



NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS
MARCH/APRIL 2016 EXAMINATION

SCHOOL OF SCIENCE AND TECHNOLOGY

COURSE CODE:
COURSE TITLE:

CIT754
DIGITAL COMMUNICATIONS

Time: 3 HOURS

INSTRUCTION: *Answer any five questions out of Seven*

1.
 - a. Distinguish between Amplitude Shift Keying (ASK) and Frequency Shift Keying (FSK) (8 marks)
 - b. Determine the bit rate for a 1500-baud 16-QAM signal. (6 marks)
 - c.
2.
 - a. Write short notes on 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 4400 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).

- c. (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.
 - b. (6 marks)
 - c. Determine the minimum bandwidth for an ASK signal transmitting at 2000 bps in half-duplex mode. (8 marks)