



Benha University
Faculty of Engineering
Shoubra

Antennas & Wave Propagation
ECE 411

Electrical Eng. Dept.
4th year communication
2016-2017

Sheet (1)... 1st Week

1. **Define** antenna, show How to classify antenna types.
2. **Draw *only*** some familiar types of antenna.
3. **Which** antenna may be used for
 - i. UHF/VHF TV.
 - ii. WLAN protocols.
 - iii. Satellite communications.
4. **Mention *only*** the main Fundamental Parameters of Antennas
5. **Define *only*** "Radiation Pattern", "isotropic antenna", "omnidirectional antenna", "directional antenna".
6. **Draw** the radiation pattern for an antenna has a field pattern of :

$$E_n = \text{Cos}^2\theta, \text{ for } 0 \leq \theta \leq 90^\circ, 0 \leq \phi \leq 360^\circ$$

And Show the **nulls, Maxima, FNBW, and HPBW**

Good Luck