Name:	**Dr JBO – Model answer**
Student ID Number:	
Section:	01A / 01B
Lecturer:	Dr. Jamaludin Bin Omar

EEEB273 - Quiz 6 [Question Set 1]
SEMESTER 1, ACADEMIC YEAR 2010/2011
Date: 14 October 2010

Question:

Study Figure 1 carefully. Given that v_{I1} **= 0.6 V** and v_{I2} **= 0.3 V**.

(a) Using **superposition theorem**, find v_2.

[6 marks]

(b) Find v_O.

[4 marks]

Show clearly all calculations.

Answer:

(a)
Find v_2 when $v_{I2} = 0$
$v_2\ (v_{I1})$ = (40k/(20k+40k))(v_{I1}) **[1]**
= (40k/(20k+40k))(0.6) = 0.4 V **[1]**

Find v_2 when $v_{I1} = 0$
$v_2\ (v_{I2})$ = (20k/(20k+40k))(v_{I2}) **[1]**
= (20k/(20k+40k))(0.3) = 0.1 V **[1]**

v_2 = $v_2\ (v_{I1}) + v_2\ (v_{I2})$ **[1]**
= 0.4 + 0.1 = 0.5 V **[1]**

(b)
Using virtual short circuit propeties
v_O = (1+100k/50k)(v_2) **[2]**
= (3)(0.5) = 1.5 V **[2]**

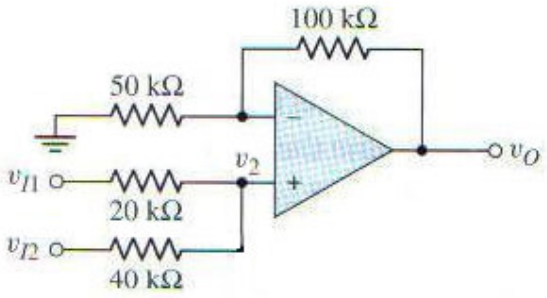

Figure 1

Name:	**Dr JBO – Model answer**
Student ID Number:	
Section:	01A / 01B
Lecturer:	Dr. Jamaludin Bin Omar

EEEB273 - Quiz 6 [Question Set 2]
SEMESTER 1, ACADEMIC YEAR 2010/2011
Date: 14 October 2010

Question:

Study Figure 1 carefully. Given that v_{I1} **= 0.45 V** and v_{I2} **= 0.6 V**.

(c) Using **superposition theorem**, find v_2.

[6 marks]

(d) Find v_O.

[4 marks]

Show clearly all calculations.

Answer:

(a)

Find v_2 when $v_{I2} = 0$

$v_2\ (v_{I1})$ = (40k/(20k+40k))(v_{I1}) **[1]**

= (40k/(20k+40k))(0.45) = 0.3 V **[1]**

Find v_2 when $v_{I1} = 0$

$v_2\ (v_{I2})$ = (20k/(20k+40k))(v_{I2}) **[1]**

= (20k/(20k+40k))(0.6) = 0.2 V **[1]**

v_2 = $v_2\ (v_{I1}) + v_2\ (v_{I2})$ **[1]**

= 0.3 + 0.2 = 0.5 V **[1]**

(b)

Using virtual short circuit propeties

v_O = (1+100k/50k)(v_2) **[2]**

= (3)(0.5) = 1.5 V **[2]**

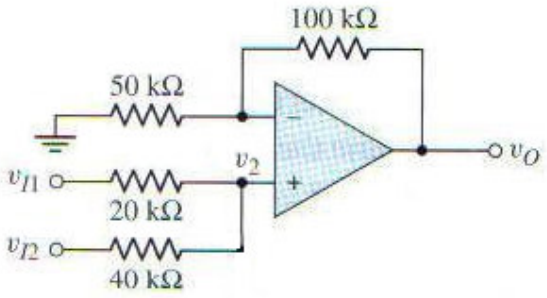

Figure 1

Name:	**Dr JBO – Model answer**
Student ID Number:	
Section:	05A / 05B
Lecturer:	Dr. Jamaludin Bin Omar

EEEB273 - Quiz 6 [Question Set 1]
SEMESTER 1, ACADEMIC YEAR 2010/2011
Date: 14 October 2010

Question:

Study Figure 1 carefully. Given that v_{I1} **= 0.45 V** and v_{I2} **= 0.75 V**.

