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Name:

Entry No.:

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*Show all the steps in your solution clearly. Writing the final answer directly would not fetch any marks.*

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1. [3 marks] Draw a circuit that generates six repeated timing signals,  $T_0$  to  $T_5$ , using:
  - (a) flip-flops only.
  - (b) a counter and a decoder. (You may use a block diagrams for the counter as well as the decoder, but you must mention their specification.)You must also mention the number and the kind of AND-gates needed in each design.
2. [2 marks] How many  $128 \text{ K} \times 8$  RAM chips are needed to provide a memory capacity of 2 M bytes? How many address lines must be used to access these 2 M bytes? Briefly justify your answer.