

QUESTION ONE (30MARKS) COMPULSORY

- a. (i) State three factors considered in frequency allocation to any of radio channel or TV channel in Kenya (3 Marks)
- (ii) The international calling and distress frequency is 1000 kHz. What is the equivalent wavelength in meters? Hence illustrate the relationship of two frequency signal of the same amplitude but with different phase (3 Marks)
- (iii) We have three types of modulation, using illustration demonstrate how the binary digital sequence 00110100010 can be the modulating in electrical baseband signal (3 Marks)
- b. (i) Outline possible areas of frequency allocation spectrum in our country (2 Marks)
- (ii) Briefly discuss techniques used in spectrum monitoring (2 Marks)
- (iii) Highlight various medium used to transport electrical signal hence solve for the loss in dB on the line of signal. Suppose a 20-mW (milliwatt) 1000-Hz signal is launched into a wire pair. At the distant end of the wire pair the signal is measured at 0.5mW. (2 Marks)
- c. Briefly explain the necessity of regulation in telecommunications sector (3 Marks)
- d. Define the term Amplitude modulation (1 Marks)
- e. Differentiate between direct and indirect FM modulation (2 Marks)
- f. (i) Distinguish between intelligible and unintelligible cross talk in a channel of communication (2 Marks)
- (ii) Define the term level and explain various techniques used to measure level (3 Marks)
- g. (i) Enlist the major causes of dispersion in optic fiber (2 Mark)
- (ii) Outline the advantages of fiber optic communication links (2 Marks)

QUESTION TWO (20 MARKS)

- a. Describe the major goals of frequency spectrum management body in Kenya and state its function (10 Marks)
- b. Discuss the core planned activities of frequency spectrum management that a regulatory body does here in Kenya (6 Marks)
- c. Explain in detail various issues addressed by regulatory body in telecommunication. (4 Marks)

QUESTION THREE (20 MARKS)

- (a) With an aid of block diagram explain how PM can be converted to FM and FM to PM (8 Marks)
- (b) Describe the advantages and disadvantages of digital transmission (6 Marks)
- (c) Discuss the advantages of FM over AM (6 Marks)

QUESTION FOUR (20 MARKS)

- a. Describe basic impairments found in all telecommunication transmission systems. (12 Marks)
- b. Discuss the application of fiber optical communication link hence describe the approach used in design of fiber communication systems (8 Marks)

QUESTION FIVE (20 MARKS)

- a. With an aid of block diagram ,describe the simplified model of fiber optic link (8 Marks)
- b. Discuss the drawback of using coaxial cable for long-distance transmission (6 Marks)
- c. Explain three major cause of attenuation in fiber optic (6 Marks)