



INSTITUTE OF INFORMATION TECHNOLOGY
JAHANGIRNAGAR UNIVERSITY
PMIT 1ST SEMESTER FINAL EXAMINATION-AUGUST 2019
PRE-REQUISITE BATCH

COURSE CODE: IT-6217
TOTAL MARKS: 60

COURSE TITLE: WIRELESS NETWORK
TIMES: 3 HOURS

ANSWER ANY FIVE (5) QUESTIONS

1. a) Draw an environment of subscriber station of WiMAX network and explain 6
b) "The Destination-Sequenced Distance Vector (DSDV) protocol is a table-driven routing protocol"
Explain 6
2. a) Four prominent wireless technologies: Bluetooth, Wi-Fi (more formally known as 802.11), WiMAX (802.16), and third-generation or 3G cellular wireless. Now mention typical link length, bandwidth, use, wired technology analogy of any three technologies. 6
b) Considering a baseband OFDM transmission model where x_q is the received subcarrier and x_k represents the local oscillator. When integrating received power over one symbol period, T_U , the output of the correlators is zero for any combination, except when $k = q$. Now prove the following 6
$$\sum_{q=0}^{N_C-1} \frac{a_q}{T_U} \int_0^{T_U} e^{j2\pi(q-k)\frac{t}{T_U}} dt = \begin{cases} a_k, & k = q \\ 0, & k \neq q \end{cases}$$
3. a) Mention four Major Problems with Wireless network. Explain solution for one of them 6
b) A city has total population of 5,00,000. A network planner found the behavior of users of the city like: they generate 3 calls/hour with average holding time of 2 minutes. The service provider got the license of BW that can support 36 carriers of GSM. Determine number of sectors of 3/9 cell pattern maintaining GoS of 5%. 6
4. a) Explain Infrared LANs with advantages. 4
b) Bluetooth defines two types of networks called: piconet and scatternet. Explain them. 4
c) Explain Adaptive modulation and channel coding (MCS) scheme 4
5. a) Explain Interferences In Mobile Cellular Network 4
b) Explain OFDM Versus FDM. 4
c) Explain the mechanism of Soft Handover. 4

6. a) Explain the frame format of IEEE 802.11 3
b) Draw and describe GSM Architecture
c) A wide-range of applications offered by WSN. Explain four of them.
7. a) Explain LEACH Clustering Protocol 3
b) An urban area has a population of two million residents. Two computing trunked mobile networks (A and B) provide cellular service in this area. System A has 394 cells with 19 channels each, system B has 98 cells with 60 channels each. Find the number of users that can be supported at 2% blocking. If each user averages two calls per hour at an average call duration of three minutes. Also compute the market penetration of each cellular provider. 6
c) Explain three important features of WiMAX 3