**AUTUMN Mid Semester Examination -2019**

**Computer Networks**

**[IT 3001]**

**Full Mark: 20 Duration: 1 hours.**

**Answer any FOUR questions including Question No.1, which is compulsory.**

*The Figure in the margin indicates full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*All parts of the question should be answered at one place only.*

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| **1.** |  | **[1 x 5 = 5]** |
| **(a)** | **Name the transport layer protocols used to support electronic mail and domain name service?** | |
| **(b)** | What is classless IP addressing. State the advantage and limitation of this addressing over classful addressing. | |
| **(c)** | What is use of GET method in HTTP. Explain briefly can a client put a condition while requesting a server for any resource. | |
| **(d)** | Assume that a new client-server application program that requires persistent connection. Can we use UDP as the underlaying transport layer protocol for this new application. | |
| **(e)** | If the value of HLEN field in TCP is 1110, how many bytes of options are included in the segment? If this value is used in total length field in UDP how much data in bytes the segment carries. | |

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| **2.(a)** | **Explain the IPv4 header format.** |  |
| **(b)** | One class B network on the Internet has a subnet mask of 255.255.240.0. What is the maximum number of hosts per subnet? |  |

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| **3.(a)** | **Why the congestion control is required in TCP. Why we use 3 duplicate Ack to detect the congestion? Explain the working of slow start, congestion avoidance and fast recovery steps in details with a suitable graph.** |  |
| **(b)** | The following is the contents of a UDP header in hexadecimal format: **CB84000DD001C001C.**  Find the source port number, destination port number, length of the user datagram and length of the data. |  |

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| **4.(a)** | **Briefly discuss the network layer services. What are the advantages of virtual circuit approaches over datagram?** |  |
| **(b)** | 1. **Explain the working of the DNS protocol in details. What is web caching, how it is helpful load over network?** |  |

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| **5.(a)** | **In sliding window protocols, what is the relationship among sequence numbers, sender window size and receiver window size. Explain why such relationship is required and what happen if we don’t follow it.** |  |
| **(b)** | Compare the range of 16-bit addresses, 0 to 65,535 with the range of 32 bit addresses, 0 to 4, 294, 967, 295. Why do we need such a large number of IP addresses, but only a relatively small range of port numbers? |  |

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| **6.(a)** | With non persistent connection between browser and origin server, is it possible for a single TCP segment to carry two distinct HTTP request message? Explain your answer. |  |
| **(b)** | Explain why the size of the sender window must be less than 2m for Go-Back-N ARQ. |  |

**\*\*\* ALL THE BEST \*\*\***