

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) - EXAMINATION – SUMMER 2017****Subject Code: 2171004****Date: 04/05/2017****Subject Name: Wireless Communication****Time: 02.30 PM to 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: (1) Forward Channel (2) Reverse Channel (3) Control Channel (4) Paging System (5) Hand-off (6) Base Station (7) Full Duplex Systems **07**
- (b) What is interference? Explain the difference between co-channel interference and adjacent channel interference. Derive equation for signal to interference ratio. **07**
- Q.2** (a) A unit gain antenna with a maximum dimension of 1 m produces 50 W power at 900 MHz. Find (i) the transmit power in dBm and dB, (ii) the received Power at a free space distance of 5 m and 100 m using free space distance formula. **07**
- (b) (i) Why hexagonal cell shape is preferred in cellular architecture? **03**  
(ii) Explain the concept of umbrella cell. **04**
- OR**
- (b) Explain different channel assignment strategies in detail. **07**
- Q.3** (a) Explain the concept of cell splitting with require figure. **07**
- (b) Explain Free space propagation model with necessary equations. **07**
- OR**
- Q.3** (a) Describe empirical formula for path loss in mobile networks. **07**
- (b) What is diffraction? Briefly explain knife-edge diffraction model with figure. **07**
- Q.4** (a) Describe Time Division Multiple Access (TDMA) in detail. Write the equation for efficiency of TDMA and number of channels in TDMA system. **07**
- (b) Explain the following term with reference to CDMA **07**
- (i) Power Control
- (ii) Soft hand-off
- (iii) Frequency hopping
- OR**
- Q.4** (a) Write a short note on OFDM. **07**
- (b) Describe a Rake receiver in CDMA. **07**
- Q.5** (a) With the help of a neat sketch, describe GPRS architecture. **07**
- (b) Write a short note on UWB radio. **07**
- OR**
- Q.5** (a) With neat diagram explain wireless Ad-Hoc network. **07**
- (b) Write a short note on software defined radio. **07**

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