

**BINDURA UNIVERSITY OF SCIENCE EDUCATION**  
**FACULTY OF SCIENCE AND ENGINEERING**  
**DEPARTMENT OF COMPUTER SCIENCE**  
**BSc HONS DEGREE IN INFORMATION TECHNOLOGY**  
**IT415/NWE415- WIRELESS NETWORKS AND MOBILE COMPUTING**  
**2 HOURS 30 MINUTES**

**INSTRUCTION TO CANDIDATES**

Paper consists of 5 questions

Answer all questions

Each question carries 20 marks. Total marks are 100.

APR 2025

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**Question 1**

- a. Compare wired network and wireless network. [10]
- b. Explain the major types of wireless media. [4]
- c. Fading types are divided into large scale fading and small scale fading. Briefly describe each type. [6]

**Question 2**

- a. An orbit is the curved path that an object in space (such as a star, planet, moon, asteroid or spacecraft) takes around another object due to gravity. Explain the following types of orbits:
  - i. medium earth orbit (MEO) [4]
  - ii. geosynchronous satellite (GEO). [4]
- b. State any two advantages and limitations of CDMA system. [4]
- c. Describe the carrier sensing mechanism and how collision is avoided in IEEE 802.11 wireless LAN. [8]

**Question 3**

- a. State and explain any five goals of HiperLAN. [5]
- b. Explain the building blocks of IEEE 802.11 architecture. [5]
- c. Describe five salient features supported by WiMAX. [10]

**Question 4**

- a. Explain the security services provided by IEEE 802.11? [6]
- b. Compare 4G with 3G. [8]
- c. Explain the three most important advantages of spread spectrum? [6]

**Question 5**

- a. Explain why Coda is promising and potentially very important in networked file systems. [8]
- b. Draw and explain different states of devices in Bluetooth? [12]

\*\*\*\*\*END OF PAPER\*\*\*\*\*