NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS
SEPTEMBER/OCTOBER 2015 EXAMINATION

SCHOOL OF SCIENCE AND TECHNOLOGY

CIT754: DIGITAL COMMUNICATIONS

INSTRUCTION: ***Answer any five questions out of Seven***
Time: 3 HOURS

1.
   a. Write brief notes on the following:
      i. Amplitude Shift Keying (ASK)
      ii. Frequency Shift Keying (FSK) *(8 marks)*
   b. Compute the bit rate for a 1000-baud 16-QAM signal. (*6 marks*)
2.
   a. Briefly describe the following techniques:
      i. Phase Shift Keying (PSK)
      ii. Pulse Amplitude Modulation (PAM) *(8 marks)*
   b. A constellation diagram has 8 equally spaced points on a circle. If the bit rate is 4800 bps, determine the baud rate. *(6 marks)*
3.
   a. Describe what broad spectrum signals are and explain their benefits. *(8 marks)*
   b. Distinguish between baud rate and bit rate. *(6 marks)*
4.
   a. Give a brief description of Quadrature Amplitude Modulation (QAM) mentioning its advantages over other digital modulation techniques. *(8 marks)*
   b. Briefly describe the causes and effect of fading in channel. (*6 marks*)
5.
   a. List 5 types of channel impairments and describe how digital modulation helps to reduce their effects. (*8 marks*)
   b. Briefly describe the technique of Minimum Shift Keying (MSK). (*6 marks*)
6.
   a. Distinguish between a memoryless modulation and one with memory. (*4 marks*) b.
      i. Differentiate between NRZ-L and NRZ-I polar encodings. (*4 marks*)
      ii. Sketch NRZ-L, and NRZ_I and Manchester coding representations for the bit series 01001110. (*6 marks*)
7.
   a. Determine the bit rate of a 500-baud signal if each of its units carries 6 bits. (*6 marks*)
   b. Determine the minimum bandwidth for an ASK signal transmitting at 2000 bps in half-duplex mode. (*8 marks*)