

**Uva Wellassa University of Sri Lanka**  
**Faculty of Science and Technology**  
**Department of Computer Science and Technology**  
**100 level 2<sup>nd</sup> Semester Examination – Dec./Jan. 2017**  
**CST131-2 Computer Networks I**



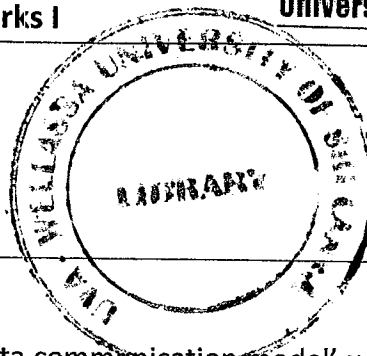
**Instructions to candidates**

**Duration:** Two (02) hours

**Number of questions:** Five (05)

**Mark allocation:** 100

**Answer any four (04) questions only.**



1.
  - a. Briefly explain the components of 'simplified data communication model' using a diagram. (6 mark)
  - b. Define computer network and give an example. (3 mark)
  - c. Describe the use of computer networks in following application areas.
    - i. Home application (4 mark)
    - ii. Mobile application (4 mark)
  - d. Explain the following transmission technologies and give an example for each.
    - i. Broadcast link (4 mark)
    - ii. Point-to-point link (4 mark)
  
2.
  - a. Name the ISO – OSI seven (07) layers in proper order and briefly explain the functionality of any two (02) layers. (8 mark)
  - b. State two (02) reasons for using layered architecture in network protocol design. (2 mark)
  - c. Briefly explain guided media and give two (02) examples. (3 mark)
  - d. Briefly explain the following terms.
    - i. Network Header (4 mark)
    - ii. Network Protocol (4 mark)
  - e. List and briefly describe two (02) Transmission Control Protocols (TCP). (4 mark)
  
3.
  - a. Briefly explain the client server architecture by using a diagram. (4 mark)
  - b. If you classify computer networks according to the scale, name and describe the different categories. (5 mark)
  - c. Briefly explain 'periodic signal'. (3 mark)
  - d. Name the parameters of a sine wave. (3 mark)
  - e. Compare and contrast Internet Protocol address version 4 (IPv4) with Internet Protocol address version 6 (IPv6). (5 mark)
  - f. Compare Personal Area Network (PAN) with Wide Area Network (WAN). (5 mark)

4.

- a. Briefly explain how data travels through fiber cable by using a diagram. (5 mark)
- b. Explain all the terms in '10Base-5'. (3 mark)
- c. If a periodic signal is decomposed into five (05) sine waves with frequencies of 200, 400, 600, 800 and 900 Hz, what is the bandwidth of the above sine wave? (2 mark)
- d. A periodic signal has a bandwidth of 20 Hz. The highest frequency is 60 Hz. What is the lowest frequency? (2 mark)
- e. Change the following IPV4 address from binary notation to dotted decimal notation. 10000001 00001011 00011011 11100010 (2 mark)
- f. State the network identification (net\_id) and the host identification (host\_id) of the 192.248.48.3 class full IP address. (4 mark)
- g. Suppose you need to create sub networks on the 192.248.2.3/24 network address block.
  - i. What is the class of the above IP address? (1 mark)
  - ii. What is the default subnet mask of the above IP address? (3 mark)
  - iii. How many binary digits are required to create eight (08) subnets in the above given IP address? (3 mark)

5.

- a. Explain how transmission impairments affect analog signals and digital signals. (2 mark)
- b. List and briefly describe three (03) main types of impairments which could occur in a transmitted signal. (6 mark)
- c. List four (04) categories of Noise in transmission media and briefly explain any two (02). (6 mark)
- d. Briefly explain the following terms. (4 mark)
  - i. Internet
  - ii. Internet Service Provider (ISP)
- e. With an aid of a diagram explain Domain Name System (DNS) hierarchy and give two (02) examples for top level domain. (5 mark)
- f. List two (02) services provided over the Internet. (2 mark)