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MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

FOURTH SEMESTER B.TECH. (E & C) DEGREE END SEMESTER EXAMINATION

APRIL/MAY 2019

SUBJECT: INTRODUCTION TO COMMUNICATION SYSTEMS (ECE - 3283)

TIME: 3 HOURS

MAX. MARKS: 50

Instructions to candidates

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

- 1A. With a neat block diagram, explain telephone set and signalling tones used in telephone system.
- 1B. Compare step index multimode, graded index and step index single mode fibers. Also discuss the three windows used in optical fiber communication.
(5+5)
- 2A. With a neat block diagram, explain electronic communication system.
- 2B. With neat diagrams, explain the operation of basic cellular system.
(5+5)
- 3A. Derive the expression for numerical aperture and maximum acceptance angle of optical fiber. Find the core radius necessary for single mode operation at 1320nm of a step-index fiber with $n_1=1.48$ and $n_2 = 1.478$. What are the numerical aperture and maximum acceptance angle of this fiber?
- 3B. With neat diagrams, explain the process of multiplexing and demultiplexing used in electronic communication system.
(5+5)
- 4A. With neat diagrams, explain the display systems used in radar.
- 4B. With a neat diagram, explain the working of avalanche photo diode.
- 4C. Discuss various applications of radar system.
(4+3+3)
- 5A. Discuss the applications of satellites and compare the various orbits used by satellites.
- 5B. With a neat diagram explain the three segments of global positioning system.
(5+5)