Total No. of Questions : 8]

SEAT No. :

P-7597

[Total No. of Pages : 2

# [6180]-114

## 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. No. 1 or 2, Q. No. 3 or 4, Q5 or Q6 and Q7 or Q8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data; if necessary.***

***Q1)*** a) Explain different Channel Assignment Strategies. **[6]**

b) What is Handoff? Why is it necessary in Mobile Cellular System? Explain hand off scenario at cell boundary. **[8]**

c) What is Cell Sectoring? Explain with neat diagram. **[4]**

OR

***Q2)*** a) Derive the approximate formula for S/I using co-channel reuse ratio Q. **[6]**

b) A cellular service provider decides to use a digital cellular method that can tolerate a signal to noise interference ratio 15 dB in the worst case. What is the frequency reuse factor and cluster size for maximum capacity if the path loss exponent is n = 4 and n = 3? Assume that there are six co-channels in the first tier, and all of them at the same distance from the mobile. **[9]**

c) Differentiate between hard handoff and soft handoff. **[3]**

***Q3)*** a) Define and explain : **[8]**

i) CCR (call completion rate)
ii) Grade of Service
iii) Busy hour call Attempt.
iv) Calling rate and holding time

b) What is lost call system? Derive the first Erlang distribution for Lost call systems. **[9]**

***P.T.O.***

OR

***Q4)*** a) Explain the assumptions in traffic measurement. **[8]**

b) A group of 5 trunks is offered 2 Erlang of traffic. Find Grade of service, probability that only one trunk is busy, probability that only one trunk is free, probability that at least one trunk is free. **[9]**

***Q5)*** a) Explain the requirements of 5G? Also explain the open wireless architecture of 5G. **[9]**

b) Compare LTE and LTE A. **[7]**

c) List any four specifications of LTE. **[2]**

OR

***Q6)*** a) Explain the following IEEE standards : **[9]**

IEEE 802.11a, IEEE 802.11g, IEEE 802.11d, IEEE 802.11e, IEEE 802.11n, IEEE 802.11r.

b) Draw and explain LTE radio protocol architecture. **[9]**

***Q7)*** a) Explain in detail the why to evaluate the performance of a system and the procedure to performance evaluation of a system. **[8]**

b) Explain network coding and elaborate the use of Network Coding in wireless communication. **[9]**

OR

***Q8)*** a) Explain mechanisms by which a system could improve link robustness in wireless communication. **[8]**

b) Explain the classification of scheduling algorithm and explain the types of scheduling. **[9]**

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