

Federal University of Technology Minna,
School of Science and Technology Education
Department of Industrial and Technology Education
Second Semester Examination 2018/2019 Session

COURSE: - Electronic Communication.

COURSE CODE: ITE 362

DURATION: 2 hours,

INSTRUCTION: Answer **all** questions in section A and any **two** questions in section B.

SECTION A (36 MARKS)

- 1a With the aid of diagram explain the concept of modulation and state three reasons of modulation (7 marks)
- b The R.M.S value of aerial current is 10A and 12A before and after modulation. Calculate % modulation employed (3 marks)
- c Draw a basic block schematic diagram of an amplitude modulation super heterodyne radio receiver and explain the function of each block. (8 marks)
- 2a A frequency modulated signal which is modulated by a 15KHz sinewave reaches a maximum frequency of 118.09MHz and minimum frequency of 116.98MHz. Determine the; (i) carrier swing (ii) carrier frequency (iii) frequency deviation of the signal (iv) modulation index of the signal? (6 marks)
- b With the aid of circuit diagram explain quartz crystal oscillator. State two advantages and two disadvantages (6 marks)
- c Briefly explain the following terms
- i. Optimus Working Frequency
 - ii. Multiple Hop Transmission
 - iii. Lowest Usable Frequency
 - iv. Maximum usable frequency (6 marks)

SECTION B (24 MARKS)

- 3a Explain the concept of ground wave and explain two types of ground wave propagation (8 marks)
- b What is antenna? State three benefits of horizontal polarization antenna (4 marks)
- 4a What is fading? Explain three principal classes of fading (8 marks)
- b The total power content of an A. M wave is 2KW for a 100% modulation, determine: power transmitted by carrier and power transmitted by each side band (4 marks)
- 5a What is noise in communication system? Explain two types of external noise and one type of internal noise (9 marks)
- b Explain the followings
- i. Resting Frequency
 - ii. Frequency Deviation
 - iii. Carrier swing (3 marks)
- 6a Draw a block diagram of F. M. transmitter and explain the function of each block (9 marks)
- b In an F.M circuit, the modulation index is 10 and highest modulation frequency is 30KHz. What is the approximate band width of the resultant FM signals? (3 marks)