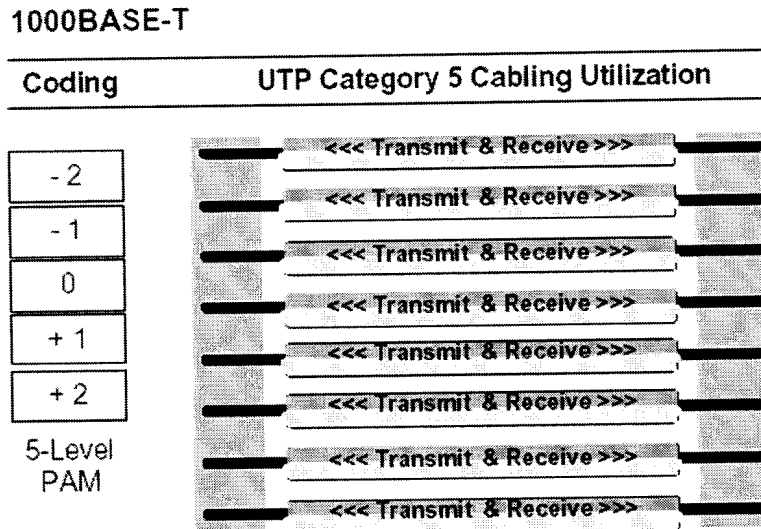


4. The picture below shows 1000BASE-T using UTP Category 5. Please explain how Gigabit Ethernet can generate 1 Gbps speed on this cable. (10 marks)



Answer

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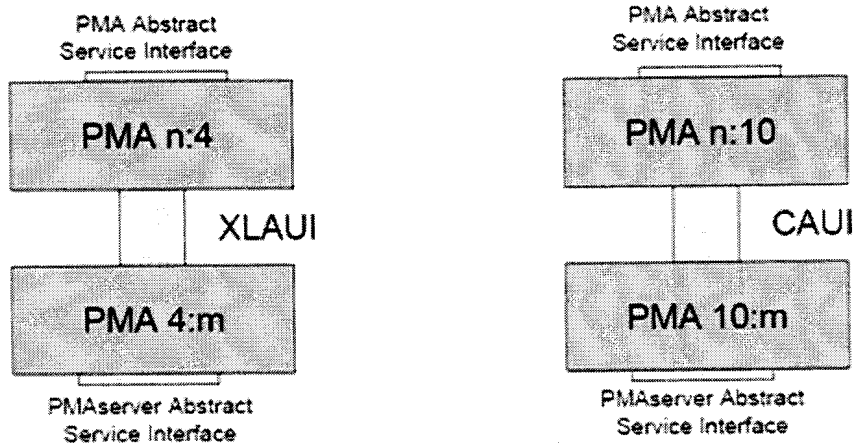
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5. Below are shown the 40 Gigabit Ethernet and 100 Gigabit Ethernet Protocol Architectures. Please explain how each works, show their differences of traffic lanes mapping (10 marks)



Answer:

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6. The table below is a comparison between 1000Base-T and 10GBase-T. What are A, B, and C? (5 marks)

1000BASE-T	10GBASE-T
5-level coded PAM signaling (2 information bits/symbol)	A
8-state 4D Trellis code across pairs	8-state 4D Trellis code across pairs
Full duplex echo-cancelled transmission	B
125 Mbaud, ~80 MHz used bandwidth	833 Mbaud, ~450 MHz used bandwidth
No FEXT Cancellation	C

Answer

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7. 10G uses 4 pairs in each cable (same as 1000BASE-T). The encoding uses 3 information bits per symbol (baud) with baud rate: ~ 833 MBaud. Please explain how 10G can achieve 10 Gbps. (10 marks)

