COLLEGE OF TECHNOLOGY **B-Tech**

9/10

Quick test no.1

EEC231: Circuit Analysis I

Duration: 15mn

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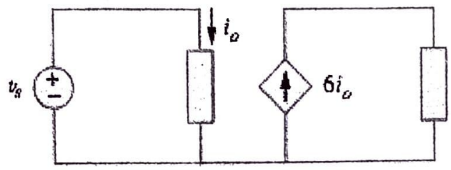
NB on MCQ questions: read the questions carefully and mark an **X** *only* on the letter of the correct answer.

1. A charge of 2C flowing past a given point each second is a current of 2A. (a) True (b) False

2. The unit of current is: (a) coulomb (b) ampere (c) volt (d) joule

3. The prefix *milli* stands for: (a) 10^{-6} (b) 10^{-3} (c) 10^{3} (d) 10^{6}

4. The dependent source in the figure beside is:



(a) voltage-controlled current source
(b) voltage-controlled voltage source
(c) current-controlled voltage source
(d) current-controlled current source

5. Which of these is not an electrical quantity?

(a) charge (b) time (c) voltage (d) current (e) power

6. The voltage v across a device and the current i through it are $v(t) = 10\cos 2t$ V, $i(t) = 20(1 - e^{-0.5t})$ mA, Calculate: a) the total charge in the device at t=1s; b) the power consumed by the device at t=1s.

$v(t) = 10\cos 2t$ V

$i(t) = 20(1 - e^{-0.5t})$ mA

a) $q(t) = \int i\,dt$

$= \int 20 - 20e^{-0.5t}\,dt$

$= \frac{20t^2}{2} - 20\left(\frac{1}{-0.5}e^{-0.5t}\right) + q_0$

$q(t) = 10t^2 + 40e^{-0.5t} + q_0$

at t_0, $q_i = 0$

$q(1) = 10(1) + 40e^{-0.5}$ C

b) $P = \int v\,i\,dt$

$= \int (10\cos 2t)(20 - 20e^{-0.5t})\,dt$

$= \int 200\cos 2t\,dt - \int 200e^{-0.5t}\cos 2t\,dt$

$= -200\left(\frac{1}{2}\sin 2t\right) -$

7. Calculate the power delivered or absorbed by each element in the network below: