

DiplETE – CS (Current & New Scheme)

Time: 3 Hours

JUNE 2017

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. Semaphores are used to
(A) do I/O
(B) synchronize critical resources to prevent contention
(C) synchronize critical resources to prevent deadlocks
(D) allow processes to communicate with one another
- b. Time sharing provides
(A) Disk management
(B) Concurrent execution
(C) File system management
(D) All of these
- c. 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.c
- d. The translator program used in assembly language is called
(A) Compiler
(B) Interpreter
(C) Assembler
(D) Translator
- e. The Hardware mechanism that enables a device to notify the CPU is called _____.
(A) Polling
(B) Interrupt
(C) System Call
(D) None of these
- f. _____ OS pays more attention on the meeting of the time limits.
(A) Distributed
(B) Network
(C) Real time
(D) Online
- g. The _____ time of a user job is the time since its submission to the time its results become available to the user.
(A) Latency
(B) Turn-around
(C) Batch monitoring
(D) Processing

Code: DC61/DC110

Subject: OPERATING SYSTEMS & SYSTEMS SOFTWARE

- h. _____ is the technique of temporarily removing inactive programs from the memory of a computer system.
 (A) Swapping (B) Time slicing
 (C) Time sharing (D) Program pre-emption
- i. When exceptional condition occurs outside the CPU the hardware signal given is
 (A) Reset (B) Interrupt
 (C) Hold (D) Wait
- j. Which of the following is not a valid page replacement policy?
 (A) LRU (B) FIFO
 (C) RLU policy (D) Optimal page replacement

PART A

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

- Q.2** a. Explain the following terms- (Do any three) (9)
 (i) Serial Processing
 (ii) Batch processing
 (iii) Multi processing
 (iv) Multitasking
 (v) Network operating system
- b. What are the basic functions of an Operating System? (3)
- c. Explain Real time OS. (4)
- Q.3** a. What are deadlock prevention techniques? (6)
- b. What do you mean by Preemptive and Non-preemptive scheduling? (10)
- Q.4** a. Discuss briefly about the UNIX file system. (8)
- b. Explain critical section problem in relation to process synchronization. List various requirements that critical section problem solution must satisfy. (8)
- Q.5** a. Describe the First fit, Best fit and Worst fit allocation algorithms. Given memory partitions of 100K, 500K, 200K, 300K, and 600K (in order), how would each of the First-fit, Best-fit, and Worst-fit algorithms place processes 212K, 417K, 112K, and 426K (in order)? Which algorithm makes the most efficient use of memory? (3+6)
- b. Discuss page replacement. With reference to the given string find the page faults using FIFO Page replacement:- 2, 3, 5, 4, 6, 2, 1, 3. (7)

Code: DC61/DC110**Subject: OPERATING SYSTEMS & SYSTEMS SOFTWARE****PART B****Answer at least TWO questions. Each question carries 16 marks.**

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- Q.6** a. Define language processor and highlight the practical requirements that language processor should meet. (6)
- b. What is static binding and dynamic binding? (3)
- c. How the data structures used for language processors are classified? Explain. (7)
- Q.7** a. What is parsing? Write down the drawback of top down parsing of backtracking. (5)
- 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)
- c. What are assembler directives in assembly languages? (3)
- Q.8** a. Explain positional and keyword parameters used in lexical expansion (6)
- b. What are the data structures used during pass I of the Assembler? (5)
- c. What are the tasks performed by synthesis phase of an assembler. List these. (5)
- Q.9** a. What are the features used by compiler during implementing function calls? (4)
- b. Compare and contrast Static and Dynamic memory allocation. (4)
- c. Differentiate between logical address and physical address. (8)