Answer

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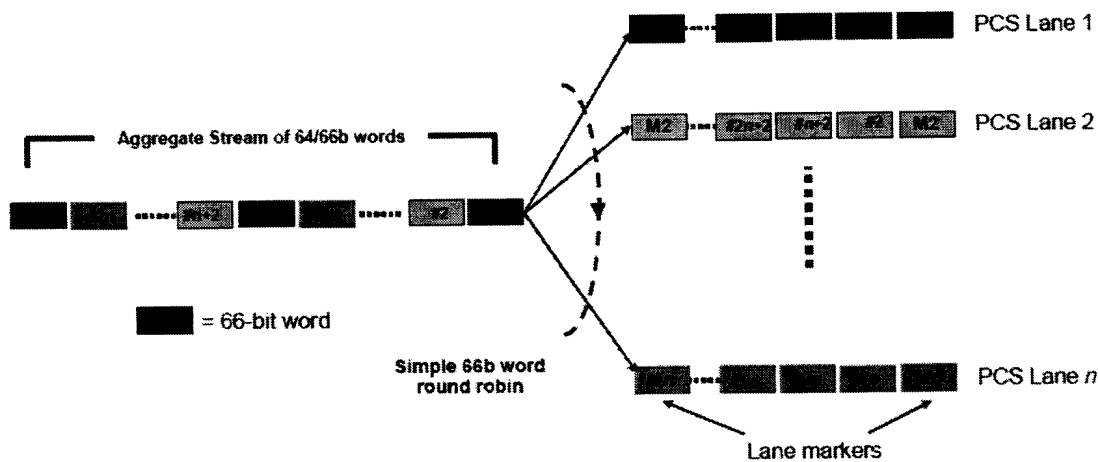
8. The table below is a comparison between 1000Base-T and 10GBase-T What are A, B, and C? (5 marks)

Feature	Gigabit Ethernet	10 Gigabit Ethernet
IEEE standard	802.3z	802.3ae
Media support	Copper and optical fiber	Optical fiber
Mode(s) of operation	Half and full duplex	(A)
Coding scheme	(B)	64B/66B
PMD layer	From fiber channel	New
Transmission range	5 km	40 km
SONET/SDH attachment	(C)	Yes

Answer

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9. In 100 G Ethernet, “Multilane Distribution (MLD)” is used. The MLD scheme implemented in the PCS is fundamentally based on a striping of the 66-bit blocks across multiple lanes. Please explain, how 100 G Ethernet can achieve 100 Gbps. (5 marks)



Answer

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11. A car is connecting to the Internet. What happens when the car is moving? In cases of:
- Change of point of attachment,
- Change of IP sub-network
In such cases, what are the problems? (10 marks)

