

Reg. No. :

|  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|

**Question Paper Code:U2509**

M.E/Ph.D. DEGREE EXAMINATION, APRIL 2024

Elective

Communication Systems

21PCM509- ULTRA WIDEBAND COMMUNICATION

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

|    |     |  |          |      |
|----|-----|--|----------|------|
| 1. | (a) | Design the near field antenna used for Wireless Personal Area Networks and analyze its characteristics with respect to the received power over a large frequency band. | CO3- App | (20) |
|    |     | Or   |          |      |
|    | (b) | Calculate the amplitude and Magnitude of the Legendre functions for the order of $n= 1,2,3,4$ and 5.   | CO3- App | (20) |
| 2. | (a) | Analyze in detail about any two impulse response modeling of UWB wireless channels.  | CO4- Ana | (20) |
|    |     | Or   |          |      |
|    | (b) | Analyze how the Directivity, Gain and height are involved in WiMax with existing OFDM System   | CO4- Ana | (20) |
| 3. | (a) | Compare the M-ary pulse amplitude modulation and Pulse position modulation and analyze its BER performance to select the suitable one for UWB signal processing.       | CO4- Ana | (20) |
|    |     | Or   |          |      |
|    | (b) | Compare DS-UWB and MB-OFDM UWB techniques, in terms of system's complexity and achievable range-data rate performance for the WPAN applications.                       | CO4- Ana | (20) |
| 4. | (a) | Discuss in detail about Position Locationing Methods.  | CO1- U   | (20) |
|    |     | Or   |          |      |
|    | (b) | Discuss in detail about locationing with OFDM  | CO1- U   | (20) |

|    |     |   |          |      |
|----|-----|---|----------|------|
| 5. | (a) | Identify the proper UWB signal which is used to detect the cardiac contractions and breath monitor to detect the respiratory movements.       | CO3- App | (20) |
|    |     | Or  |          |      |
|    | (b) | Develop the system which is used to deliver innovative enabling PHY layer and medium access technology for Low Spectral Energy Radio Systems. | CO3- App | (20) |