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

$A=(\overline{V}B) + (V\overline{B})$
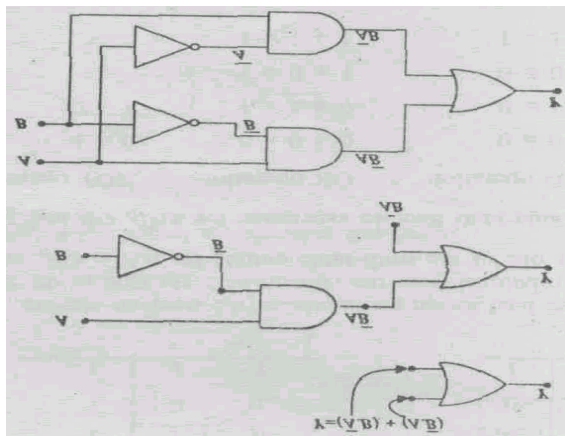
                                                                          4 marks

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**
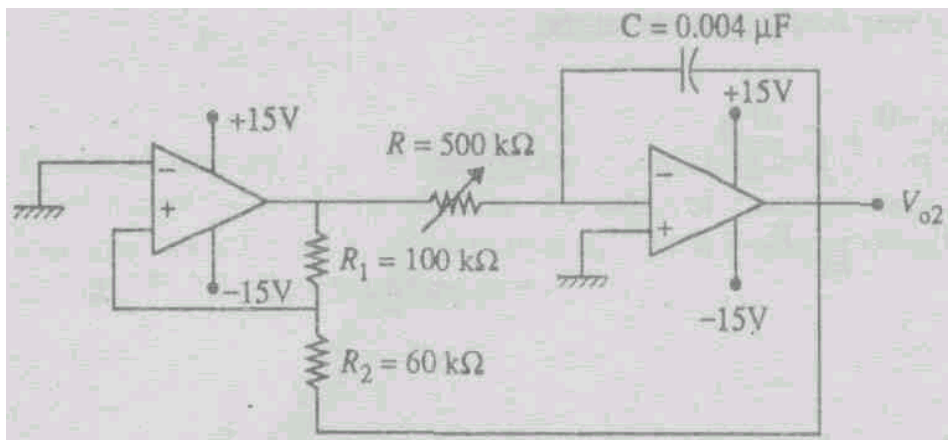

QUESTION 2

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 stores10Mwords 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