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**Presidency University**

**Bengaluru**

**SCHOOL OF ENGINEERING**

**MIDTERM EXAMINATION – MAY 2023**

**Semester**: 8th

**Course Code**: ECE 5003

**Course Name**: Advanced Computer Networks

**Program & Sem**: Btech & 8th semester (Latrobe)

**Date**: 18-MAY-2023

**Time**: 10.30AM – 12.00PM

**Max Marks**: 60

**Weightage**: 30%

**Instructions:**

1. ***Read Questions carefully and answer accordingly***
2. ***Scientific and Non- programmable calculators are permitted***
3. ***This question paper contains two pages***

**Part A**

**Answer all the Questions. Each question carries 2 marks. (5Qx2M=10)**

**(CO: 1, Knowledge Level)**

1. Each layer of OSI model is responsible for particular job. Which layer in OSI model is responsible for source to destination delivery of packets possibly across multiple networks? **(CO: 1, Knowledge Level)**
2. Data communication refers to the exchange of data between a source and a receiver via form of transmission media such as a wire cable. ATM wide area network uses which type of framing? **(CO: 1, Knowledge Level)**
3. Protocol means rules and regulation to perform specific tasks of a layer. Different protocols are designed for different parameters like in presence of noise, hacking, intruder attacking etc. name a Protocol for noiseless channel? **(CO: 2, Knowledge Level)**
4. In layered architecture data moves from one defined level of processing to another. Different network models have different number of layers. The protocol data unit in data link layer is called? **(CO: 2, Knowledge Level)**
5. Internetworking refers to the trade, products, and procedures that meet the challenge of making and administering internetworks. To enable communication, every individual network node or phase is designed with similar protocol or communication logic. Internetworking protocol transports data in packets called? **(CO: 2, Knowledge Level)**

**Part B**

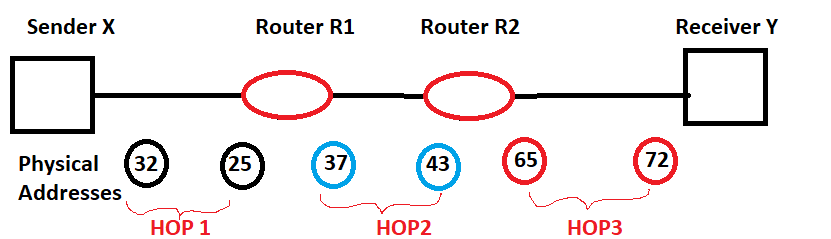
**Answer all the Questions. Each question carries 10 marks. (2Qx10M=20)**

1. There are 3 stations in a network and are trying to send on the shared communication channel without checking the channel status or even worrying if anyone else wants to send. The stations are sending on the channel randomly, whenever they have data to send. Which multiple access method is used for the above transmission? Explain this protocol in detail. **(CO: 2, Comprehension Level)**
2. To improve the efficiency of transmission, multiple frames must be sent in transition while waiting for acknowledgement. Identify the error control protocol of the data link layer in which the receiver window size is fixed to one and the sender sends several frames before receiving the acknowledgement. Explain the same with the flow diagram assuming that no data is lost but some acknowledgements are delayed and one is lost.

**(CO: 2, Comprehension Level)**

**Part C**

**Answer All the Questions. Each question carries 15 marks. (2Qx15M=30)**

1. In a large room with many people, two people can talk in English if nobody else understands English. Another two people can talk in Chinese if they are the only ones who understand Chinese, and so on. In other words, the common channel, the space of the room in this case, can easily allow communication between several couples, but in different languages. Which Channelization technique is used for the above scenario? Explain that channelization technique in detail. Let us assume we have four stations 1, 2, 3, and 4 connected to the same channel. The data from station 1 is bit0, from station2 is bit0, from station3 no transmission and from station4 is bit1.Explain the procedure in CDMA with encoding and decoding, if Station3 wants to listen to station1. The codes assigned to station1 is C1 [+1 +1 +1 +1], station2 is C2 [+1 -1 +1 -1], station3 is C3 [+1 +1 -1 -1] and station4 is C4 [+1 -1 -1 +1]. **(CO: 2, Knowledge Level)**
2. A) Let a route between Sender with NL address “X” and Receiver NL address “Y” be going through 2 routers, R1 and R2. As we know, at DLL, only the MAC Layer gets encapsulated and de-capsulated at each router, while the logical addresses of NL gets encapsulated and de-capsulated only at the End Machines. Let the route be shown as follows. Show Encapsulation and de-capsulation at all stages. **(CO: 1, Knowledge Level)**

B) 5. We know that framing can be done by various methods, and in a given situation we are using Character oriented framing. Let Flag Sequence be = 0111 1110 and Escape sequence = 1000 0001. If the data given by the NL at the sender to the DLL is as follows – show both byte stuffing at sender and De-stuffing at the receiver **(CO: 1, Knowledge Level)**

1001 0011 1100 0111 1110 0101 1000 0001 1010 0110 0111 1110 1011 1111