Code: AC08 / AT08   **Subject: SYSTEM SOFTWARE**

AMIETE – CS/IT (OLD SCHEME)

Time: 3 Hours   **OCTOBER 2012**   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. 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. In which addressing mode, the effective address of the operand is generated by adding a constant value to the contents of register?

   (A) Absolute mode   **(B)** indirect mode
   (C) immediate mode   **(D)** index mode

b. A loader is

   (A) A program that places programs in to memory and prepares them for execution.
   (B) A program that automate the translation of assembly language in to machine language.
   (C) Program that accepts a program written in a high level languages and produce an object program.
   (D) Is a program that appears to execute a source program as if it were machine language.

c. A compiler for a high level language that runs on one machine and produces code for a different machine is called

   (A) optimizing compiler   **(B)** one pass compiler
   (C) cross compiler   **(D)** multipass compiler

d. If you want to execute more than one program at a time, the system software you are using must be capable of:

   (A) Word processing   **(B)** virtual memory
   (C) compiling   **(D)** multitasking

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e.   A multiprogramming system permits

     (A) Single job to be loaded into memory
     (B) Permits several user jobs to be executed concurrently
     (C) More complex type of network organization.
     (D) None of the above

f.   The primary purpose of operating system is to

     (A) Make computer easier to use
     (B) Keep system programmer employed
     (C) Make the most efficient use of hardware
     (D) Allow people to sue the computer

g.   The advantage(s) of incorporating the macro processor in to pass 1 is(are):

     (A) Many functions do not have to be implemented twice.
     (B) Functions are combined and it is not necessary to create intermediate
             files as output from the macros processor and input to the assembler.
     (C) More flexibility is available to the programmer in that he may use all the
             features of the assembler in conjunction with macros.
     (D) All of the above.

h.   The function (s) of the syntax phase is (are)

     (A) To recognize the major constructs of the language and to call the
             appropriate action routines that will generate the intermediate form or
             matrix for these constructs.
     (B) To build a literal table and an identifier table.
     (C) To build a uniform symbol table.
     (D) To parse the source program in to the basic elements or tokens of
             the language.

i.   A system program that sets up an executable program in main memory ready
     for execution is:

     (A) Assembler   **(B)** linker
     (C) loader   **(D)** compiler

j.   Terminal Table _____

     (A) Contains all constants in the program
     (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 or partial list of 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.

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Answer any FIVE Questions out of EIGHT Questions.
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Q.2 a. Describe the architecture of SIC machine. **(8)**

   b. Give a general description of the functions of the two passes of simple assembler and major internal data structure used. **(8)**

Q.3 a. In machine independent assembler, how the program can have multiple program blocks. **(8)**

   b. Which feature of machine independent loader allows the programmer to use subroutines from many libraries almost as if they are part of programming languages? **(8)**

Q.4 a. How linking of control sections can be useful in program handling in machine independent assembler? **(8)**

   b. What are the advantages of object-oriented approach to operating system? **(8)**

Q.5 a. Explain syntactic analysis and operator–precedence parsing **(8)**

   b. Explain the machine-independent macro processor features. **(8)**

Q.6 a. Make the parse tree for the following two statements: **(8)**
      (i)   read(value);
      (ii) variance=sumsq div 100 – mean * mean ;

   b. What do you understand by Macro processing within language translators? Explain. **(8)**

Q.7 a. What are quadruples? How do they give intermediate form of the program? **(8)**

   b. Discuss the design of a P-Code compiler. **(8)**

Q.8 a. Explain about the code generation phase of the compiler. **(8)**

   b. Define user interface. Explain various components of user interface. **(8)**

Q.9 a. Explain hierarchical structure of an operating system. **(8)**

   b. Explain typical structure of an Editor. **(8)**