

SURNAME: Douglas

FORENAME(S): Aiden

12 Pages

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right and fold over and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners will either ignore illegible script or have it typed and the expense of typing charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. **Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.**

List the numbers of the questions you have attempted	Office Use
1	8
2	—
3	6
4	—
Total	14/465

0/

$$= 18.3\%$$



Prifysgol Cymru
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University of Wales
Trinity Saint David

LOCATION: SWANSEA

LLEOLIAD: ABERTAWE

LEVEL 4

LEFEL 4

EXAMINATION PERIOD
JANUARY 2020

CYFNOD ARHOLIADAU
IONAWR 2020

MODULE CODE: M4X01510
INTRODUCTION TO ELECTRONICS

TIME: 1 HOUR

ANSWER ALL QUESTIONS

Equipment or materials required – Calculator

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Aiden
Douglas

1 - 8 marks
2 - _____
3 - 6 marks
4 - _____
= 14 / 20.

QUESTION 1

Using Ohms and Kirchhoff's Laws determine: -

- a) The Resistance, Voltage, Current values for each resistor in the circuit as shown in Fig 1.1

2 marks per resistor
16 marks total

- b) The input resistance of the circuit as shown in Fig 1.1

4 marks

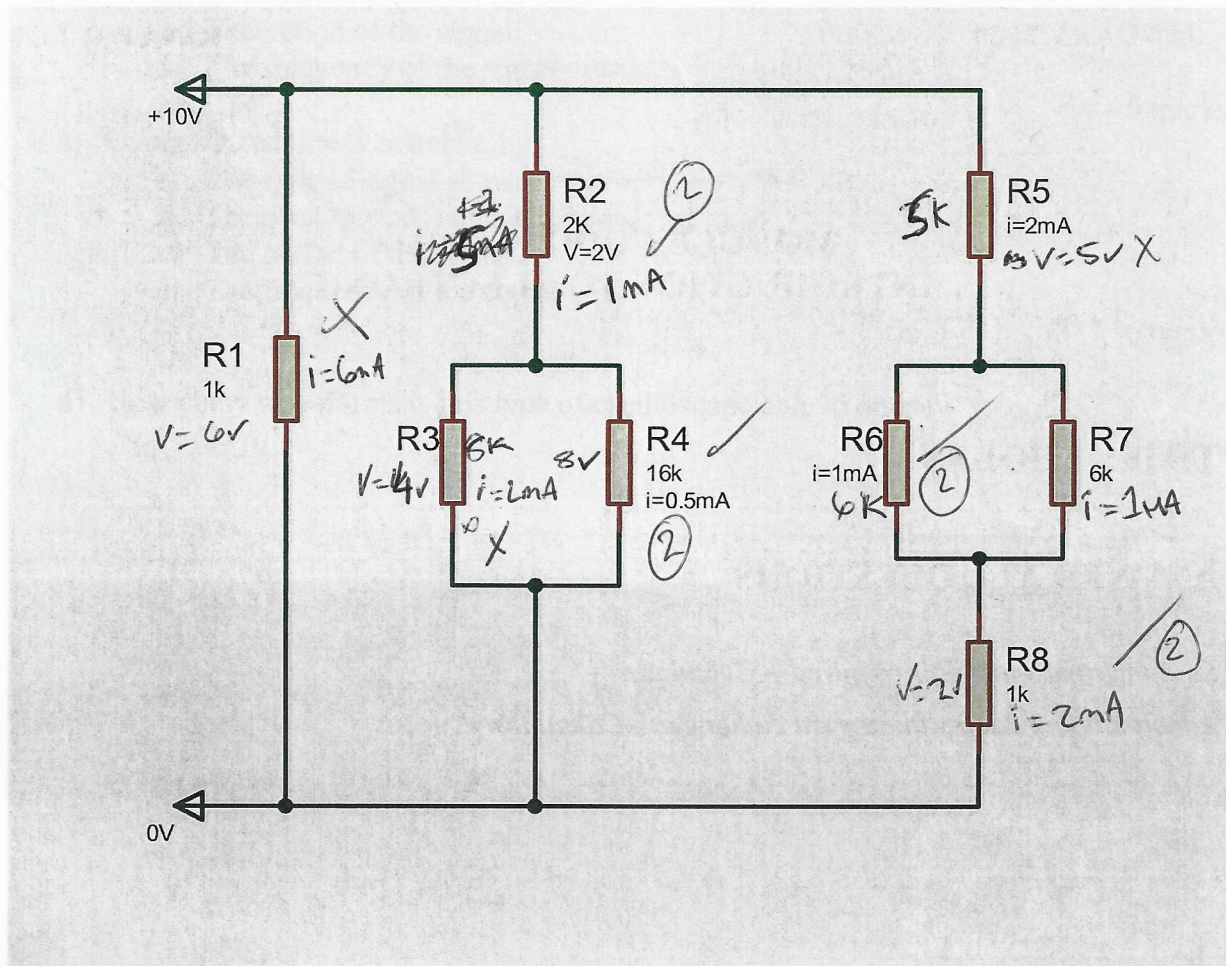


Fig 1.1

QUESTION 2

Examine the oscilloscope display below (Fig 2.1) and determine the following:

a) Using the yellow line (Channel A)

- The type of signal shown. *wave signal* / 1.5
- The peak to peak voltage of the signal *1V*
- The period of the signal
- The frequency of the signal *120*

6 marks

b) Using the blue line (Channel B)

- The type of signal shown. *Square Signal* / 1.5
- The peak to peak voltage of the signal *5V*
- The period of the signal
- The frequency of the signal *10*

6 marks

c) Using the red line (Channel C)

- The type of signal shown. *Saw signal* 1.5
- The peak to peak voltage of the signal *2V*
- The period of the signal
- The frequency of the signal *80*

6 marks

d) How many waveforms is this type of oscilloscope able to display

4 2

2 marks

Digital Oscilloscope

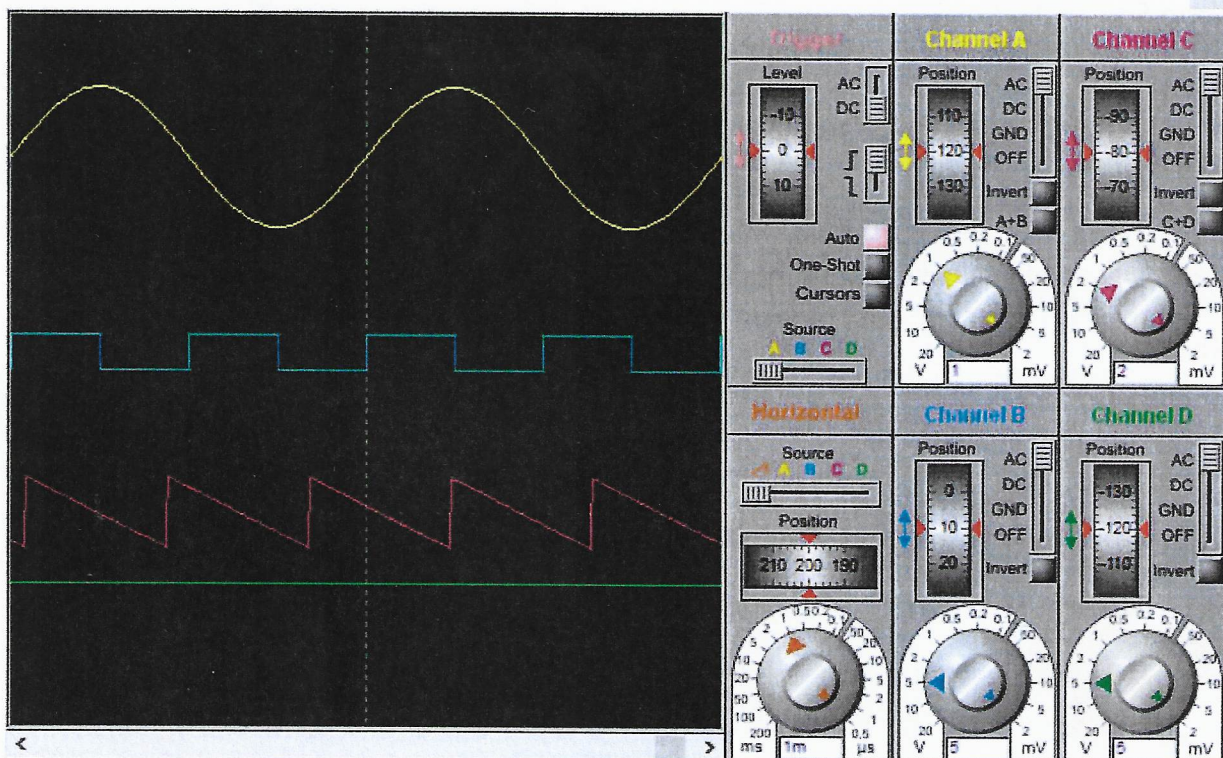
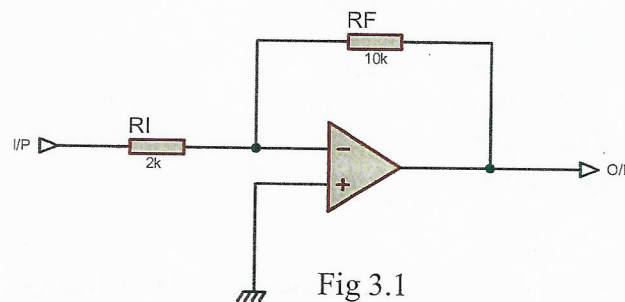


