

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER-IV • EXAMINATION- WINTER • 2015

Subject Code: 740401

Date: 05/12/2015

Subject Name: Wireless and Mobile Network Architecture

Time: 2:30 PM TO 5:00 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) What is handoff? Describe Inter-BS Handoff and Intersystem Handoff. **07**
 (b) Draw GSM architecture and explain functions and significance of each block. **07**
- Q.2** (a) Consider a GSM system with a one way spectrum of 12.5 Mhz and channel spacing of 200 kHz. There are three control channels per cell, and the reuse factor is 4. Assuming an omni-directional antenna with six interferes in the first tier and a slope for path loss of 40 dB/decade ($\gamma=4$), Calculate the number of calls per cell site per hour and mean S/I ratio with 2% blocking during system busy hour and an average call holding time is 120 seconds. Using Erlang B table for 122 channels and given blocking, traffic load is 110 Erlangs. **07**
 (b) Why hexagonal cell geometry is used in cellular system? Prove that for a hexagonal geometry, the co-channel reuse ratio is given by $q = (3N)^{1/2}$, Where $N = i^2 + ij + j^2$. **07**
- OR**
- (b) Explain MS registration process and call delivery procedure under roaming Management. **07**
- Q.3** (a) Enlist the issues related to handoff management. And explain in brief the mobile controlled handoff. **07**
 (b) Compare soft handoff with hard handoff. **07**
- OR**
- Q.3** (a) Write a brief note on signaling system No. 7. **07**
 (b) Explain IS-41 authentication and compare sharing scheme and without sharing scheme. **07**
- Q.4** (a) Describe in brief PACS registration process and call origination process. **07**
 (b) Draw the CDPD reference model and explain roaming management. **07**
- OR**
- Q.4** (a) Write a brief note on GSM operation and maintenance. **07**
 (b) Explain about Location tracking and call setup procedure in GSM. **07**
- Q.5** (a) What is the significance of WAP specifications? Briefly explain WAP protocol Stack. **07**
 (b) Compare W-CDMA and CDMA2000 and explain quality of service in 3G. **07**
- OR**
- Q.5** (a) What are the advantages of Wireless Local Loop over wire line networks? Describe the functions of various entities of WLL Architecture. **07**
 (b) Discuss the operation of Mobile IP and Define (a) Mobile Node (b) Home Agent (c) Foreign Agent. **07**
