

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – III • EXAMINATION – WINTER • 2014****Subject code: 732701****Date: 25-11-2014****Subject Name: Smart Antennas for Wireless Communication****Time: 02:30 pm - 05:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Define following terms in connection with antenna : (i) Radiation Impedance (ii) Radiation Pattern (iii) Antenna Polarization (iv) Bandwidth (v) Directivity (vi) Gain (vii) Antenna efficiency. **07**
- (b) List out the advantages of Smart Antenna technology. Show how the antenna pattern of the array can be changed in the smart antenna technology. **07**
- Q.2** (a) Write short note on wideband smart antennas. **07**
- (b) Write short note on The vector channel Impulse response and the spatial signature **07**
- OR**
- (b) Describe Fixed beam forming networks in detail. **07**
- Q.3** (a) Write short note on Spatial diversity, diversity combining and sectoring. **07**
- (b) Explain Spatial processing receivers. **07**
- OR**
- Q.3** (a) Write short note on Transmission beam forming. **07**
- (b) Explain Dynamic Re-sectoring using smart antennas. **07**
- Q.4** (a) Describe Non-coherent CDMA spatial processors in details. **07**
- (b) Write short note on Range and Capacity Analysis Using Smart Antennas A Vector Based Approach. **07**
- OR**
- Q.4** (a) Write short note on Coherent CDMA spatial processors and the spatial processing Rake receiver. **07**
- (b) Explain range extension in CDMA. **07**
- Q.5** (a) Explain downlink beam-forming for CDMA. **07**
- (b) Write short note on Direction finding PL system. **07**
- OR**
- Q.5** (a) Write short note on Reverse Channel Performance of Multi-cell Systems with Spatial Filtering at the Base Station. **07**
- (b) Explain TDOA estimation techniques. **07**
