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# 316206

**May, 2019**

**M.Tech. (CE/CN/CSE) II SEMESTER**

**Advanced Wireless and Mobile Networks ( MCS-18-212)**

Time : 3 Hours]  [Max. Marks : 75

*Instructions :*

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

## PART–A

**1.** (a) Describe how a fixed telephone to cellular phone call is made? (1.5)

(b) What is Grade of Service (GOS)? (1.5)

(c) Is it recommended to increase the cluster size in order to improve the signal-to-interference ratio? Justify. (1.5)

(d) Differentiate between hard handoff and soft handoff. (1.5)

(e) What is the basic function of an antenna? (1.5)

(f) Describe Phase shift keying? (1.5)

(g) What are Wireless Sensors? (1.5)

(h) Discuss DoS in wireless communication. (1.5)

(i) Describe the features of Tiny OS. (1.5)

(j) What is WiMAX? (1.5)

## PART–B

**2.** (a) What do you mean by system capacity of a cellular system? Derive the equation for it. (8)

(b) Prove that for a hexagon geometry, the co-channel reuse ratio can be given by $Q = \sqrt{(3N)} = D/R$. (7)

**3.** (a) A cellular system designed with 3-sector directional antenna and reuse pattern of 4. Compute the worst case S/I value at the mobile receiver located at the cell boundary? (8)

(b) What are hidden terminal and exposed terminal problems? Describe an access method for resolving these problems. (7)



**4.** (a) What are the benefits of cell splitting? A cellular system is originally designed with a larger hexagonal cell of radius of 20 km. In order to assign optimized channels in varying traffic it is overlaid with seven smaller regular hexagonal cells.

(i) What is the size of each smaller cell? Analyse the impact of splitting.

(ii) How is the received signal strength influenced by such an overlaid cellular system? (8)

(b) Explain Bluetooth and its major baseband states. (7)

**5.** (a) Describe distributed foundation wireless medium access control (DFWMAC) with RTS/CTS extension. (8)

(b) What are Mobile ad-hoc networks? How does dynamic source routing handle routing? (7)

**6.** Explain the protocol stack of WSN. Describe the role of management plane in detail. (15)

**7.** Write short notes on any *three* of the following :

(i) GSM system architecture.

(ii) Wireless networks vulnerabilities.

(iii) Vehicular Ad-hoc Networks.

(iv) WEP *v/s* WPA. (3×5=15)