VASAVI COLLEGE OF ENGINEERING (Autonomous) IBRAHIMBAGH, HYDERABAD-500031

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Name of the Course: **Computer Networks**

ASSIGNMENT - 1

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| Name of the Faculty: **Dr M Jithender Reddy** | Date of Submission: **010-10-23** |
| Class : **B.E.** Section: **A** Sem: **V**  Academic Year: **2023-24** | Time: **10.40 AM** -**11.40 AM** |

Set-I (1602-21-733-005,012,013,020,026,029,032,036,037,063)

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| **Q.No.** | **Description of the Question** | **Mar ks** | **BTL**  **(1/2/3/ 4/5/6)** | **Mapped** | |
| **CO** | **PO** |
| 1 | The ping program allows you to send a test packet to a given location and see how long it takes to get there and back. Try using ping to see how long it takes to get from your location to several known locations. From these data, plot the one-way transit time over the Internet as a function of distance. It is best to use universities since the location of their servers is known very accurately. For example, berkeley.edu is in Berkeley, California; mit.edu is in Cambridge, Massachusetts; vu.nl is in Amsterdam; The Netherlands; www.usyd.edu.au is in Sydney, Australia; and www.uct.ac.za is in Cape Town, South Africa. | 4 | 3 | 1 | 1,2,  3 |

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| 2 | A system has an n-layer protocol hierarchy. Applications generate messages of length M bytes. At each of the layers, an h-byte header is added. What fraction of the network bandwidth is filled with headers? | 1 | 03 | 1 | 1,2,  3 |

SET-II (1602-21-733-001 to 004, 006,007,008)

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| **Q.No.** | **Description of the Question** | **Mar ks** | **BTL**  **(1/2/3/ 4/5/6)** | **Mapped** | |
| **CO** | **PO** |
|  | Ethernet and wireless networks have some similarities and some differences. One property of Ethernet is that only one frame at a time can be transmitted on an Ethernet. Does 802.11 share this property with Ethernet? Discuss your answer. | 3 | 3 |  | 1,2,  3 |
|  | A system has an n-layer protocol hierarchy. Applications generate messages of length M bytes. At each of the layers, an h-byte header is added. What fraction of the network bandwidth is filled with headers? | **2** | **3** | 1 | **1,2,3** |

SET-III (1602-20-733-009 to 011, 014 to 017)

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| **Q.No.** | **Description of the Question** | **Mar ks** | **BTL**  **(1/2/3/ 4/5/6)** | **Mapped** | |
| **CO** | **PO** |
|  | When a file is transferred between two computers, two acknowledgement strategies are possible. In the first one, the file is chopped up into packets, which are individually acknowledged by the receiver, but the file transfer as a whole is not acknowledged. In the second one, the packets are not acknowledged individually, but the entire file is acknowledged when it arrives. Discuss these two approaches. | 3 | 3 | 1 | 1,2,  3 |
|  | To illustrate why TCP/IP is so commonly used, compare the OSI model and TCP/IP model. | **2** | **3** | 1 | **1,2,3** |

SET-IV (1602-21-733-018,019,021 to 025)

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| **Q.No.** | **Description of the Question** | **Mar ks** | **BTL**  **(1/2/3/ 4/5/6)** | **Mapped** | |
| **CO** | **PO** |
|  | What does ‘‘negotiation’’ mean when discussing network protocols? Give an example. | 5 | 3 | 1 | 1,2,  3 |
|  | The performance of a client-server system is strongly influenced by two major network characteristics: the bandwidth of the network (that is, how many bits/sec it can transport) and the latency (that is, how many seconds it takes for the first bit to get from the client to the server). Give an example of a network that exhibits high bandwidth but also high latency. Then give an example of one that has both low bandwidth and low latency. |  |  |  |  |

SET-V (1602-21-733-027 to 028, 030,031, 033 to 035)

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| **Q.No.** | **Description of the Question** | **Mar ks** | **BTL**  **(1/2/3/ 4/5/6)** | **Mapped** | |
| **CO** | **PO** |
|  | List two advantages and two disadvantages of having international standards for network protocols.  Suppose the algorithms used to implement the operations at layer k is changed. How does this impact operations at layers k − 1 and k + 1? | 3 | 3 | 1 | 1,2,  3 |
|  | When a file is transferred between two computers, two acknowledgement strategies are possible. In the first one, the file is chopped up into packets, which are individually acknowledged by the receiver, but the file transfer as a whole is not acknowledged. In the second one, the packets are not acknowledged individually, but the entire file is acknowledged when it arrives. Discuss these two approaches. | **2** | 3 | 1 | 1,2,  3 |

