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|  | 1. A)   Answer:    Reflection  When a radio wave clash with a change in medium some of it may propagate into the new medium or some of it can be reflected. There are now two parts to this wave. The segment which is transferred would be known as the transmitted wave and the segment which is reflected would be the reflected wave. Reflection would occur at large obstacles. The way this works is as follows.  Refraction  When the radio wave arrives at a new medium it can cause the alteration of the propagation speed. This will cause a change in direction of the wave. This is dependent on the density of the medium. An example of this is if a medium lowers the speed of propagation the wavelength will be resulted in becoming shorter. The link between the angles and indices of refraction is provided bySNELLS LAW. The way this works is shown below.  Diffraction  When a wave passes through an opening the waves spread out, which is known as aperture. Diffraction often occurs at edges. The wave is affected by the aperture. If it is large the wave has no effect and if it small, it will be spread equally in all directions. This is shown below.  Shadowing  Shadowing is when the power of the signal varies because of the objects in the path of the propagation. This is shown below.  Scattering  Scattering is a propagation which occurs when the signal is interrupted by any small object. This can be an object such a traffic light etc. the waves would then be redirected in different directions. This is shown as below.  Answer:     1. A)   Answer:     * When handover is needed, and the 2 nodes are not assigned to one RNC, only one RNC is in command * This RNC is now in charge of forwarding packets to the CN and receiving packets from the CN. * If the UE uses the higher cell the higher RNC will play as the SRNC. * If the UE uses the lower cell the lower RNC will play as the DRNC this is done by something called splitting as it is done using the Iur. * SRNC would then forward packets which has been obtained via DRNC from the lower node * SRNC would then merge both packets and transfer it to the CN * The UE lowers and SRNC nodes do not forward. * SRN relocates * This results in Hard handover.   B)  Answer:   1. A)   Answer:    There can be many means of interference in a mobile network such as.   * Interference from a non-cellular device * When a call is being made via an adjacent cell * When two or more base stations have the identical frequency band * When there is an addition mobile device in the identical cell.   In voice call this would affect this would cause cross talk. Regarding control channels this would cause blocking.  B)  Answer:  By preventing contact with a neighbouring base stations and users of mobile devices adjacent cells are allocated to separate channel groups (these cells are nearby).  This initiates the same frequency channels to be utilised/reused when a call is made. this would be determined as the cells were a significant distance apart.  The frequency will be able to be reused more times as the same channel cells.  These are called co-channel cells and they have an interference level which can suffice.    C)  Answer:  QoS problems which include.   * Increased amount of reservations * Tunneling is a problem   Firewalls problems which include.   * Mobile IP can’t be utilized simultaneously with firewalls.   Security problems which include.   * Export restrictions * Patent restrictions * Protocol has not been standardized   There a few problems with using IP and standard routing protocols. One challenge is that IRP are not constructed for roaming nodes.  In particular they are not designed for mobile routers. Missing these added functions, the addressing cannot be carried out and incorrect addressing would be taking place.  The standard routing protocols which are from the internet can only deal with failures on a small scale. For example, in overload circumstances on a small scale this can be dealt with.   1. A)   Answer:    Distribution system:  Connection of a network which would make 1 logical network.  Portal:  This allows connection to other wired networks. This works as a bridge.  Access point:  this is cohesive with a WLAN using the station.  BSS:  These all use the same radio frequency.  STA:  These are terminals which have access to a wireless medium.  They also have radio communication with an access point.  B)  Answer:  This is an attribute of CDMA. A UE can obtain signals from 3 different antennas that can be from 3 different node B’s.  If the UE uses the lower cell the lower RNC will play as the DRNC this is done by something called splitting as it is done using the Iur. This then is forwarded to the B nodes. The UE is then merged.  As now the UE is getting packets from various antennas concurrently means the handover is now classed as soft.   1. A)   Answer:    Fast retransmit:  TCP may create an instant response when a out of order segment is obtained. This duplicate response will not be delayed.  The purpose of the duplicate is allowing the other end to be notified that a segment was received out of order and what sequence number to now expect.  TCP does not know if the duplicate is a result of lost segments or reordering of the segments. This means it waits for a small quantity of dupes to be accepted. The figure shows how this is carried out.  Slow start:  TCP slow start again is another algorithm which balances the speed of a network connection. This is one of the main and first steps when congestion control occurs.  The main aim is to balance the quantity of data the sender can transmit which can be known as the congestion window with the quantity of data the receiver can receive which is known as the receiver window.  Slow start slowly improves the quantity of information transferred till it gets the network’s highest carrying capability. A sender transmits to a receiver. Original packet comprises of a little congestion window. The receiver then accepts the data and then replies with a window size of its own. This is show in the figure attached.  B)  Answer:   1. Proficiency and scalability:  * There is a backing of a large amount of mobile systems * Just a few added messages to a mobile system are needed  1. Compatibility:  * The end infrastructure can transmit with fixed systems * There a no adjustments need to the existing end systems * The same layer 2 protocol can be supported  1. Transparency:  * The IP addresses can be kept the same for the mobile systems * The connection point can be altered on the network * Transmission can still be carried out even following any disturbance  1. A)   mobile host  access point  (foreign agent)  “wireless” TCP  Answer:  I-TCP segments a TCP connectivity into a fixed part and a wireless part. In this arrangement the mobile host uses two address which is the permanent and care-of address. The foreign agent functions can be done by the mobile itself.  Standard TCP is being utilized amongst the mobile host and the access point.  Optimized TCP protocol is being utilized amongst the mobile host and access point.  After this the access point is now behaving as a proxy. This results in the access point being portrayed as the mobile host by the fixed host and vise versa.  Amongst the access point and the mobile host, a specific TCP designed to wireless links is applied. There is now only a short delay on the hop. Also, higher latency is likely as the data between the new and old FA is buffering.  B)  Answer:    As soon as a handover takes place, I-TCP some changes need to be made. As shown in the figure, more than packets need to be diverted, mobile IP, for example.   * Once handover is completed the last proxy must now forward data to the fresh proxy. * The packets must be transmitted utilizing mobile IP * The access point plays as a proxy buffering data for retransmission * Once registered the new FA can detail its whereabouts to the old FA so packet forwarding can take place.   Transmission errors are not spread to the fixed network which can be a major advantage. It is also straightforward to control as M-TCP is only used for 1 hop which is in between FA and the mobile host. |
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