Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

FIFTH SEMESTER BTECH. (E & C) DEGREE END SEMESTER EXAMINATION
DECEMBER 2020/JANUARY 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. With the help of a block diagram explain the principle of Digital Communication system.

1B. Illustrate the application of electromagnetic frequency spectrum from 30Hz to 300GHz.

1C. 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?

(4+3+3)

2A. What are the key elements of an optical fibre system? With the help of a block diagram explain how conversion from electrical to optical signal take place in an OFC system.

2B. Consider two silica fibres that are doped with 6 percent and 18 percent mole fractions of GeO2. Compare the ultraviolet absorptions at wavelengths of 0.7 μm and 1.3 μm of each.

2C. Explain the Bending losses in an OFC system.

(4+3+3)

3A. A satellite transponder operates in C band. Let the local oscillator frequency be 2 GHz. What is the uplink receiver frequency if the downlink transmitter is on channel 4? If the downlink frequency of channel 4 is 3840 MHz, what is the maximum theoretical data rate if one of the transponder is used for binary transmission?

3B. Write the generic block diagram of a satellite communication system.

3C. If the earth station downlink signal received is at fs =4.08 GHz, what is the local-oscillator frequencies f_{lo} needed to achieve IFs of 770 and 140 MHz?

(4+3+3)

4A. What are the major components used in FSO system. Explain each with a suitable block diagram.

4B. Write a note on dynamic channel allocation strategy in Mobile communication system.

4C. What are the practical limitations of a Microcell zone concept?

(4+3+3)

5A. With the help of a neat block diagram explain the concept of a CW Doppler Radar

5B. Explain the principle of working of Bluetooth pico-net with scatter-net link.

(5+5)