NATIONAL OPEN UNIVERSITY OF NIGERIA
14/16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS
SCHOOL OF SCIENCE AND TECHNOLOGY
JUNE/JULY EXAMINATION

COURSE CODE: PHY 405
COURSE TITLE: Electronics III (3units)
TIME ALLOWED: 3 Hours
INSTRUCTION: Answer any five questions.

1. (a) In the binary sequence, what is number that follows 10111?**4 marks**

(b)Prove the following identities:

$A+\overline{A}B=A+B$; **5 marks**

$AC+ABC=AC$**5 marks**

2. (a) With a suitable diagram, explain the working of RS flip-flop consisting oftwo NAND gates.

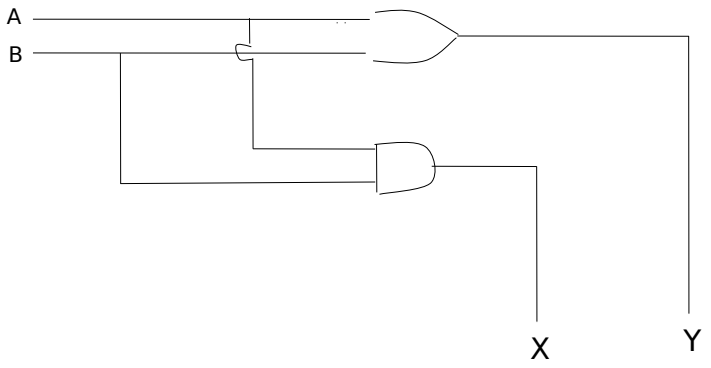
7 marks

(b) Draw a suitable circuit to illustrate the De Morgan equivalent of the NAND-gate RS flip-flop**. 7 marks**

3. (a) Write down the Boolean expression and construct a truth-table for exclusive-NOR operation.

4marks

(b) Identify the circuit shown. Also, identifythe outputs X and Y and construct its truth-table.**10 marks**



Circuit diagram for question3b(i)

4. (a) What is a *register*?**4 marks**

(b)(i)With a suitable example discuss the operation of a shift rightregister**.10 marks**

5(a)A user has two memory devices. One of these stores 10M words of 8-bit size, while the other stores 2M words of 16-bit size. Which of the two stores most bits?**4 marks**

(b) Draw a 4-bit DAC circuit and explain its working.**10 marks**

6(a) Draw a pictorial representation of a general purpose CRT and label the components

by name.**4 marks**

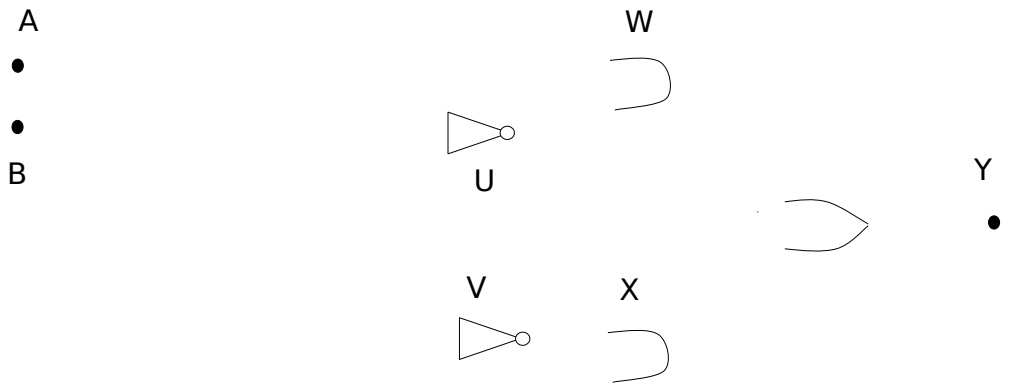
(b) (i)What do you understand by rise time (T_r) and Fall time (T_f) as applied to signal generators?

5 marks

(ii)Describe the function generator**5 marks**

7. (a) Draw the circuit symbol for a NAND gate and construct its truth-table. **4 marks**

(b) Write down the output of each of the symbols labeled; hence obtain the output Y in the circuit shown.



Circuit diagram for question 2a (ii)

10 marks