

UNIVERSITY OF SWAZILAND
FACULTY OF SCIENCE
DEPARTMENT OF ELECTRONIC ENGINEERING

MAIN EXAMINATION 2005

TITLE OF PAPER: **ELECTRONICS I**

(**Paper I I Practical**)

COURSE NUMBER: **E360**

TIME ALLOWED: THREE HOURS

INSTRUCTIONS: MAKE SURE YOU HAVE THE FOLLOWING :

- 1 Oscilloscope
- 1 Dc Power supply that may give 1.5 volts
- 1 Function generator (with frequency range up to 2MHz)
- 1 Digital Multimeter
- 1 Breadboard
- 2 BC 177 transistors
- 2 Capacitors 0.1 μ F, 6V
- 1 Resistor 5.6K Ω , 1/4 W
- 2 Resistors 560K Ω , 1/4 W

THIS PAPER HAS 2 PAGES, INCLUDING THIS PAGE

DO NOT OPEN THE PAPER UNTIL PERMISSION HAS BEEN GIVEN BY THE
INVIGILATOR

Problem:

I would like to redesign the circuit shown below, but I do not know the voltage gain, bandwidth and power consumption. Therefore, in this laboratory session obtain the following:

- i) Connect the circuit shown below
- ii) Apply a small ac input voltage v_s in millivolts to the circuit. Make sure that the output is not distorted or clipped.
- iii) Take voltage measurements which will allow you to plot the **voltage gain** of this circuit for frequencies ranging from 10 Hz to 100KHz and then plot the voltage gain.
- iv) From your graph of voltage gain determine the bandwidth in Hz
- v) Take measurements which will allow you to obtain the dc power consumed by this circuit and the obtain the power consumption.

(Please note: **DO NOT WRITE ANY THEORY FOR THIS EXPERIMENT**)

write a report consisting of but not limited to

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|---|-------------|
| A) Objectives | (4 marks) |
| B)Measurements | (60 marks) |
| C) Graph | (20 marks) |
| D)Conclusion (Include suggestions on how I can improve this circuit so that less power is consumed while getting reasonable gain and bandwidth) | (16 marks) |





