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

DEPARTMENT OF PURE AND APPLIED SCIENCE

OCT/NOV 2019 EXAMINATIONS

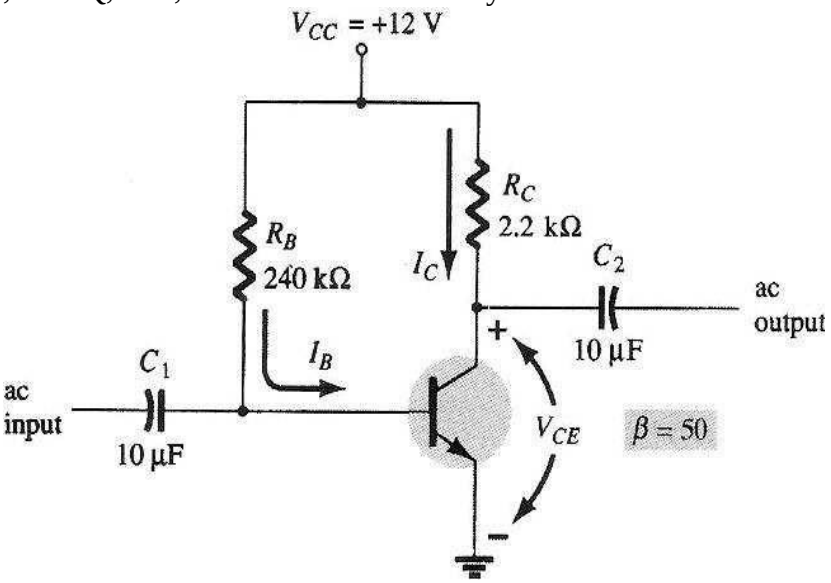
COURSE CODE: **PHY 308**

COURSE TITLE: **ELECTRONICS I**
CREDIT UNIT: **2**
TIME ALLOWED: **(2 HRS)**

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

QUESTION 1

a)i- State the function and basic properties of amplifier. **2 marks**
ii- State the typical maximum efficiencies for class A, class B and class AB amplifiers. **3 marks**
b) i- With the aid of diagram, describe a half wave rectifier circuit. **3 marks**
ii- Briefly explain the operating conditions of the transistor when used as a switch for both "Fully-OFF" and "Fully-ON" **2 marks**
c)i- Differentiate between *gain margin* and *phase margin* **2 marks**
ii- What is meant by power supply? (**2marks**). Enumerate the sources of electricity. **3 marks**
d)i- Explain the terms Digital and analogue IC's **3 marks**
ii- For dc fixed-bias configuration in the figure below, Determine the values of IBQ, ICQ , VCEQ, VB , VC and VBC. What is your comment on value of VBC obtained? **5 marks**



QUESTION 2

(a) Sketch a diagram of an Ideal Amplifier Model. **4 marks**
(b) Determine the Voltage, Current and Power Gain of an amplifier that has an input signal of **1***mA* at **10***mV* and a corresponding output signal of **10***mA* at **1***V*. Also, express all three gains in decibels. **3 marks**
(c) Briefly describe the operation of a Class A amplifier **4 marks**
(d) Draw a complete Transistor Characteristics showing Load Line and Q- Point **4 marks**

QUESTION 3

(a) Briefly explain the term" frequency stability of an oscillator" and name any six factors responsible for it. **5 marks**
(b) Explain any four (4) factors that affect frequency stability of an oscillator. **4 marks**
(c) State and briefly explain the factors upon which the frequency of time-period of the oscillatory current depends. **2 marks**
(d) Give any four (4) examples of Non sinusoidal wave forms and state the use of each **4 marks**

QUESTION 4

(a) Explain the function of a rectifier circuit in a dc supply unit. **3marks**
(b) What do you understand by Amplifier efficiency? **3 marks**
(c) What are the five (5) types of Amplifier Class? Explain any **one** of them. **6 marks**
(d) What is an operational amplifier (op-amp)? **3 marks**

QUESTION 5

(a) State any four (3) applications of resonance effect. **3 marks**
(b) With the aid of a block diagram, list and explain the components of a dc supply unit. **4 marks**
(c) Draw the circuit diagram of the Half-wave, Full-wave and Full-wave Bridge rectifier circuits and indicate the respective input and output waveforms. **3 marks**
(d) What is a Filter circuit? Draw a block diagram of a filter circuit. **5 marks**