

Total No. of Questions : 8]

SEAT No. :

P-3154

[Total No. of Pages : 3

[6003]-398

T.E. (E & TC)

CELLULAR NETWORKS

(2019 Pattern) (Semester - II) (304192)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer any one question out of Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 and Q.7 or Q.8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

Q1) a) List types of handoffs. With neat diagram, describe the significance of handover in cellular systems with algorithm. [8]

b) Explain in detail with diagram. Cellular Network Architecture. [5]

c) Write a brief note on Cell Geometry in mobile communication. [5]

OR

Q2) a) List out steps in Cellular radio system design and need of frequency reuse channels. [8]

b) Write a brief note on:

i) Cell splitting [5]

ii) Cell sectoring [5]

Q3) a) With state-transition diagram. explain Tele-traffic System Model with Poisson distribution. [9]

b) List out assumptions, to derive the equation for blocking probability using Steady State Analysis. [9]

OR

P.T.O.

- Q4)** a) Draw and explain Tele-traffic Theory system for 100 users with 100 channels. [6]
- b) Describe the significance of listing Power losses and Gains of different intermediate components in the transceiver chain for Link-Budget Analysis. [6]
- c) Classify path loss models of different types of cells. Write only the expression for median path loss under Hata model for small to medium sized city signifying the importance of mobile antenna correction factor. [6]

- Q5)** a) With neat diagram, explain in detail Evolved Packet Core architecture of LTE. [6]
- b) Draw LTE-A Radio Protocol Architecture. Explain the significance of RLC and RRC in the architecture. [6]
- c) List out detail specification of LTE. [5]

OR

- Q6)** a) Classify and explain in brief Wireless Local area Network. [6]
- b) Compare LTE and LTE-A. [4]
- c) List out three, why there is a need of series of 802.11 standards. Describe the utility of IEEE802.11a and 802.11n. [7]

- Q7)** a) Explain step by step with neat diagram, how performance evaluation of a Real System is done. [6]
- b) Explain following network performance parameters used to manage service performance : [5]
- i) Throughput
 - ii) Packet loss
 - iii) Latency
 - iv) Availability and
 - v) Reliability
- c) What are four mechanisms to improve link robustness of wireless network. Explain any one in detail. [6]

OR

- Q8) a) Write a brief note on the Layered analysis in wireless networks. [6]
- b) What is Network Coding. With neat diagram, explain how network coding helps in video broadcasting from one device to multiple receivers. [5]
- c) With reference to Scheduler Design, explain following components in brief : [6]
- i) Classifier
 - ii) Channel Quality
 - iii) Scheduler
