FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI.

SCHOOL OF ENGINEERING AND ENGINEERING TECHNOLOGY.

HARMATTAN SEMESTER EXAMINATION 2019/2020 SESSION.

COURSE TITLE: **PRINCIPLES OF RADIO AND TV BROADCASTING** COURSE CODE: **COE 509**

TIME ALLOWED: 2hrs:30mins HOURS

INSTRUCTIONS: ANSWER QUESTION ONE AND ANY OTHER THREE NUMBERS

1. (a) Assume a superheterodyne receiver is designed to pick up a signal at 25MHz and two turned circuit ahead of a mixer has a quality factors of 10 and 20. Draw a frequency response curve with IF of 500KHz and interpret the curve. (12mks)

   (b)Explain in detail how image frequency is formed. (8mks)

2. (a)Explain the following components of a superheterodyne receiver: (i) Automatic Gain Control (ii) Demodulator (iii) Mixers (iv) Amplifier. (12mks)

   (b)Defined the term; (i) spurious emission (ii) Ganging & Tracking (iii) Sensitivity (iv) Selectivity (8mks)

3 (a) Define Speckling (4 marks)

   (b) What are the requirements of a TV studio for high quality production? (6 marks)

   (c) Describe the method of halo graphic recording and replay? (10marks).

4 (a) With definitions, state the categories of noise, giving three (3) examples of each? (10 marks)

   (b) What conditions must be met in a TV broadcast, for a receiver to receive from any TV transmitter? (4 marks)

   (c)A parallel tuned circuit having Q = 10 resonates at 10MHz with 10pF capacitor. If this circuit at 127°C, what noise voltage will a wideband voltmeter measure when placed across it? (6 marks)

5 (a) Define Video Signal? (3 marks)

   (b) Define Spherical Aberration? (3 marks) How may it be reduced? (4 marks)

   (c) With a well labeled graph, write short note on Vestigial Sideband Signal? (10 marks)

6 (a) Differentiate between flicker noise and transistor thermal noise? (6 marks)

   (b) What are the advantages of the Plumbicon to the Vidicon? (6 marks)

   (c) What are the qualities of the Image Orthicon? (8 marks)