

Subject: OPERATING SYSTEMS & SYSTEMS SOFTWARE

Time: 3 Hours

Max. Marks: 100

DECEMBER 2010

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 half an hour 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 process can not be activated until some finite amount ofmemory is allocated to it .
- (A) Primary (B) Secondary
(C) Auxiliary (D) All of the above
- b. A.....System is a system in which transaction accessing and updating of a file is quick enough and immediate to affect the original decision making
- (A) Batch Processing (B) Real Time
(C) Online Processing (D) Information Processing
- c. This refers to the delay between the read/write request, and the appearance of the required sector under the read/write head.
- (A) Access Time (B) Seek Time
(C) Latency Time (D) None
- d. Which of the following are language processors?
- (A) Assembler (B) compiler
(C) Interpreter (D) All of the above
- e. Virtual memory can be implemented with
- (A) Segmentation (B) Paging
(C) Demand Paging (D) all of the above
- f. Which of the following is most general phase structured grammar?
- (A) Context – Sensitive (B) Regular
(C) Context-Free (D) None of the above
- g. An interpreter is a language processor which bridges an Without generating a machine language program

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

h. The PCB stands for

- (A) Printed Circuit Board
- (B) Process Control Block
- (C) Program Controlling Block
- (D) None of the above

i. A bottom-up parser builds a parser tree by starting at the leaves and working up towards the root

- (A) True
- (B) False

j. A typical operating system uses the following deadlock-handling technique:-

- (A) Deadlock prevention
- (B) Deadlock Avoidance
- (C) deadlock detection and recovery
- (D) All of the above

PART A

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

Q.2 a. Define Operating system. What are its goals? State about the major functions and Objectives of Operating Systems. (8)

b. Explain the following in brief:- (4+4)
(i) Multiprogramming Systems
(ii) Real Time Operating Systems

Q.3 a. State and explain the necessary conditions for deadlock resolution/elimination. (8)

b. What is CPU Scheduling? Explain about any three CPU Scheduling algorithms. (8)

Q.4 a. Explain about interprocess synchronization. (8)

b. How file system manages disk? What is various allocation methods used in file system? (8)

Q.5 a. What is Directory Structure? Explain different directory structures. (8)

b. What is virtual memory? How it can be implemented using paging. (8)

PART B

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

Q.6 a. What do you mean by language processor? Also discuss about the spectrum of language processors used in practice. (8)

b. Define Static binding and dynamic binding. Which one of the two is more efficient? (4)

c. Define Search structure? Also describe the format of an entry in search data structure. (4)

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- Q.7** a. What is the role of the following:- (2,2,2,2)
- (i) Scanner
 - (ii) Parser
 - (iii) Parse tree
 - (iv) Abstract syntax tree
- b. Explain the use of macros in assembly language and also define following terms associated with macros (2+(2 ×3))
- (i) macro definition
 - (ii) macro call
 - (iii) macro expansion
- Q.8** a. What is Assembly Language programming? Explain its elements. (8)
- b. Describe the pass structure and design of a two pass Assembler. (8)
- Q.9** a. Differentiate between logical address and physical address (6)
- b. Discuss the advantages and disadvantages of compiler and interpreter over each other. (6)
- c. Explain the concept of dynamic linking. (4)