B. TECH.   I - Year

FIRST SEMESTER EXAMINATION, 2006-2007

TCS-101 COMPUTER SYSTEMS, PROGRAMMING METHODOLOGY AND NETWORKING

Time : 3 Hours   *Maximum Marks : 100*

Note : Attempt any *FIVE* questions.

All questions carry equal marks.

1. (a) Convert the following:

   (i) $(76A)_{16} = (\ )_8$

   (ii) $(6B.28)_{16} = (\ )_{10}$

   (iii) $(2489)_{10} = (\ )_8$

   (iv) $(123)_6 = (\ )_{11}$

   (v) $(326.5625)_{10} = (\ )_2$ (10)

   (b) Express the number 1.75×2^{16} in IEEE 32-bit (single precision) format for floating point numbers.   (5)

   (c) Compare single-mode and multimode fiber.   (5)

2. (a) Draw the block diagram of a digital computer and explain the function of various blocks.   (10)

   (b) Explain how static RAM is different from dynamic RAM.   (5)

   (c) How many chips are needed to construct a 4K x 8 RAM using RAM chips of 1024 words of 8 bits each (1K x 8). The block diagram of the 1K x 8 RAM chip is given in Fig. 1. What

size of decoder is needed? Draw a neat diagram to show

(i) How should the address and data lines be connected ?

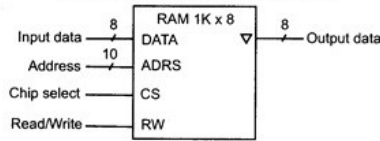(ii) What are the inputs to the decoder and where are its outputs connected ? **(5)**

Fig.. 1

3. (a) Draw a flowchart to find out the first and second largest numbers of ten given numbers. **(10)**

(b) Describe the data structures (tables etc.) used in the first and second phase of a two-pass assembler. **(5)**

(c) A collection of five routers is to be connected in a point-to-point subnet. Between each pair of routers, the designer may put a high-speed line, a medium-speed line, a low-speed line, or no line. If it takes 100 ms of computer time to generate and inspect each topology, how long will it take to inspect all of them ? **(5)**

4. (a) What are the various network topologies used for Local Area Networks? Explain with diagram. **(5)**

(b) Explain the use of FTP. Why is it said that FTP sends control information "out-of-band" ? **(5)**

(c) Describe different techniques to generate Dynamic HTML pages. How do you make an image click able in HTML? Give an example. **(10)**

5. (a) What do you mean by E-commerce? List any three areas where E-commerce may be used in our day-to-day life. **(10)**

(b) MPEG encoding uses I-frames, P-frames, and B-frames. Explain why each one of them is needed. **(5)**

(c) Can a 1-bit error in an MPEG frame affect more than the frame in which the error occurs? Explain your answer. **(5)**

6. (a) Define Operating System. How does a real-time operating system differ from a personal computer operating system ? **(5)**

(b) What is multiprogramming ? **(5)**

(c) If cells A1 to A5 contain numbers 10, 7, 9, 27 & 2 respectively in MS-Excel, then what is

(i) AVERAGE(A1:A5) and

(ii) AVERAGE(A1:A5, 5) ? **(5)**

(d) List the type of charts that may be prepared by MS-Excel. **(5)**

7. Write short notes on any FOUR :— **(5x4)**

(i) Search Engine

(ii) Animation

(iii) Mobile Communication

(iv) Software Development Methodology

(v) Firmware and Human ware

(vi) WWW