



**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES**

**B.Sc. (General) Degree in Information and Communication Technology
Second Year - Semester II Examination – September/October 2020**

ICT 2305 – COMPUTER NETWORKS

Time: Three (03) hours

Answer ALL questions

1.
 - a) Discuss the disadvantages of using computer networks with respect to the following:
 - i. Initial installation cost.
 - ii. Security. (4 Marks)
 - b) Explain the use of the following devices in computer networks:
 - i. Wireless Access Points.
 - ii. Gateways.
 - iii. Firewalls. (6 Marks)
 - c) Write short notes on each of the following:
 - i. Ethernets.
 - ii. Enterprise private networks. (6 Marks)
 - d) Explain the *tree* network topology. (4 Marks)

2.
 - a) Explain the following with respect to layered network architecture:
 - i. Peers.
 - ii. Protocols. (4 marks)
 - b) List the first five (05) layers of the OSI reference model. (5 marks)
 - c) Discuss the need or lack of need for a network layer in a broadcast network. (5 marks)
 - d) Briefly explain the functions of the two (02) main transport layer protocols of the TCP/IP reference model. (6 marks)

3. a) List the key elements of a data communications system. (5 marks)
- b) What is the relationship between a signal's spectrum and its bandwidth? (5 marks)
- c) Explain the following analog modulation techniques:
- i. AM
 - ii. FM (4 marks)
- d) Write short notes on each of the following:
- i. Attenuation.
 - ii. Asynchronous transmission. (6 marks)
4. a) What is the difference between unshielded twisted pair and shielded twisted pair? (4 marks)
- b) What are the major advantages of coaxial cables? (4 marks)
- c) Explain the followings with respect to wireless transmission:
- i. Directional configuration of antennas.
 - ii. Terrestrial Microwaves. (6 marks)
- d) What are the advantages and disadvantages of Radio Waves? (6 marks)
5. a) Explain how synchronous time-division multiplexing (TDM) works. (5 marks)
- b) Why would you expect 2D Parity Check to detect more errors than 1D Parity Check? (5 marks)
- c) Explain the Bit Stuffing method in framing. Show how to apply this method to the bit stream 111111111110111110111110. (5 marks)
- d) Explain the dotted decimal notation in IPv4 using a suitable example. (5 marks)

-END-