Roll No. | | | | | | | | | | | | | Total No. of Pages : 01

Total No. of Questions : 08

M.Tech (ECE)(Wireless Communication) (Sem.–3)

MILLIMETER WAVE COMMUNICATION AND TECHNOLOGY

Subject Code : ECE-301

Paper ID : [74635]

Time : 3 Hrs. Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT question.**
2. **Each question carries TWENTY marks.**

Q1. a) Discuss various Millimeter wave characteristics. What are the Millimeter wave free space and propagation loss factors? Describe them in detail.

b) Why narrow beam width is preferred in Millimeter wave communication?

Q2. a) Explain the following with respect to backhaul network :

i. Quality of service (QoS)

ii. Interference mitigation

iii. Frequency reuse

iv. Rain fade

b) What are the possible applications of Millimeter wave communication? Classify them into indoor and outdoor also.

Q3. What is On-Off Keying? Derive the probability of error of On-Off keying in AWGN channel.

Q4. Discuss following architectures in detail for the front-end of a 60 GHz radio :

a) Software radio architecture.

b) Six-port technology.

Q5. a) Why beam steering is employed in Millimeter wave communication?

b) Describe multiport direct conversion transceiver architecture using MIMO technology. How gain of the MIMO systems are utilized in above system?

Q6. Explain adaptive beam, steering technology. Describe various steps of acquisition and tracking algorithms used in adaptive beam steering.

Q7. Draw the flowchart of beam steering algorithm and explain. Describe advanced ID antenna technology in detail.

Q8. a) Discuss antenna symmetric system (ASS) having device 1 (DEV1) and the device 2 (DEV2) using the same physical antennas for transmission and reception using OFMD.

b) Discuss the various steps of basic protocol for beam forming in above ASS system