Fig 2.1

QUESTION 3

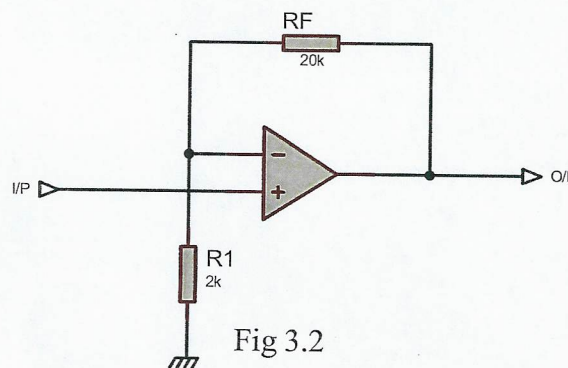
A) Using the amplifier shown in fig 3.1:-

- Identify the configuration of amplifier. *Inverted Amplifier* 2 marks ✓
- Provide the formula for the gain of the amplifier; $\frac{R_F}{R_I}$ 2 marks ✓
- Calculate the gain of the amplifier *5k* 2 marks ✓
- Should a 0.2 volt p-p signal be applied to this amplifier, what would be the output *No* 2 marks ✓
- Should a 0.2 volt p-p signal be applied to this amplifier, what would be the phase of the output compared to the input. *No* 2 marks ✓



B) Using the amplifier shown in fig 3.2:-

- Identify the configuration of amplifier. *Noninverted Amplifier* 2 marks ✓ (2)
- Provide the formula for the gain of the amplifier; $R_F \times R_I$ 2 marks ✓
- Calculate the gain of the amplifier *40k* 2 marks ✓
- Should a 0.5 volt p-p signal be applied to this amplifier, what would be the output *Yes* 2 marks ✓
- Should a 0.5 volt p-p signal be applied to this amplifier, what would be the phase of the output compared to the input. *Yes* 2 marks ✓



QUESTION 4

Identify the gates shown below in Fig 4.1 and provide their truth tables:-

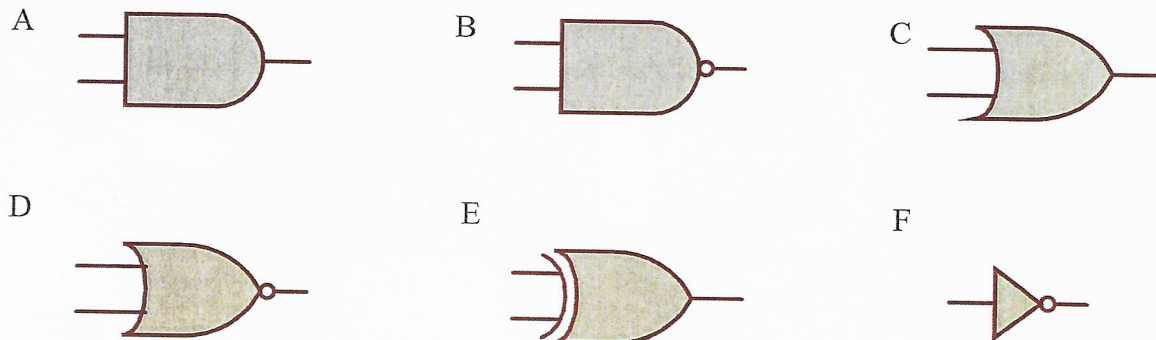


Fig 4.1

5 marks per gate
30 marks total

Diwedd/End