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Question Paper Code : 10508

M.E./M.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Second Semester

Computer Science and Engineering

CP 5201 — NETWORK DESIGN AND TECHNOLOGIES

(Regulation 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Compare the features of SLIP and PPP in terms of client and server communication.
2. Depict the connectivity of switch, router and firewall in a network to filter in and out of flows.
3. Compare the network elements and signaling specifications of UMTS and WLAN.
4. What is the functionality of L2CAP? List the different types of logical channels it provides.
5. What is the role of BCCH and FCCH channels in GSM?
6. Name the connectionless and connection-oriented services provided by GPRS.
7. State the role of OFDM and DFT-precoded OFDM in LTE radio access.
8. List down the primary technologies used in 5G networks.
9. Mention the challenges in implementation of OpenFlow.
10. State the role of SDN controllers in a SDN framework.

PART B — (5 × 13 = 65 marks)

11. (a) Explain in detail about :

    (i) DWDM and OFDM (7)

    (ii) Firewalls and L3 switches. (6)

    Or

    (b) Discuss the functionality of the various internetworking devices and mention their specifications to handle the current network traffic. (13)

12. (a) Discuss in detail about Mobile WiMAX technologies which improves the performance indices in terms of speed, throughput and capacity. (13)

Or

(b) (i) Explain the role of transport and middleware protocol group of Bluetooth in detail. (6)

(ii) How IEEE 802.11e adopts WMM to cater the demands of multimedia QoS specifications? What are the major changes made with IEEE 802.11? (7)

13. (a) Explain the GSM handover schemes and state the reasons for their occurrence. What are all the resources need to be allocated during handover for data transmission using GPRS by satisfying QoS. (13)

Or

(b) (i) Discuss in detail about the protocol stack of GPRS. Elucidate your answer by stating the reasons for the various protocols existence and their role. (8)

(ii) What are the security features adopted by UMTS from GSM and list down the additional UMTS security features. (5)

14. (a) Discuss about the responsibilities of LTE's MME. Draw the network overview to depict the interfaces used by MME for carrying out those tasks. (13)

Or

(b) (i) State the parameters used as a measure to perform handover decisions by LTE compared with handover initiations in GSM. (5)

(ii) Explain how interconnection of LTE happens with GSM and UMTS networks. (8)

15. (a) (i) Mention the various network programmability models. Explain any one in detail with respect to the interaction between the control plane and data plane in the SDN framework. (8)

(ii) Write notes on network overlays with its features and advantages. (5)

Or

(b) Discuss in detail about centralized and distributed control and data plane approaches in SDN scenario by considering an example network application. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Design a next generation heterogeneous network scenario with an aim of green wireless infrastructure as its primary goal. Identify the suitable network elements, technologies and protocols to built this design. Depict the outline your framework in a diagram and justify your network design for green networking environment.

Or

(b) Consider a network application and design a SDN framework with hierarchical SDN controllers for that application and explain about the flow of control and data packets between the entities in the framework.

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