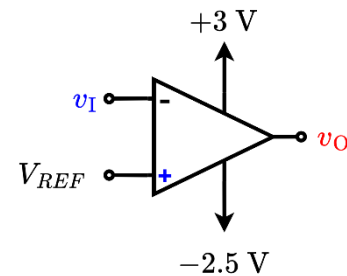
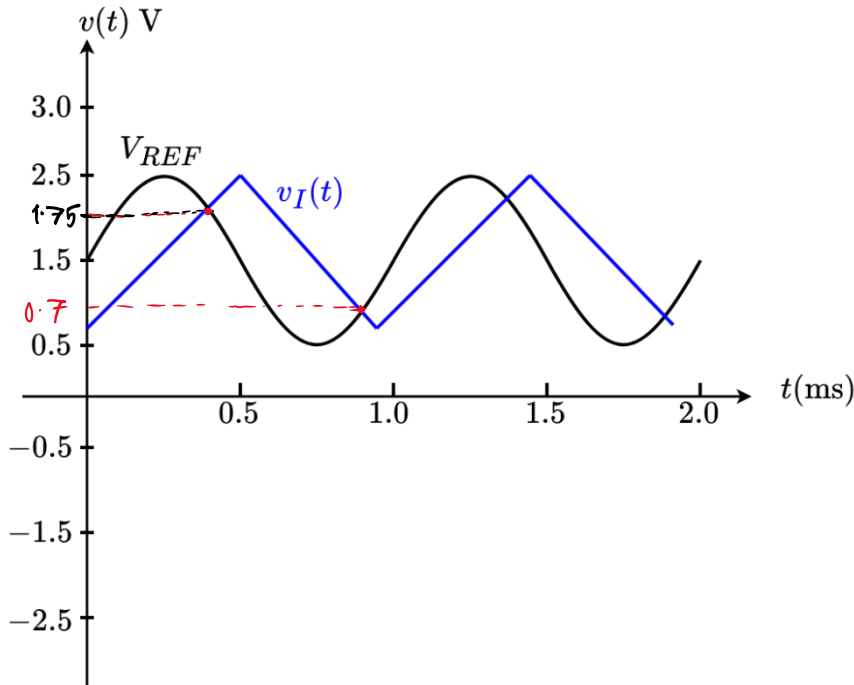


- ✓ No washroom breaks. Phones must be turned off. Using/carrying any notes during the exam is not allowed.
- ✓ At the end of the exam, the **exam script** must be returned to the invigilator.
- ✓ Marks allotted for each question are mentioned beside each question.
- ✓ Write your answers inside the indicated boxes (where applicable). If you run out of room for an answer, please continue on the back of the page".
- ✓ Symbols have their usual meanings.

## Question 1[CO2]

4 Marks

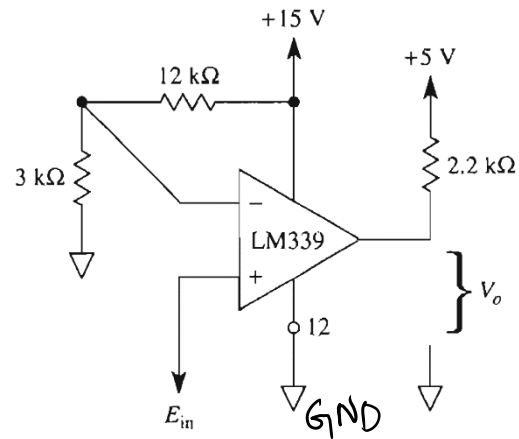
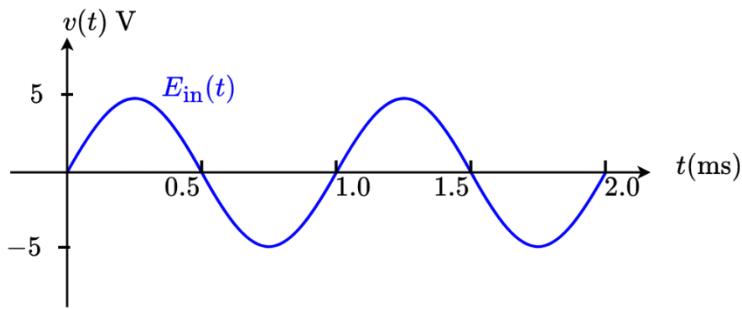


Assume that the Op-amp on the right is ideal. The wave shapes of  $v_I$  and  $V_{REF}$  are shown on the adjacent graph.

- **Draw** the waveshape of the output voltage of the op-amp  $v_O(t)$  on the graph provided above. Indicate the time ( $t$ ) in which switching would occur in  $v_O(t)$ .

## Question 2 [CO2]

6 Marks



Assume that the Op-Amp on the right is ideal. Answer the following questions.

- Sketch accurately the graphs of  $V_o$  vs  $E_{in}$ .
- Sketch accurately the graphs of  $V_o$  vs  $t$ . Find out the time ( $t$ ) in which switching would occur in  $V_o(t)$ .