	FINAL TERM EXAMINATION	Total Marks: 50
	SEMESTER (Spring 2005)I	
	PHY-301 CIRCUIT THEORY	Duration: 120min

Student ID/Login ID	
Name	
PVC Name/Code	
Exam Center	
Date	**21-07-2005**

Maximum Time Allowed: (2 Hour)

Instructions

Please read the following instructions carefully before attempting any question:

All questions are compulsory.

a. **This exam consists of One Multiple Choice Questions (MCQ's) ,which carries 5 Marks and four descriptive questions.**

b. **Each MCQ carries 1 Marks .**

c. **While attempting descriptive question do not miss any step so that you could get better marks.**

d. **Do not ask about the contents of any question of this examination from anyone.**

e. **If you think that there is something wrong with any of the   questions, attempt it to the best of your understanding.**

f. **On the other hand, if you believe that all of the choices provided for a particular question are the wrong ones, select the one that appears to you as being the least wrong.**

g. **The duration of this examination is 120 minutes.**

h. **This examination is closed book, closed notes, closed neighbors.**

i. Do not ask any questions about the contents of this examination from anyone.

j. Draw Circuit diagrams (where necessary) for each step.

**WARNING: Please note that Virtual University takes serious note of unfair means. Anyone found involved in cheating will be given grade `F` in this course.

For Teacher's use only

Question	Q1	Q2	Q3	Q4	Q5	Total	Signature
Marks							

Question No: 1   **Marks: 5**

For each question given below, encircle the option that in your opinion represents the best/ correct answer.

1) **The resistance in a short circuit is**
   a) Large
   b) small
   c) Zero
   d) None of the above

2) **If one of the diode in a full –wave bridge rectifier is open, the out put is**
   a) 0V
   b) One –fourth the amplitude of the input voltage
   c) half –wave rectified voltage
   d) a 120 HZ voltage

3) **The charge in motion is called**
   a) Voltage
   b) current
   c) intensity
   d) Coulomb

4) **The emitter current is always**
   a) Greater than base current
   b) Less than collector current
   c) Greater than collector current
   d) Small than base current

5) **In PNP transistor, the P-regions are**
   a) Base and emitter
   b) Base and collector
   c) emitter and collector
   d) All of the above

Question No: 2   **Marks: 15**

For the circuit shown in the figure below, all the resistors are given in Ohms. Find the equivalent resistance seen by the
(a) supply.
(b) Find the power in the source and the 10 Ω resistor.
Draw the circuit diagram of each step otherwise you will lose your marks. Write each step of the calculation to get maximum marks and also mention the units of each derived value.

Question No: 3   **Marks: 15**

Using superposition find

  a) the current through the -Ω resistor due to the voltage
  b) the current through the 3Ω resistor due to the current
  c) the power delivered to the 3Ω resistor

Draw and label the circuit diagram, otherwise you will lose your marks. Write each step of calculation and also mention the units of each derived value.

Question No: 4   **Marks: 5**

What is tunnel diode? Draw the graphic symbol of tunnel diode. Describe the negative resistance region of the tunnel diode. Include the relationship between diode forward current and forward voltage.

Question No: 5   **Marks: 10**

For the NPN bipolar transistor, assume that the $V_{BE}(on) = 0.7V$.

(a) If $V_{CC} = 5V$, solve for I_B, I_C, and I_E. Assume that $\beta = 100$. Be sure to justify each step that you take.

(b) Resolve this using $\beta = 200$ Be sure to justify each step that you take, also mention the units of each value derived