Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 30128

M.C.A. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2022.

Elective

MC 4018 — WIRELESS NETWORKING

(Regulations 2021)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Why is handover needed? What are the two general reasons for handover?

2. Why is power saving an absolute necessity for Bluetooth devices?

3. State the need for Session Initiation Protocol.

4. What is called a care of Address in Mobile IP?

5. List the functions of 3G-SGSN.

6. State the three different protocol planes of LU interface.

7. Mention the hardware components of Software Defined Radio.

8. How does efficient packet data transmission achieved in 4G networks?

9. Differentiate between LTE and VoLTE.

10. Give the capacity equation for Single Input Single output (SISO) system.

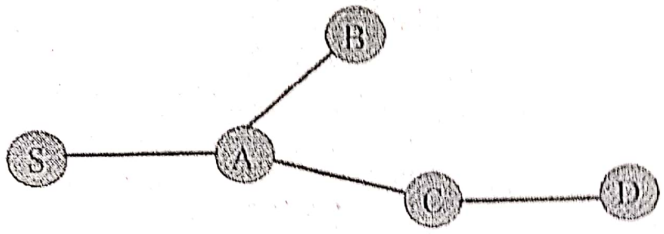
PART B — (5 × 13 = 65 marks)

11. (a) With a neat timeline diagram, show the working of CSMA/CA in 802.11 Wireless LANs using a minimum of 5 nodes contending to use the channel with different backoff timer values.

Or

(b) Discuss the working of EY-NPMA algorithm with an appropriate example to illustrate the steps followed in each phase of HIPERLAN.

12. (a) Why do the traditional routing algorithms used in wired networks cannot be used in mobile adhoc networks? Discuss the issues to be considered in the design of a routing algorithm for mobile adhoc network. Consider the following adhoc network. A Node S needs a route to D in the given ad hoc network topology, specify how the route discovery is done with hop count using DSR routing protocol.



Or

(b) State any two reasons why standard TCP falls in wireless and mobile environments. Compare and contrast any 5 techniques proposed for optimizing TCP in mobile and wireless environments.

13. (a) With a neat diagram, explain the architecture of UMTS in detail.

Or

(b) Explain LTE network architecture and associated protocols in detail.

14. (a) Explain the concept of Cognitive Radio and enumerate in detail its role in field of spectrum sensing by highlighting its bottlenecks.

Or

(b) Explain the key challenges faced by 4G networks and also propose solutions of how to mitigate those challenges.

15. (a) Sketch the block diagram of MIMO system and explain its salient features.

Or

(b) Discuss the vision, challenges, the air interface and the Ultra dense network architecture of 5G.

PART C — (1 × 15 = 15 marks)

16. (a) In a mobile network layer, assume a data packet is to be delivered from the correspondent node to a mobile node which is in some foreign network. Explain how a mobile node discovers its movement to a foreign agent and inform the home agent of the current location. Also discuss the mechanisms used for forwarding the packets between a home agent and care of address.

Or

(b) Imagine your friend in United States is calling you from a landline phone. At the time of the call, assume that you are roaming in a nearby city. Show the steps followed in routing the call to you indicating the various identifiers used during the call set up with respect to 3G LTE architecture. Also mention the signaling channels used at various points of call set up and call progress.
