2) Signal power

## 17519

## 16172 3 Hours / 100 Marks Seat No. **Instructions**: (1) **All** questions are **compulsory**. (2) Illustrate your answers with neat sketches wherever necessary. (3) Figures to the **right** indicate **full** marks. (4) Use of Non-programmable Electronic Pocket Calculator is permissible. (5) Mobile Phone, Pager and any other Electronic Communication devices are **not** permissible in Examination Hall. Marks 1. Attempt any three of the following: 12 a) i) State the concept of noise in the electronic communication system. ii) Describe the working of phase shift keying with Block diagram. iii) How cell splitting take place in mobile communication with neat diagram? iv) Draw the block diagram of high level AM transmitter. Explain the function of each block. b) Attempt any one of the following: 6 i) Find out the bandwidth required for FM in which maximum deviation is 8 KHz and $m_f = 5$ . Assume highest needed standards are 8. ii) Draw block diagram of QPSK and explain its working principle. State its application. 2. Attempt any four of the following: 16 a) State the Sampling Theorem. What is Nyquist criteria? b) Draw the block diagram of superheterodyne receiver. Explain the function of each block (for AM). c) Explain Shanon's theorem on the channel capacity. d) What are the types of Encoding technique? Why encoding is necessary in digital communication? e) Explain forward and reverse call processing. f) State application of satellite communication. **3.** Attempt **any four** of the following: 16 a) State the diagram of implementation of Pulse Position Modulation (PPM) from PWM. Draw the waveform of PPM. b) Compare Natural Sampling and Flat Top sampling on the following points. 1) Sampling rate 3) Bandwidth requirement

4) Waveform

c) Draw the block diagram of digital modulation system. State the function of each block.

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Marks d) Explain B8ZS and HDB3 Encoding techniques with waveforms. e) Explain the working of satellite communication with block diagram. **4.** a) Attempt **any three** of the following: 12 i) What are the types of electronics communication? Explain any one. State application of communication. ii) Compare polar and bipolar Encoding Technique. iii) Describe the working of FSK with Block Diagram. iv) List the different types of hand off. Explain any one in detail. b) Attempt any one of the following: 6 i) Draw the block diagram of PCM and explain it's working. State advantage and disadvantage. ii) Explain FDMA with Uplink and Downlink frequency range. Also list any two frequency band used in satellite. **5.** Attempt **any four** of the following: 16 a) State advantage and disadvantage of digital communication. b) Explain operating principle of sky wave propagation. c) Draw BPSK waveform for given bit sequence 01101011. Also state advantage and disadvantage of BPSK. d) Compare ASK and FSK on the bases of 1) Noise Immunity 2) Bit Rate 3) Waveform 4) Application. e) Define: i) Baud Rate ii) Bit Rate. In Digital to Analog system signal carries 6 bit/sec. If no. of signal per second are 1000. Calculate Bit Rate. f) Explain the working of cellular mobile phone system. **6.** Attempt **any four** of the following: 16 a) Draw the block diagram of PPM. Also state merits and demerits of PPM. b) Define Transmission Bandwidth. State the Bandwidth and frequency range for 1) Video signal in T.V. 2) Audio signal. c) Explain the working of PAM with block diagram and also draw its waveform. d) Describe the working of basic telephone system with block diagram.

e) State the working principle of handset to handset call processing.