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 μF, 6V

1 Resistor 5.6KΩ, 1/4 W

2 Resistors 560KΩ, 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.

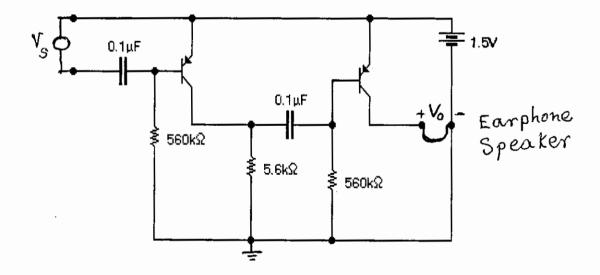
(Please note: **DO NOT WRITE ANY THEORY FOR THIS EXPERIMENT**)
write a report consisting of but not limited to

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)



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