of top down parsing of backtracking. (5)
- b. Mention some advantages of assembly language over machine language. (5)
- c. What are *assembler directives* in assembly languages? Illustrate with an example the importance of assembler directives. (3+3)
- Q.8** a. What are the major stages in the process of *compilation*? (5)
- b. Explain positional and keyword parameters used in lexical expansion. (6)
- c. Define and explain program relocation. (5)
- Q.9** Write short notes on:
- (i) A toy code generator for expressions
- (ii) Interpreter and their use (8+8)