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TEST 2:EIC

SUBJECT: Electronic Control and Digital Electronics LEVEL: 3

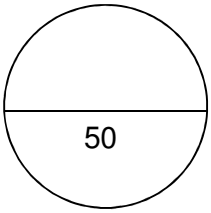
DATE: JUNE 2019

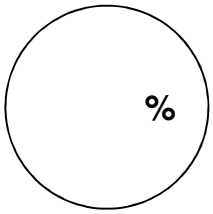
EXAMINER: BM Lotze

NAME OF MODERATOR: P Ellis

Student Surname		Name	
ID. Number		Group	

Topic and outcomes covered	SO 1.1, SO 1.2, SO 1.3, SO 1.4
Duration	1 HOUR
Evidence Required	Answer sheet
Instrument	Memorandum





Rating Scale	Remark	Rating
4	Highly competent	80 - 100
3	Competent	50 - 79
2	Not yet Competent	40 - 49
1	Not achieved	0 - 39

SIGNATURES:

Student declaration: I declare that the evidence provided is my own work.

STUDENT: _____ Date: _____

Revision Date: _____

Indicate which questions you found difficult (tick √)

1	2	3	4	5	6	7	8	Total
10	10	15	15					50

LECTURER: _____ Date: _____

COMMENT: _____ _____

POST MODERATION: _____ _____

COLLEGE MODERATION: _____ Date _____

EXTERNAL MODERATION: _____ Date _____

INSTRUCTIONS:

1. **Answer ALL the questions**
2. **Read ALL the questions carefully**
3. **Number the answers according to the numbering system used in this question paper**
4. **Write neatly and legibly**

QUESTION 1

Use Measuring Instruments

1.1 Name the most common error when using an analogue multimeter (1)

1.2 Name ***three*** advantages of using a digital multimeter (3)

1.3 Name ***three*** parameters (things) we can measure with an oscilloscope (3)

1.4 The peak (Vmax) value of a sine wave measures 3cm on the calibrated screen of an oscilloscope. The V/div is set at 2.5V. Determine the peak to peak voltage. (2)

[9]

QUESTION 2

Concepts of Atomic Theory

2.1 Fill in the missing words:

N-type semiconductors are formed by adding impurities that provide a large number of (a)……. Electrons in the material. This is known as (b)……doping.

P-type semiconductors are formed by adding a large number of (c)……in the material. This is also known as (d)…….doping. (4)

2.2 Draw the energy bands for an insulator and a conductor (6)

[10]

QUESTION 3Semiconductor Diodes

3.1 Draw the characteristic curve of a typical PN junction diode and indicate:

a) V_F (the voltage at which the diode begins to conduct)

b) the forward and reverse bias regions (5)

3.2 Name **FIVE** types of diodes and **ONE** application for each (5)

[10]

QUESTION 4

Transistors

4.1 Draw:

a) the diode configuration for a NPN transistor

b) label the three terminals (5)

4.2 Calculate the current gain of a transistor connected in common base configuration, if I_C is 0,94mA and I_E is 1mA (3)

4.3 Draw a fully labelled circuit of a common emitter amplifier **AND** draw the input and output waveforms. You may leave out the bias resistors. (7)

[15]

QUESTION 5

Decimal is our primary number system with a base of 10. Name the other **THREE** number systems used in ECDE L3 and indicate the base. (6)

TOTAL 50