**20IT701/PE**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **December, 2023** | **Information Technology** | | |
| **Seventh Semester** | **Wireless Networks** | | |
| **Time:** Three Hours | | **Maximum:** 70 Marks | |
| ***Answer question 1 compulsory.*** | | | **(14X1 = 14Marks)** |
| ***Answer one question from each unit.*** | | | **(4X14=56 Marks)** |
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|  |  |  | CO | BL | M |
| 1 | a) | What is delay spread in the context of wireless communication? | CO 1 | L1 | 1M |
|  | b) | What is Multiplexing? | CO 1 | L1 | 1M |
|  | c) | What is the purpose of signal modulation? | CO 1 | L2 | 1M |
|  | d) | Write one example for location dependent service. | CO 1 | L2 | 1M |
|  | e) | Describe cell in the context of cellular networks. | CO 2 | L2 | 1M |
|  | f) | What is a satellite? | CO 2 | L1 | 1M |
|  | g) | List any two applications of satellite communications. | CO 2 | L2 | 1M |
|  | h) | What is a handover? | CO 2 | L2 | 1M |
|  | i) | Why infrared spectrum is not popular for IEEE 802.11 networks? | CO 3 | L2 | 1M |
|  | j) | What is a basic service set? | CO 3 | L2 | 1M |
|  | k) | What is a co-located care of address? | CO 3 | L2 | 1M |
|  | l) | What is VoLTE? | CO 4 | L2 | 1M |
|  | m) | What are the requirements of massive Machine Type Communication (mMTC)? | CO 4 | L2 | 1M |
|  | n) | Give one application of Ultra Reliable Low Latency Communications (URLLC). | CO 4 | L2 | 1M |
| **Unit-I** | | | | | |
| 2 | a) | Compare and contrast the following modulation techniques i) Amplitude Shift Keying ii) Frequency Shift Keying iii) Phase Shift Keying | CO 1 | L3 | 9M |
|  | b) | Compare and contrast the following antennas i) Isotropic antenna ii) Omni directional antenna | CO 1 | L3 | 5M |
| **(OR)** | | | | | |
| 3 | a) | Compare and contrast the following medium access control mechanisms i) Space Division Multiple Access ii) Frequency Division Multiple Access iii) Time Division Multiple Access | CO 1 | L3 | 9M |
|  | b) | Describe Code Division Multiple Access mechanism. | CO 1 | L2 | 5M |
| **Unit-II** | | | | | |
| 4 | a) | Describe the evolution of cellular networks. | CO 2 | L2 | 7M |
|  | b) | Describe Universal Mobile Telecommunications System (UMTS) architecture | CO 2 | L2 | 7M |
| **(OR)** | | | | | |
| 5 | a) | Compare and contrast the following orbits for satellite communication i) Low Earth Orbit ii) Medium Earth Orbit iii) Geosynchronous Earth Orbit | CO 2 | L3 | 9M |
|  | b) | How routing takes place in Satellite networks? | CO 2 | L2 | 5M |
| **Unit-III** | | | | | |
| 6 | a) | What is hidden terminals problem? How to overcome the problem in IEEE 802.11 ad-hoc networks? | CO 3 | L2 | 7M |
|  | b) | How are Synchronization and Power management taken care by MAC management protocol in IEEE 802.11 infrastructure networks? | CO 3 | L2 | 7M |
| **(OR)** | | | | | |
| 7 | a) | How Mobile IP supports mobility of a node in wireless networks? | CO 3 | L2 | 7M |
|  | b) | Write about Dynamic Host Configuration Protocol (DHCP) | CO 3 | L2 | 7M |
| **Unit-IV** | | | | | |
| 8 | a) | What are the functions of UMTS Terrestrial Radio Access Network (E-UTRAN) in 4G cellular network? | CO 4 | L2 | 7M |
|  | b) | Describe the functions of each component in the 4G evolved packet core network. | CO 4 | L2 | 7M |
| **(OR)** | | | | | |
| 9 | a) | What are the functions of next generation radio access network (NG-RAN) in 5G cellular network? | CO 4 | L2 | 7M |
|  | b) | Describe the functions of each component in the 5G core network. | CO 4 | L2 | 7M |