(e) Using **superposition theorem**, find v_2.

[6 marks]

(f) Find v_O.

[4 marks]

Show clearly all calculations.

Answer:

(a)

Find v_2 when $v_{I2} = 0$

$v_2\ (v_{I1})$ = (40k/(20k+40k))(v_{I1}) **[1]**

= (40k/(20k+40k))(0.45) = 0.3 V **[1]**

Find v_2 when $v_{I1} = 0$

$v_2\ (v_{I2})$ = (20k/(20k+40k))(v_{I2}) **[1]**

= (20k/(20k+40k))(0.75) = 0.25 V **[1]**

v_2 = $v_2\ (v_{I1}) + v_2\ (v_{I2})$ **[1]**

= 0.3 + 0.25 = 0.55 V **[1]**

(b)

Using virtual short circuit propeties

v_O = (1+100k/50k)(v_2) **[2]**

= (3)(0.55) = 1.65 V **[2]**

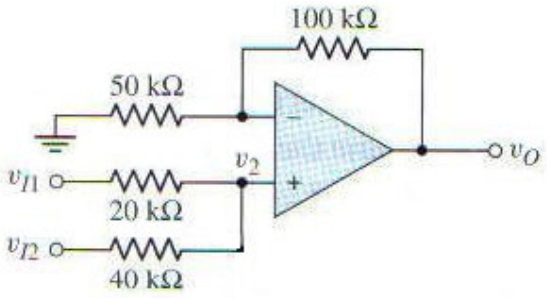

Figure 1

Name:	**Dr JBO – Model answer**
Student ID Number:	
Section:	05A / 05B
Lecturer:	Dr. Jamaludin Bin Omar

EEEB273 - Quiz 6 [Question Set 2]
SEMESTER 1, ACADEMIC YEAR 2010/2011
Date: 14 October 2010

Question:

Study Figure 1 carefully. Given that v_{I1} **= 0.3 V** and v_{I2} **= 0.75 V**.

(g) Using **superposition theorem**, find v_2.

[6 marks]

(h) Find v_O.

[4 marks]

Show clearly all calculations.

Answer:

(a)

Find v_2 when $v_{I2} = 0$

$v_2\ (v_{I1})$ = (40k/(20k+40k))(v_{I1}) **[1]**

= (40k/(20k+40k))(0.3) = 0.2 V **[1]**

Find v_2 when $v_{I1} = 0$

$v_2\ (v_{I2})$ = (20k/(20k+40k))(v_{I2}) **[1]**

= (20k/(20k+40k))(0.75) = 0.25 V **[1]**

v_2 = $v_2\ (v_{I1}) + v_2\ (v_{I2})$ **[1]**

= 0.2 + 0.25 = 0.45 V **[1]**

(b)

Using virtual short circuit propeties

v_O = (1+100k/50k)(v_2) **[2]**

= (3)(0.45) = 1.35 V **[2]**

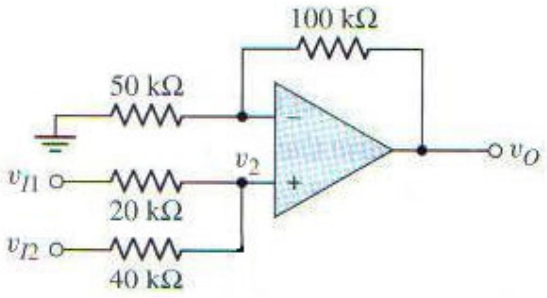

Figure 1