



**NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA
FACULTY OF SCIENCES**

DEPARTMENT OF PURE AND APPLIED SCIENCE

2021_2 EXAMINATIONS

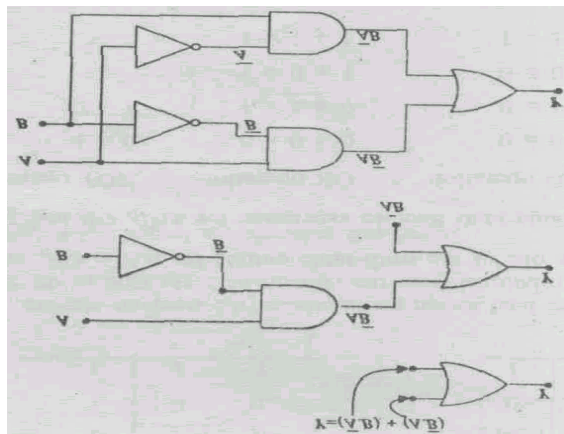
COURSE CODE: PHY405
COURSE TITLE: ELECTRONICS III
CREDIT UNIT: 3
TIME ALLOWED: (2½ HRS)

INSTRUCTION: *Answer question 1 and any other four questions*

QUESTION 1

- a. What is Logic gate? Explain the three basic gates with the use of a circuit diagram and their Truth tables respectively, **6 marks**
- b. Differentiate between NAND and NOR gate **5 marks**
- c. Using the Truth table below, estimate the output Y of the diagram

A	B	\bar{A}	\bar{B}	$A\bar{B}$	$\bar{A}B$	Y



4 marks

- d. State the three (3) advantages of digital system over analogue system

2 mark

- e. What is a transducer? Give four (4) examples of a transducer **2 mark**
- f. What is a counter and a register? **2 mark**
- g. Enumerates the several techniques for the measurement of magnetic field **1 mark**

QUESTION 2

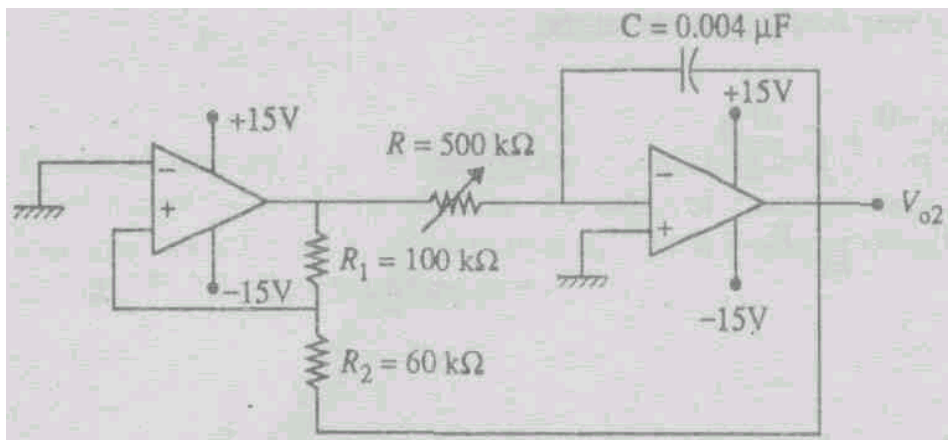
- a. With the aid of a well labelled diagram, describe the Cathode Ray oscilloscope indicating the major subsystem. **10 marks**
 - b. State the advantage of square wave generator over sine wave generator **2 marks**
- 12 marks**

QUESTION 3

- a Explain the principle of the Digital oscilloscope **5 marks**
 - b. if the time/div control is set to 4μ s/div and the displayed signal covers 5div on the horizontal scale of the CRT screen, Determine the frequency of the signal? **7 marks**
- 12 marks**

QUESTION 4

- a. Computethefrequencyandthepeakamplitudeofthetriangularoutputofthecircuitshownbelow. **6marks`**



- b. How does FETEVM differ from the VOM? **4 marks**
- c. Mention some the boundary conditions for transmission of wave in a pair of parallel conducting plane. **2 marks**

12 marks

QUESTION 5

- a. What is the function wattmeter? **5 marks**
 - b. Explain the principle of a Siemen's wattmeter and How does a Siemens power meter work? **7marks**
- 12 marks**

QUESTION 6

a. Differentiate between memory cell and memory word.

4 marks

b.i. 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?

ii. A certain memory is specified as 32K×8. (a) What is the size of the word?

(b) What is the total number of bits stored by the memory?

8 marks

12 marks