

[Time: 3 Hours]

[ Marks: 80]

Please check whether you have got the right question paper.

- N.B: 1. Question.No.1 is compulsory.  
2. Attempt any three questions from the remaining five questions.

- Q.1 Answer the following: **20**
- Explain the authentication process in GSM.
  - Discuss the need for 3G cellular networks.
  - If there are 50 channels in a cell to handle all the calls and the average call holding time is 100s/call, how many calls per hour can be handled in this cell with a blocking probability of 2%? For number of channels = 50 and  $P_b = 2\%$  Traffic intensity in Erlangs is 40.3.
  - Explain the Forward and Reverse channel structure in CDMA.
- Q.2 a) Explain GSM frame and time slot structure. **10**  
b) Explain GSM signaling and protocol architecture. **10**
- Q.3 a) Explain CDMA reverse channel processing. **10**  
b) Discuss mobility and resource management in CDMA. **10**
- Q.4 a) Explain 4G-LTE architecture with a neat block diagram in detail. **10**  
b) Explain cell splitting. **04**  
If the radius of each new microcell is half that of the original cell, show that **06**
- Traffic load increases four times
  - Transmit power must be reduced by 12dB to maintain the S/N requirement with a path loss exponent of 4.
- Q.5 a) Explain UMTS network architecture in detail with interfaces. **10**  
b) Compare the characteristics of WCDMA and CDMA 2000. **05**  
c) Explain GPRS network architecture. **05**
- Q.6 Write short notes on: **20**
- Trunking and GoS
  - Mobile IP
  - MANET
  - Interfaces used in GSM systems