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

AMIETE – CS/IT (OLD SCHEME)

Time: 3 Hours   **JUNE 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. Which of the following is a phase of the Compilation Process?

   (A) Lexical Analysis   **(B)** Code Generation
   (C) Both **(A)** and **(B)**   **(D)** Static Analysis

b. Which of the following are loaded into main memory when the computer is booted?

   (A) Internal Command Instructions **(B)** External Command Instructions
   (C) Utility Programs   **(D)** Word Processing Instructions

c. All the time when computer is switched on, its operating system has to stay in

   (A) Main Storage   **(B)** Primary Storage
   (C) Floppy Disk   **(D)** Disk Drive

d. Which is not true about 'syntax' and 'semantics' parts of a computer language?

   (A) Syntax is generally checked by the Programmer
   (B) Semantics is the responsibility of the Programmer
   (C) Semantics is checked mechanically by a computer
   (D) Both **(B)** and **(C)**

e. What is true about Machine Language?

   (A) It is understood by computer
   (B) It varies from one Model of computer to Another
   (C) It may always are represented by Binary Numbers
   (D) All the above are True

f. A form of code that uses more than one process and processor , possibly different type, and that may on occasions have more than one process or processor active at the same time , is known as

(A) Multiprogramming   (B) Multithreading
(C) Broadcasting   (D) Time Sharing

g. The function(s) of the syntax phase is

(A) To recognise 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 built a uniform symbol table.
(D) To parse the source program into the basic elements or tokens of the language.

h. In an absolute loading scheme, which loader function is accomplished by assembler?

(A) Reallocation   (B) Allocation
(C) Linking   (D) Loading

i. What is the name given to the values that are automatically provided by softwares to reduce keystrokes and improve a computer's user's productivity?

(A) Defined Values   (B) Fixed Values
(C) Default Values   (D) Special Values

j. Multiprogramming Systems:

(A) Are easier to develop than single programming systems.
(B) Execute each job faster.
(C) Execute more jobs in the same time period.
(D) Are used only on large main frame computers.

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

Q.2 a. Explain SIC/XE Machine Architecture.   **(8)**

  b. Describe various forms of intermediate code generated during compilation phase.   **(8)**

Q.3 a. What is an Operating System (OS)? Explain various types of OS.   **(8)**

b. Explain following symbol defining statements:

```
        LDS     INCR
        LDA     ALPHA
        ADDR    S, A
        SUB     #1
        STA     BETA
        LDA     GAMMA
        ADDR    S, A
        SUB     #1
        STA     DELTA
        .
        .
        .
        .
        ALPHA           RESW            1
        BETA        RESW        1
        GAMMA       RESW        1
        DELTA           RESW            1
        INCR            RESW        1            (8)
```

Q.4   a. Write the advantages and disadvantages of single pass assembler over two
           pass assembler.   **(8)**

        b. Explain the design of a linker. What do you mean by dynamic linking?   **(8)**

Q.5   a. Explain in detail Machine independent loader features.   **(8)**

        b. What do you mean by independent code optimization? Explain in detail. **(8)**

Q.6   a. Explain the following terms:
            (i)   I/O buffering
            (ii) Ambiguous grammar   **(4×2)**

        b. Explain Round Robin (RR) and shortest job first (SJF) job scheduling
           algorithms with example.   **(8)**

Q.7   a. What do you mean by Macro processor? Explain macro definition, call
           And expansion in detail.   **(8)**

        b. Explain the syntax and working of the following assemble directives:
            (i)   ORIGIN   (ii) EQU
            (iii) LTORG   (iv) START   **(8)**

Q.8   a. How Debug-monitor help in dynamic debugging? Write down the steps
           involved.   **(8)**

        b. What do you mean by DBMS? Also write the disadvantages of File system
           over DBMS.   **(8)**

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Q.9   Write short note on following:

(i)   Virtual machines
(ii) Machine instruction format
(iii) SIC Assembler
(iv) Linkage editor   **(4×4)**