Code: AC08 / AT08
Time: 3 Hours

JUNE 2011

Subject: SYSTEM SOFTWARE
Max. Marks: 100

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. 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. Which of the following program is not a utility?

    (A) Debugger   **(B)** Editor
    (C) Spooler   **(D)** All of the above

b. Which of the following system program forgoes the production of object code to generate absolute machine code and load it in to the physical main storage location from which it will be executed immediately upon completion of the assembly?

    (A) two pass assembler   **(B)** macroprocessor
    (C) load-and-go assembler   **(D)** compiler

c. The table created by lexical analysis to describe all literals used in the source program is:

    (A) terminal table   **(B)** literal table
    (C) identifier table   **(D)** reductions

d. Which of the following (is)are Language Processor(s)

    (A) assembler   **(B)** compiler
    (C) interpreter   **(D)** all of the above

e. A generalized software package produced to meet the bugs of a variety of data processing users is known as:

    (A) Utility programs   **(B)** System software
    (C) Operating system   **(D)** Application package

f. Software instructions intended to satisfy a user's specific processing needs are called ……..…….

    (A) system software   **(B)** a microcomputer
    (C) documentation   **(D)** application software

g. Multiprogramming was made possible by

   (A) Input/output units that operate independently of the CPU
   (B) Operating system
   (C) Both (A) and (B)
   (D) Neither (A) nor (B)

h. A relocate program form is one which

   (A) cannot be made to execute in any area of storage other than the one designated for it at the time of its coding or translation.
   (B) consists of a program and relevant information for its relocation.
   (C) can itself performs the relocation of its address-sensitive portions.
   (D) all of the above

i. Assembly code data base is associated with

   (A) Assembly language version of the program which is created by the code generation phase and is input to the assembly phase.
   (B) A permanent table of decision rules in the form of patterns for matching with the uniform symbol table to discover syntactic structure.
   (C) Consists of a full/ partial list or the token's as they appear in the program. Created by Lexical Analysis and used for syntax analysis and interpretation.
   (D) A permanent table which lists all key words and special symbols of the language in symbolic form.

j. In analyzing the compilation of program , the term Lexical Analysis is associated with

   (A) Recognition of basic syntactic constructs through reductions.
   (B) Recognition of basic elements and creation of uniform symbols.
   (C) Creation of more optical matrix.
   (D) Use of macroprocessor to produce more optimal assembly code.

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

Q.2 a. Explain architecture of simplified instructional computer. **(8)**

   b. Explain the translation and execution process using a P-code compiler. **(8)**

Q.3 a. What are the contents of a literal pool? Where these can be placed? **(8)**

   b. Explain following symbol defining statements: **(8)**

      1. +LDT   #MAXLEN
      2. MAXLEN   EQU 4096
      3. ORG   value
      4. BASE   EQU R1
      5. COUNT   EQU R2
      6. INDEX EQU   R3

Q.4 a. What is need of Multipass assemblers? Explain various steps involved in multipass assembly. **(8)**

b. Briefly define loading, linking and relocation. Show how a subroutine getc(getcharacter) perform much work for bootstrap loader? **(8)**

Q.5 a. With block diagram, show processing of an object program using **(8)**
(i) linking loader
(ii) linkage editor

b. Compare machine independent and machine dependent compiler features. **(8)**

Q.6 a. Explain the following terms:
(i) Throughput and turnaround time.
(ii) Type-2 and Type-3 Grammar. **(4×2)**

b. Write the sequence of steps involved in dynamic debugging of a program. **(8)**

Q.7 a. Explain Macro definition and Macro call in a program giving suitable example. **(8)**

b. What is an operating system? Explain basic operating system functions in details. **(8)**

Q.8 a. Discuss various issues which are required to be considered for designing a distributed operating system. **(8)**

b. Explain compilation of control structures. Give suitable example. **(8)**

Q.9 a. Explain default specifications of parameters in macro-processors **(8)**

b. Explain different type of text editors available as software tools? **(8)**