

INSTRUCTIONS:

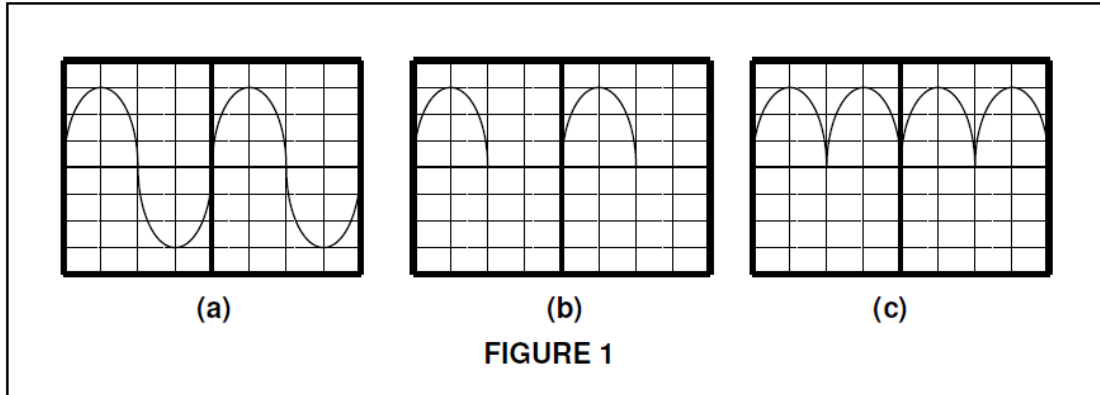
1. Answer ALL the questions.
2. Read the instructions for each question carefully and do only what is required.
3. Number the answers correctly according to the numbering systems used in this assessment or make use of the answer books (Write down your name, surname and ID number on your answer sheet)
4. Please write neatly and legibly.
5. ALL work that you do not want to be marked must be clearly crossed out.

QUESTION 1 : USE OF MEASURING INSTRUMENTS

1.1 Figure 1 below shows output waveforms as displayed on the oscilloscope screen.

Define the THREE waves in terms of rectification.

(6)



1.2 As a technician, when will you choose/use an oscilloscope and **NOT** a digital multimeter? (8)

1.3 If you do not plan to use a digital multimeter for a long time, how should you take care of it?(1)

1.4 You have just purchased a new oscilloscope and want to use it. What must be done first before using it? (1)

1.5 What is the purpose of a function generator? (2)

1.6 Name FOUR types of waveforms a function generator can produce (8)

[26]

QUESTION 2: COMPONENTS, RECTIFIERS AND AMPLIFIERS

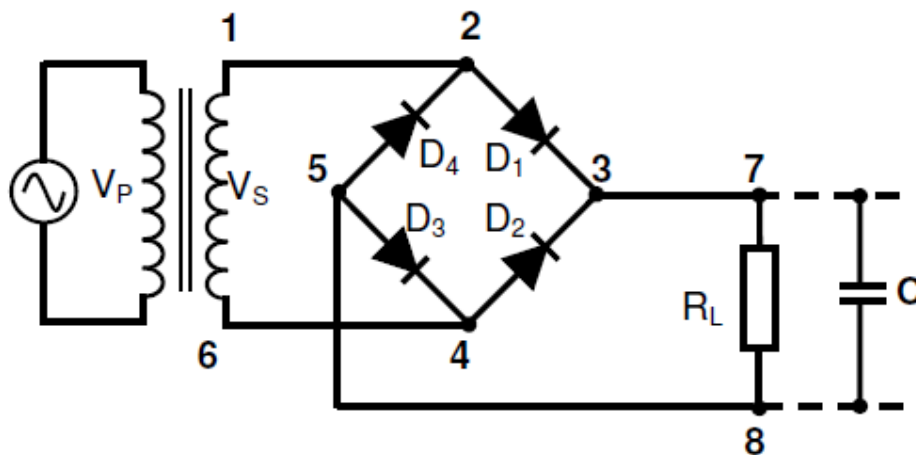


FIGURE 3

2.1.1 Briefly explain the function of the circuit in FIGURE 3 using electron current flow. You should describe the flow of current through the numbered points eg: (starting at 1) 1 2 5.....

(14)

2.1.2 Draw the voltage waveforms you would expect across points 7 and 8:

(A) Without the capacitor connected (2)

(B) With the capacitor connected (2)

2.2 FIGURE 4 shows the circuit of a single-stage transistor amplifier.

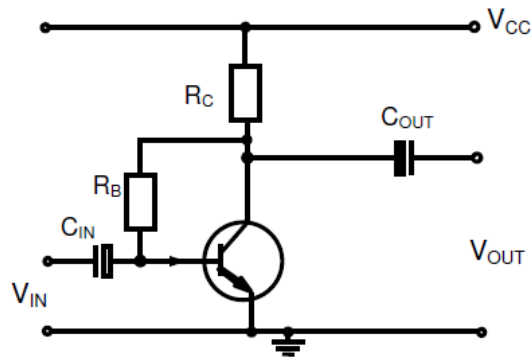


FIGURE 4

2.2 Is this a common base, common emitter or common collector amplifier? (1)

2.3 Use FIGURE 5 to answer the questions that follow.

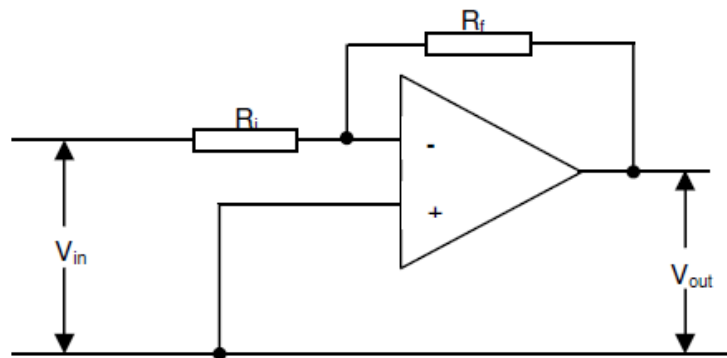


FIGURE 5

2.3.1 What kind of an operational amplifier does the circuit in FIGURE 5 represent? (2)

2.3.2 Write the formula for closed loop gain (A) in terms of V_o and V_i . (1)

2.3.3 Calculate the value of V_o if $A = -20$ and $V_{in} = 50$ V. (2)

[24]

Total : 50