Federal University of Technology, Minna
School of Science and Technology Education
Industrial and Technology Education Department

Second Semester Examination, 2017/2018 Session
Course: - Electronic Communication (ITE 362)
Duration:- 2 hours.
Instruction:- Answer **all** questions in section A & **any two** questions in section B.

SECTION A (36 Marks)

1a With the aid of diagrams explain the construction of condenser and dynamic microphone and also explain two factors which should be considered before selecting a microphone **(8 marks)**.

b What is the function of an oscillator in electronic communication? With the aid of circuit diagrams explain the differences between L C Oscillator and Hartley Oscillator **(6 marks)**.

c A frequency modulated signal which is modulated by a 45 KHz sinewave reaches a maximum frequency of 101.06 MHz and minimum frequency of 100.98 MHz. Determine the (i) Carrier swing (ii) Carrier frequency (iii) Frequency deviation of the signal (iv) Modulation index of the signal? **(6 marks)**

2a Write short note on the followings terms (i) Optimus Working Frequency (ii) Lowest Usable Frequency (iii) Maximum Usable Frequency (iv) Multiple Hop Transmission **(6 marks)**

b Draw the block diagram of a basic Frequency Modulation transmitter and explain function of each block **(7 marks)**.

c Briefly explain two principal classes of fading in electronic communication **(3 marks)**.

SECTION B (24 Marks)

3a The total power content of an AM wave is 5KW for a 100% modulation, determine. Power transmitted by carrier and the power transmitted by each side band **(4 marks)**.

b What is vertical and horizontal polarized transmitting antenna? Explain two benefits of each **(8 marks)**.

4a The R.M.S value of aerial current is 24A and 32A before and after modulation. Calculate % modulation employed **(2 marks)**.

b Explain with the aid of diagrams the construction and principles of operation of loud Speaker **(10 marks)**.

5a A 103.96MHz carrier is frequency modulated by a 10.65 KHz message signal. If the frequency deviation of the resulting FM signal is 65KHz. Determine (a) The highest and lowest frequencies of the FM wave (b) The carrier swing (c) The modulation index **(6 marks)**.

b Explain the concept of Sky wave propagation **(6 marks)**.

6a F. M circuit have modulation index of 24 and highest modulation frequency of 42KHz. What is the approximate band width of the resultant F.M? **(2 marks)**.

b What is Amplitude Modulation? State three limitations of Amplitude Modulation **(6 marks)**.

c What is noise in electronic communication? **(4 marks)**.