國立成功大學 77 學年度电機工程研究所入學考試(计算機概论試題)

1) Explain the following terms:
(24%)
(a) Latency (b) Page Thrashing (c) Fork (d) ARQ
(e) Autoincrement Addressing Mode (f) Memory Interleaving

2) Give an example to illustrate the algorithm of Heap Sort.
(15%)

3) (a) Multiply the signed 6-bit numbers (2's complement representation)
(16%)
$A = 010111$ $(+23)$ (multiplicand)
$B = 110110$ (-10) (multiplier)
using the Booth Algorithm

(b) Repeat (a) using bit pairing of the multiplier

4) Compute the shortest paths from vertex 1 to all remaining vertices in the
(15%) diagraph of Fig. 1.

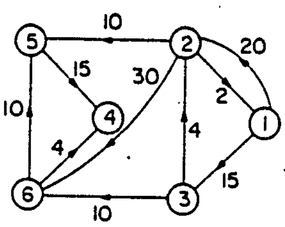
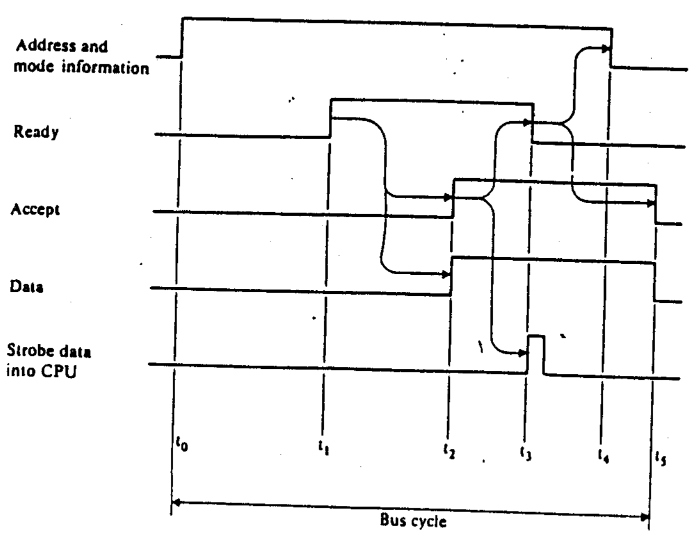


Fig. 1

5) Prove that any switching function $f(x_1\ x_2\ x_3 \cdots x_n)$ can be expressed as:
(15%)
$$f(x_1\ x_2\ x_3 \cdots x_n) = x_1 x_2 f(1\ 1\ x_3 \cdots x_n) + x_1 \bar{x}_2 f(1\ 0\ x_3 \cdots x_n) + \bar{x}_1 x_2 f(0\ 1\ x_3 \cdots x_n) + \bar{x}_1 \bar{x}_2 f(0\ 0\ x_3 \cdots x_n)$$

6) Briefly describe the sequence of events at $t_0\ t_1 \cdots t_5$ of the following
(15%) diagram which gives the handshake timing control of data transfer during an input operation.



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