Code: DC14 **Subject: SYSTEM SOFTWARE & OPERATING SYSTEMS**
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. 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 grammar for a programming language is a formal description of

(A) Syntax **(B)** Semantics
(C) Structure **(D)** Code

b. ……. is a technique of temporarily removing inactive programs from the memory of computer system

(A) Swapping **(B)** Spooling
(C) Semaphore **(D)** Scheduler

c. _____ is a technique of improving the priority of process waiting in queue for CPU allocation

(A) Starvation **(B)** Aging
(C) Revocation **(D)** Relocation

d. _____ is the time required by a sector to reach below read/write head.

(A) Seek Time **(B)** Latency Time
(C) Access Time **(D)** None

e. Which of the following is most general phase structured grammar?

(A) Context – Sensitive **(B)** Regular
(C) Context-Free **(D)** None of the above

f. File record length

(A) Should always be fixed
(B) Should always be variable
(C) Depends upon the size of file
(D) Should be chosen to match the data characteristics.

g. Which of the following Statement is true

(A) Macro definitions can not appear within other macro definitions in assembly language.
(B) Overlaying is used to run a program which is longer than the address space of Computer
(C) Mutual memory can be used to accommodate a program which is longer than the address space of the computer.
(D) It is not possible to write interrupt service routines in a high level language.

h. Real time systems use ……scheduling.

(A) Priority based preemptive **(B)** Shortest Job next
(C) Round Robin **(D)** First come First served

i. Debug monitors helps in

(A) Obtaining information for localization of errors
(B) Keeping track of modifications performed in source code
(C) To generate test data
(D) None of the above

j. The degree of multiprogramming is determined by the size of physical memory and the size of all programs in execution

(A) True **(B)** False

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Explain the use of language processors and their activities. **(8)**

b. What are the requirements for the solution to the critical section problem **(8)**

Q.3 a. Explain about the pass structure of an assembler in context of working of pass 1 and Pass 2 along with their data structures. **(8)**

b. What do you understand by the parameter passing mechanism? Give brief description about **(8)**
(i) Call by value,
(ii) Call by value-result,
(iii) Call by reference.

Q.4 a. What do you mean by user interface? Explain various types of user interfaces and their uses. **(8)**

b. Write short note on code optimization and Optimizing Transformations**.** **(8)**

Q.5 a. Write short note on Program generation activity. **(8)**

b. Explain about Macro Call and Macro Expansion in brief. **(8)**

Q.6 a. Distinguish between protection and security mechanism in OS. **(6)**

b. Explain the method to avoid deadlock. **(6)**

c. What do you mean by control structures ?. **(4)**

Q.7 a. Differentiate between the following:- **(4×3)**
(i) Batch operating system & Time sharing operating system.
(ii) Compiler and interpreter
(ii) Contigous memory allocation and non contiguous memory allocation.

b. What is external fragmentation and internal fragmentation? Define. **(4)**

Q.8 a. What is parsing and specify the goals of parsing? **(6)**

b. Write short note on dynamic memory allocation. **(4)**

c. What is the role debug monitors as a software tool? **(6)**

Q.9 a. Define process. Give brief description about process states with the help of process state transition diagram. **(8)**

b. Define the following terms: **(8)**
(i) Batch systems
(ii) A real time system
(iii) Kernel
(iv) Multi programming Systems