

Menoufia University Faculty of Electronic Engineering
Dept. of Communications Fourth Year
Midterm Exam: Advanced Communication Systems
Time Allowed 1 hour

Answer Five questions only:

- 1- Compare between wireless, acoustic, and optical OFDM.
- 2- Explain the wavelet based approach for PAPR reduction in OFDM systems.
- 3- Explain three different cancelable biometric systems.
- 4- What are the limitations of acoustic communication channels? Explain how the equalization process is simplified in OFDM systems.
- 5- What is the main difference between image, video, and 3D video systems? Explain briefly three different challenges for wirelessly 3D video communication systems. Discuss the proposed solutions to mitigate each explained challenge?
- 6- Explain how to use NOMA techniques in 5G systems. What is the difference between NOMA, Single-Carrier NOMA, Multi-Carrier NOMA, cooperative NOMA, and traditional OMA techniques? Discuss their features, advantages, and disadvantages.
- 7- Explain how the molecular communication system works. Show its communication model. Compare between the traditional communication systems and Nano-network-based molecular communication systems.
- 8- Discuss the communication architecture layers of WBAN. Explain a medical WBAN-based system. Mention the obligatory goals to fulfill its adequate functionality.