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**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA**

**FACULTY OF SCIENCES**

**DEPARTMENT OF PURE AND APPLIED SCIENCES**

 **July 2018 Examinations**

**COURSE CODE: PHY 310**

**COURSE TITLE: ELECTRONICS II**

**CREDIT UNIT 2**

**TIME ALLOWED (2 HRS)**

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

**QUESTION 1**

1. Sketch common emitter, common base and common collector amplifier [2 marks each]
2. Why are MOSFETs susceptible to electrostatic damage? [2 marks]
3. What are conductively modulated devices? [3 marks]
4. Define an amplifier[2 marks]
5. Give 3 merits of close loop amplifiers. [3 marks]
6. What methods are used to store electrical energy? [2 marks]
7. Compare direct current and alternating current power transmission [3 marks]
8. Draw the circuit of an operational amplifier voltage regulator[2 marks]
9. What is a filter [2 marks]

**QUESTION 2**

1. Descriptively compare the enhancement and depletion modes of field effect transistor operation [10marks].
2. Name two types of field effect transistors[5 marks]

**QUESTION 3**

1. Sketch an N-channel common source JFET and describe it operation? [10 marks]
2. Why are junction field effect transistors difficult to manufacture? [2 ½ marks]
3. Are junction field effect transistors damaged by electrostatic discharge? [2 ½ marks]

**QUESTION 4**

1. Discuss amplifiers generally [**6 ½** marks]
2. List 3 common problems associated with the common-emitter amplifier[4 ½ marks]
3. Why is the bandwidth of a common-emitter amplifier low and how is this overcome?[4 marks]

**QUESTION 5**

1. Illustrate how the overall transconductance of a common-emitter amplifier can be reduced? [3 marks]
2. Why is current gain always greater than unity in a common- emitter amplifier? [2 marks]
3. Sketch a common-base amplifier- and one area of application of such amplifier. [4 marks]
4. Use diagrams to differentiate between common-base (C-B), common –emitter(C-E) and common –collector (C-C) amplifiers[3 marks]
5. Why are common-base amplifiers used for very high and ultra high frequency range? [3 marks]