**SET-VI (1602-21-**733**-038 to 044)**

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| **Q.No.** | **Description of the Question** | **Mar ks** | **BTL**  **(1/2/3/ 4/5/6)** | **Mapped** | |
| **CO** | **PO** |
| 1 | Assume that the probability that a bit in a data unit is corrupted during transmission is p. Find the probability that x number of bits are corrupted in an nbit data unit for each of the following cases. a. n = 8, x = 1, p = 0.2 b. n = 16, x = 3, p = 0.3 c. n = 32, x = 10, p = 0.4 | 3 | 3 | 1 | 1,2,  3 |
| 2 | What are two reasons for using layered protocols? What is one possible disadvantage of using layered protocols? | 2 | 3 | 1 | 1,2,  3 |

SET-VII (1602-21-733-046 to 049 051, 052 to 054)

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| **Q.No.** | **Description of the Question** | **Mar ks** | **BTL**  **(1/2/3/ 4/5/6)** | **Mapped** | |
| **CO** | **PO** |
| 1 | A system has an n-layer protocol hierarchy. Applications generate messages of length M bytes. At each of the layers, an h-byte header is added. What fraction of the network bandwidth is filled with headers? | 5 | 3 | 1 | 1,2,  3 |
| **2** | Ethernet and wireless networks have some similarities and some differences. One property of Ethernet is that only one frame at a time can be transmitted on an Ethernet. Does 802.11 share this property with Ethernet? Discuss your answer. |  |  |  |  |

**SET-VIII (1602-21-733-055 to 061)**

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| **Q.No.** | **Description of the Question** | **Mar ks** | **BTL**  **(1/2/3/ 4/5/6)** | **Mapped** | |
| **CO** | **PO** |
| 1 | Write a program that implements message flow from the top layer to the bottom layer of the 7-layer protocol model. Your program should include a separate protocol function for each layer. Protocol headers are sequence up to 64 characters. Each protocol function has two parameters: a message passed from the higher layer protocol (a char buffer) and the size of the message. This function attaches its header in front of the message, prints the new message on the standard output, and then invokes the protocol function of the lower-layer protocol. | 4 | 3 | 1 | 1,2,  3 |
| 2 | Ethernet and wireless networks have some similarities and some differences. One property of Ethernet is that only one frame at a time can be transmitted on an Ethernet. Does 802.11 share this property with Ethernet? Discuss your answer. | 1 | 3 | 1 | 1,2,  3 |

SET-IX (1602-21-733-062, 064 to 067, 135, 136)

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| **Q.No.** | **Description of the Question** | **Mar ks** | **BTL**  **(1/2/3/ 4/5/6)** | **Mapped** | |
| **CO** | **PO** |
| 1 | Develop a web application which keeps track of data about students academic background and helps HR manager to generate eligibility list wrt a Company. There should be provision to capture the data of a candidate through multiple forms. Use the appropriate styling for creating rich interface and perform the necessary validation  using JavaScript | 5 | 3 | 1 | 1,2,  3 |

SET-X (1602-21-733-301 to 307)

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| **Q.No.** | **Description of the Question** | **Mar ks** | **BTL**  **(1/2/3/ 4/5/6)** | **Mapped** | |
| **CO** | **PO** |
| 1 | The performance of a client-server system is strongly influenced by two major network characteristics: the bandwidth of the network (that is, how many bits/sec it can transport) and the latency (that is, how many seconds it takes for the first bit to get from the client to the server). Give an example of a network that exhibits high bandwidth but also high latency. Then give an example of one that has both low bandwidth and low latency. | 4 | 3 | 1 | 1,2,  3 |
| 2 | Ethernet and wireless networks have some similarities and some differences. One property of Ethernet is that only one frame at a time can be transmitted on an Ethernet. Does 802.11 share this property with Ethernet? Discuss your answer. | 1 | 3 | 1 | 1,2,  3 |