

Code No: 135CX**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, October - 2020****PRINCIPLES OF ELECTRONIC COMMUNICATIONS****(Common to CE, EEE, CSE, EIE, IT)****Time: 2 hours****Max. Marks: 75****Answer any five questions
All questions carry equal marks**

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- 1.a) A communication system has five stages, with gains of 12, 245, 68, 231, and 9 dB. What is the overall gain?
b) Explain the frequency range and applications of UHF, SHF and EHF. [7+8]
- 2.a) A power amplifier has an input of 90 mV across 10 k Ω . The output is 7.8 V across an 8- Ω speaker. What is the power gain, in decibels? You must compute the input and output power levels first.
b) A signal travels a distance of 75 ft in the time it takes to complete 1 cycle. What is its frequency?
c) A television signal occupies a 6-MHz bandwidth. If the low-frequency limit of channel 2 is 54 MHz, what is the upper-frequency limit? [6+4+5]
- 3.a) Determine the modulation index and bandwidth for FM and PM signals for a modulating signal $5 \cos 30000 \pi t$ angle modulates a carrier $A \cos 2\pi f_c t$. Assume $K_s = K_p = 15$ KHz/volt.
b) Compare PAM with PWM. [8+7]
- 4.a) Draw the QPSK transmitter and explain each block.
b) Discuss the oversampling and under sampling operating and state their advantages and disadvantages. [8+7]
- 5.a) Discuss the Signal flow in a VoIP system.
b) Illustrate the diagrams of LANs arranged according to the three basic topologies: star, ring, and bus. [7+8]
- 6.a) Explain the paging systems.
b) An office with 20 PCs is to be wired so that any computer can communicate with any other. How many interconnecting wires (or links, L) are needed?
c) Discuss the Ethernet frame format. [6+4+5]
- 7.a) Explain two types of optical transmitter components and their main operating characteristics.
b) Discuss the advantages and disadvantages of satellite communications. [7+8]
- 8.a) Detail notes about GSM – system overview, physical and logical channels.
b) Explain why IEEE 802.16 is a MAN technology. [8+7]