



FIFTH SEMESTER BTECH. (E & C) DEGREE END SEMESTER EXAMINATION
MARCH 2021

SUBJECT: INTRODUCTION TO COMMUNICATION SYSTEMS (ECE - 4304)

TIME: 3 HOURS

MAX. MARKS: 50

Instructions to candidates

- Answer **ALL** questions.
- Missing data may be suitably assumed.

- 1A. Write the advantages of Digital Communication systems over Analog systems. How a designer can reduce noise in digital systems? Explain with a neat block diagram.
- 1B. A communication system possesses power amplifier with a 40-dB gain, and has an output power of 100 W. What is the input Power that is required to feed the antenna? If a designer wants to increase the reliability of this system, how to achieve that? Show a conceptual based idea (with the help of a block diagram) which involves error reduction and also improvement in the reliability.
(5+5)
- 2A. What are the key elements of an optical fibre system? With the help of a block diagram explain how electrical to optical and optical to electrical conversion take place in an OFC system. Explain the concept of cable breakage and how to solve the breakage error.
- 2B. Consider two silica fibres that are doped with 6 percent and 18 percent mole fractions of GeO₂, respectively. Compare the ultraviolet absorptions at wavelengths of 0.7μm and 1.3μm.
(5+5)
- 3A. A satellite transponder operates in the C band. (Assume a local oscillator frequency of 2 GHz). What is the uplink receiver frequency if the downlink transmitter is on channel 4? (The downlink frequency of channel 4 is given as 3840 MHz). What is the maximum theoretical data rate if one transponder is used for binary transmission?
- 3B. Explain the operation of A broadband multiple-channel repeater in a satellite communication system and define why the concept of channelization process is required in these satellite systems
(5+5)
- 4A. What are the Major components used in an FSO system? Explain each with a suitable block diagram. Why pixel sensors are used in an FSO system?
- 4B. Write a Note on Dynamic Channel Allocation strategy in a Mobile communication system. Comment on the Practical limitations of a Microcell Zone concept.
(5+5)
- 5A. With the help of a neat Block diagram explain the concept of a CW Doppler Radar
- 5B. Explain the concept of a Bluetooth pico-net with scatter-net link.
(5+5)