

## Sessional Assignment, Course: - Mobile Computing

**Deadline: - Mentioned on SIC**

**Marks: - 20**

**Program: - BS (CS), BS-SE**

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**Related Course: Lecture 7 and 8.**

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**Q1: In what aspects is an Adhoc network different from infrastructure networks?**

**ANSWER:**

### **ADHOC NETWORK;**

**An Ad-hoc network** allows each device to communicate directly with each other. There is no central Access Point controlling device communication. Ad-hoc networks are only able to communicate with other Ad-hoc devices, they are not able to communicate with any Infrastructure devices or any other devices connected to a wired network. Besides, Ad-hoc mode security is less sophisticated compared to an Infrastructure mode network.

### **INFRASTRUCTURE NETWORK;**

In the case of an infrastructure network, this network requires the use of an Access Point. The Access Point controls Wireless communication and offers several important advantages over an Ad-hoc network. For example, an Infrastructure based network supports increased levels of security, potentially faster data transmission speeds, and integration with a wired network.

### ***Characteristics of the Infrastructure network***

#### **Communication**

<b>Devices</b>	Through an access point
<b>Security</b>	More security options
<b>Range</b>	Determined by the range and number of access points
<b>Speed</b>	Usually faster

### ***Characteristics of the Ad hoc network***

#### **Communication**

<b>Devices</b>	Directly between
<b>Security</b>	WEP or no security

<b>Range</b>	Restricted to the range of individual devices on the network
<b>Speed</b>	Usually slower

**Q2: What is the difference between reactive and proactive routing protocols in MANETS?**

**ANSWER:**

**Proactive protocols**

In MANET proactive routing protocol, each node in the available network maintains a singular or multiple routing tables that are updated regularly. Each of the nodes will transmit a broadcasting message to all the other nodes in the network to result to detect the changes in their network topology.

**Advantages:**

1. Increases availability of the network, highly as this protocol provides the actual information.

**Disadvantages:**

1. Additional cost (maintenance) overhead for storing up-to-date information.
2. Throughput is very less compared to other ad hoc routing protocols.

**Reactive Protocols**

In MANET Reactive routing protocol, each node in the available network discovers or finds its destination route using on-demand.

This on-demand route finding is done via flooding CM (control messages), through broadcast which is global. Once route discovery is done the bandwidth is used for message transmission or exchanging data.

Example: AODV Protocol, ABR Protocol.

**Q3: Differentiate between regular and MPR flooding?**

**ANSWER:**

**MPR FLOODING**

MPR flooding stands for multipoint relaying flooding, The concept of multipoint relaying refers to minimize the number of duplicate retransmissions while forwarding a broadcast packet. The technique stops the set of nodes retransmitting a packet from all other nodes to a subpart of all nodes.

The size of this subset always depends on the topology of the available network

**REGULAR FLOODING**

Regular flooding is the term in computer networks which is forward by a router of a packet from any nodes to other nodes attached to the router expect the nodes from which the packet has been arrived initially.

It is a way to distribute routing information updates to every node in a large network

**Q4: On which path is the route reply message sent in DSR?**

**ANSWER:**

The destination node of the route request message in DSR cannot use the reverse route to send the route reply message because DSR assumes that the wireless links are unidirectional. So, the return route may not be operational.

**Q5: What is source routing?**

**ANSWER:**

In computer networking, Source routing is a specific routing process where senders can specify the route that data packets take through a network. This allows for troubleshooting and various transmission goals. Source routing is also called path addressing and it is an alternative to traditional routing where packets just move through a network based on their destination.

**Q6: If AODV does not store route information in the packet then how does the routing works?**

**ANSWER:**

AODV is a very efficient and effective routing protocol for Mobile Adhoc Networks. AODV does not have which do not have fixed topology. It allows these mobile computers or nodes to pass messages through their neighbors to nodes with which they cannot directly communicate. The route reply uses the RREP message that can be only generated by the destination host or the hosts who have the information that the destination host is alive and the connection is fresh. AODV does this by discovering the routes along which messages can be passed.

**Q7: What are the functions of sequence numbers in AODV?**

**ANSWER:**

Sequence numbers in AODV make the protocol different from the other on-demand routing protocols. A sequence number acts like a timestamp that is used to know the freshness of a route. The sequence number determines if the path from the source to the destination is up to date.

AODV maintains three entries in the routing table of each node. First, next hop, second, a sequence number and third, the hop count. When a node, that is an intermediate node between the source and the destination, receives an RREQ packet, makes a comparison of the sequence number of RREQ message with its sequence number. If the sequence number of the node is greater than the sequence number in the RREQ packet, the route is considered more up to date.

**Explanation:**

AODV protocol always makes sure the following property all the time-

$Seq(a) < Seq(b)$  And  $(Seq(A) = Seq(b) \text{ or } count(a) > hcount(b))$

Where,  $Seq(a)$ ,  $Seq(b)$  implies to the sequence number of hop a and hop b

And  $count(a)$  and  $count(b)$  refers to hop count of a and hop count of b

Also, Hop "a" is the sender hop and "b" is the intermediary hop to the destination