

College of Engineering, Pune
END SEMESTER EXAM Nov 2013
Year: (Final B. Tech - E & TC)
(ET 401)- (Mobile Communication)

Day & Date-
Timing-

Max. Marks- 60
Duration – 3 hours

Instructions:

1. All questions are compulsory.
 2. Figures to the right indicate full marks.
 3. Assume suitable data wherever necessary.
 4. Draw neat figure wherever required
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- Q.1 A. Determine the design parameters of three stage switch with inlet utilization of 0.1 to achieve a blocking probability as 0.002. for $N=128$ and 2048. How the blocking probability can be altered? 3
- B. Comment on any two enhanced services that can be made available to subscribers by SPC: 4
1. Conference call facility
 2. Automatic alarm
 3. Malicious call tracing
- C. What is the objective of 'Numbering plan'? 3
Explain different fields included in telephone number structure?
- OR**
- C. Distributed SPC structure offers better availability and reliability than the centralized SPC; prove this in terms of availability and unavailability of both the systems. 3
- Q.2 A. 'Combination switching is preferred in multistage electronic exchange' justify the statement. 3
- B. In telecommunication switching system related to traffic engineering, state the steady state equations of B-D (birth death) process, explain the significance of each parameter in it. 3
- C. Referring to protocol architecture of SS7, state the functionality difference between signaling link and signaling network layers. 4
- Q.3 A. In case of GSM, an MS has number of identities, mention the details and significance of each. 3

- Q.3 B. Explain the type of information that SIM carries. How the security issues are handled in the GSM handset? 3
- C. How the cochannel interference affects the system performance? Name the techniques for reducing it and explain any one technique in detail. 4
- D. What is adjacent channel interference? How this can be reduced? 4
Differentiate between next-channel and neighboring channel interference.
- Q.4 A. Consider a GSM TDMA system with following parameters: 4
 $N_r = 2$, $N_t = 24$ frames of 120 ms with 8 time slots per frame.
 $b_r = 148$ bits in each of 8 time slots, $b_p = 34$ bits in each of 8 time slots.
 $b_g = 8.25$ bits in each of 8 time slots. $T_f = 120$ ms. $R = 22.8$ kbps.
 $R_{eff} = 270.833$ kbps. Calculate frame efficiency and number of channels per frame. How these two parameters can be improved?
- B. State the importance of interface used between BSC to MSC in GSM. 4
Explain significance of 'Dedicated control channel' and its types.
- C. Illustrate **any one** process in GSM, using flow scenarios. 4
 a) Call release mobile initiated
 b) Mobile terminated call
- Q.5 A. Describe processing of logical channel for IS-95 CDMA reverse link. 6
- B. Explain the advantage of 'Soft hand off' technique in CDMA system. 2
- C. Calculate the process gain, 'Gp' for DSSS CDMA system with 10 Mcps code clock rate and 4.8 kbps information rate. How it can be improved? 2
- D. In getting to the traffic channel a mobile station in CDMA goes through several states. Explain functioning of, i) system initialization state, ii) system idle state. 4
