

AMIETE – CS/IT (NEW SCHEME) – Code: AC59 / AT59**Subject: OPERATING SYSTEMS AND SYSTEMS SOFTWARE****Time: 3 Hours****Max. Marks: 100****JUNE 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.
- 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. Windows 2000 OS can act as a

- (A) Web client. (B) Web server.
(C) Both (A) & (B). (D) Neither (A) nor (B).

b. The API stands for

- (A) Application Programming Interface.
(B) Applications Program Interchange.
(C) Application Protocol Interface.
(D) Application Protocol Interrupt.

c. 'Fork' leads to a

- (A) Interrupt. (B) Exception.
(C) Child process. (D) Suspend process.

d. FIFO stands for

- (A) First In First Out (B) Fastest Input Fastest Output.
(C) File Implementation For Output. (D) None of the above.

e. The optimum CPU scheduling algorithm is

- (A) FIFO. (B) SJF with pre-emption.
(C) SJF without pre-emption. (D) Round Robin.

f. Bankers algorithm is used in

- (A) Deadlock detection. (B) Deadlock prevention.
(C) Deadlock avoidance. (D) CPU Scheduling.

g. Which one of the following is not a function of Pass-1 of two-pass assembler?

- (A) Assign addresses to all statements in the program.
- (B) Save the values of all labels to use in pass2.
- (C) Generate data values defined by BYTE, WORD, etc.
- (D) Perform some processing of assembler directives.

h. Which of the following are not false w.r.t. addressing modes?

- (A) In direct addressing, address is part of the instruction.
- (B) In base relative addressing, displacement is an unsigned integer.
- (C) In PC relative addressing, displacement is a signed integer.
- (D) In PC and base relative addressing, displacement is a signed integer.

i. Which of the following statements are true?

- (i) I/O channels allow overlap of computing and I/O.
- (ii) I/O channel is not a part of SIC.
- (iii) I/O channels do not allow overlap of computing and I/O.
- (iv) I/O channels are used to perform I/O only when the CPU is not busy.

- (A) (ii) & (iii)
- (B) (ii), (iii) & (iv)
- (C) only (ii)
- (D) (i) & (ii)

j. Which of these is a component of a process precedence sequence?

- (A) Process name
- (B) Sequence operator ‘;’
- (C) Concurrency operator ‘,’
- (D) All of the above

PART A

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

Q.2 a. Explain the various characteristics of an operating system. Give typical examples. **(6)**

b. Write a short note on the following: **(10)**

- (i) Multiprogramming.
- (ii) Time sharing systems.
- (iii) Parallel systems.
- (iv) Distributed systems.
- (v) Spooling.

Q.3 a. Compare the following scheduling algorithms with an example:
(i) FCFS (ii) SJF (iii) Priority Based **(10)**

b. Define Deadlock? What are the necessary conditions for the deadlock? **(6)**

Q.4 a. What is Thrashing? Why does it occur? Once it occurs, what can the operating system do to eliminate it? **(8)**

b. Explain how semaphore and semaphore operations can be implemented in an operating system. **(8)**

- Q.5** Write short notes on:
- (i) Major file allocation strategies for files.
 - (ii) Pre-emptive and Non-Pre-emptive scheduling algorithms.
 - (iii) Virtual Memory Management Scheme
 - (iv) Banker's Algorithm. **(16)**
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PART B

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

- Q.6** a. Differentiate between CISC and RISC processors. **(5)**
- b. Briefly explain the debugging functions. **(5)**
- c. Explain the functions of two pass assembler. **(6)**
- Q.7** a. What is parsing? Explain top down and bottom up parsing. **(8)**
- b. Explain the different classification of grammars. **(8)**
- Q.8** a. Enlist the synthesis and analysis phase of an assembler. **(8)**
- b. Explain the Relocation Algorithm. **(8)**
- Q.9** a. What do you mean by invocation of macros within macros? Explain with an example. **(8)**
- b. Explain the phase of building a DFA. **(8)**