

MCA Fifth Semester End Term Examination- 2023

Wireless Communication Network

MCA05E06

Time: 2 Hours

Full Marks: 50

The figures in the margin indicate full marks for the questions

Candidates are required to give their answers in their own words as far as practicable

Answer all the questions

Group A

(1X10=10)

1. (1) Which of the following measures spectrum efficiency of a wireless system?
 - 2) Spectral capacity
 - b) Channel capacity
 - c) Carrier capacity
 - d) Radio capacity
- (ii) _____ is a transmission method used in MIMO wireless communications to transmit encoded data signals independently.
 - a) MU-MIMO
 - b) STTD
 - c) SM
 - d) Collaborative Uplink MIMO
- (iii) Which of the following is a type of wireless communication?
 - a) LAN
 - b) WAN
 - c) PAN
 - d) All of the mentioned
- (iv) Which of the following specifies a set of media access control (MAC) and physical layer specifications for implementing WLANs?
 - a) IEEE 802.11
 - b) IEEE 802.16
 - c) IEEE 802.15
 - d) IEEE 802.3
- (v) Which of the following problems occur due to adjacent channel interference?
 - a) Cross talk
 - b) Missed calls
 - c) Blocked calls
 - d) Near-far effect
- (vi) What is meant by HIPERLAN and path loss?
- (vi) Differentiate an ad hoc network and a cellular network with respect to bandwidth usage and cost effectiveness
- (viii) List the transmission impediments of wireless channel.
- (ix) List the issues of designing a MAC protocol for ad-hoc networks.
- (x) Draw the frame format of IEEE 802.11 physical layer using FHSS.

Group B

2. (a) What is the relationship between a base station and a mobile switching center?
(b) What is reuse factor? Explain whether a low or a high reuse factor is better?
(c) What is mobility management? Distinguish between soft and hard handoff.

(3+4+3=10)

3. (a) Explain in brief the Frequency Hopping Spread Spectrum (FHSS) technique.
(b) Explain multi-path interference and a solution to it in brief.
(c) What are the characteristics and features of ad hoc networks? Why are ad hoc networks needed?

(4+4+2=10)

Group C

4. (a) State some advantages and disadvantages of Wireless LANs.
(b) Explain hidden station and exposed station problems? How they are solved?

(4+6=10)

- 5.(a) Compare a Piconet and Scatternet in the bluetooth architecture.
(b) What are the reasons that CSMA/CD cannot be used in a wireless LAN?

(5+5=10)

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