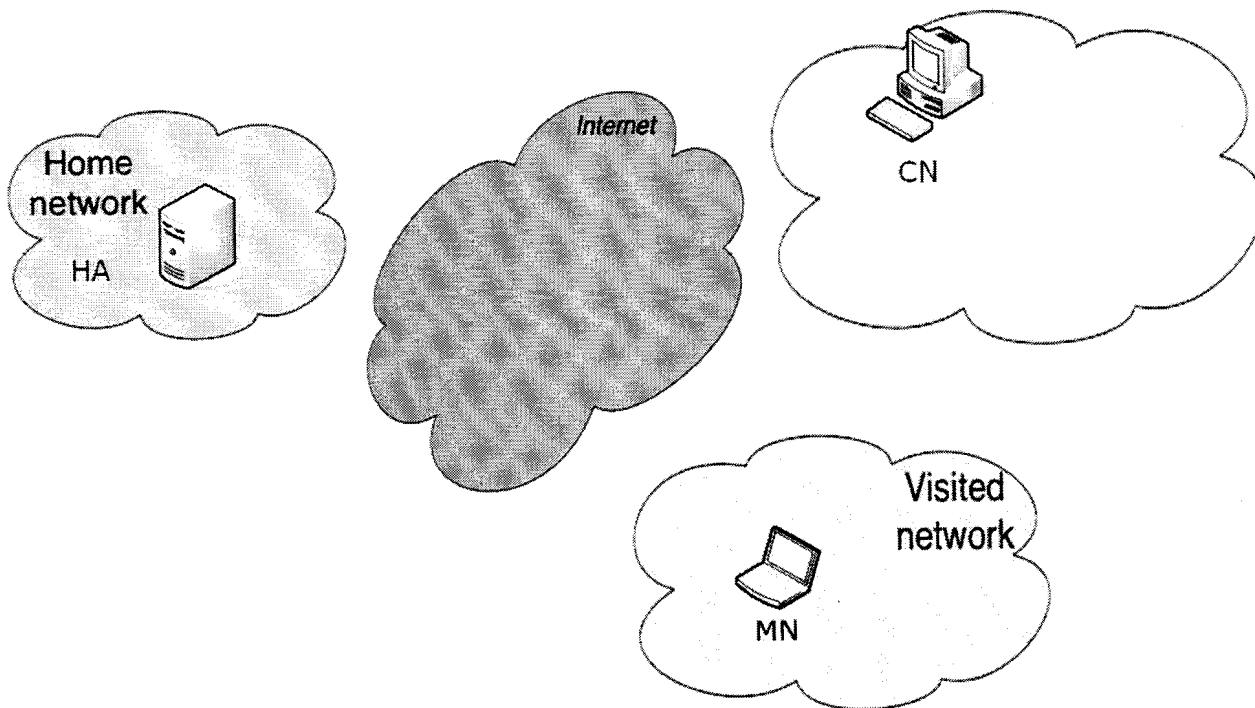
Answer

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12. What is the main difference between MIPv6 and NEMO?

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13. Below is a scenario of using MIPv6. MN just moved to into the visited network. Please describe the signal flow showing s how MIPv6 works in this scenario.



14. Please give 3 reasons why we need HA in MIPv6.

Answer

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15. Please describe how the triangular routing problem happens in MIPv6

Answer

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16. Please give your analysis of how many round trips are needed during hand over period until MN can communicate with CN.

Answer

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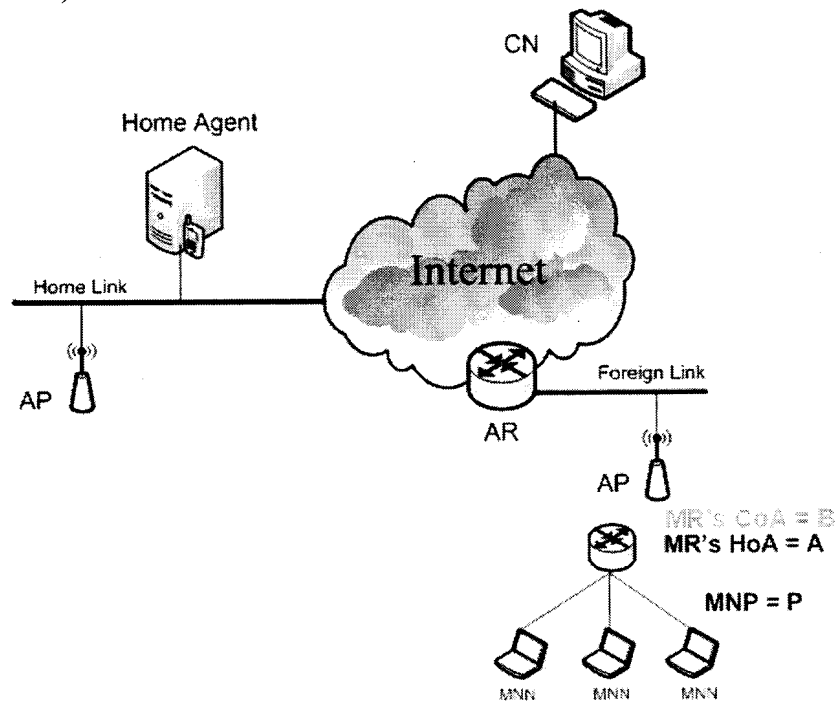
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17. The picture shows a scenario of NEMO happening where a Mobile Router (MR) moved from its Home Link to a Foreign Link. Please describe the steps of establishing a connection between Mobile Nodes (MNN) and CN.



Answer

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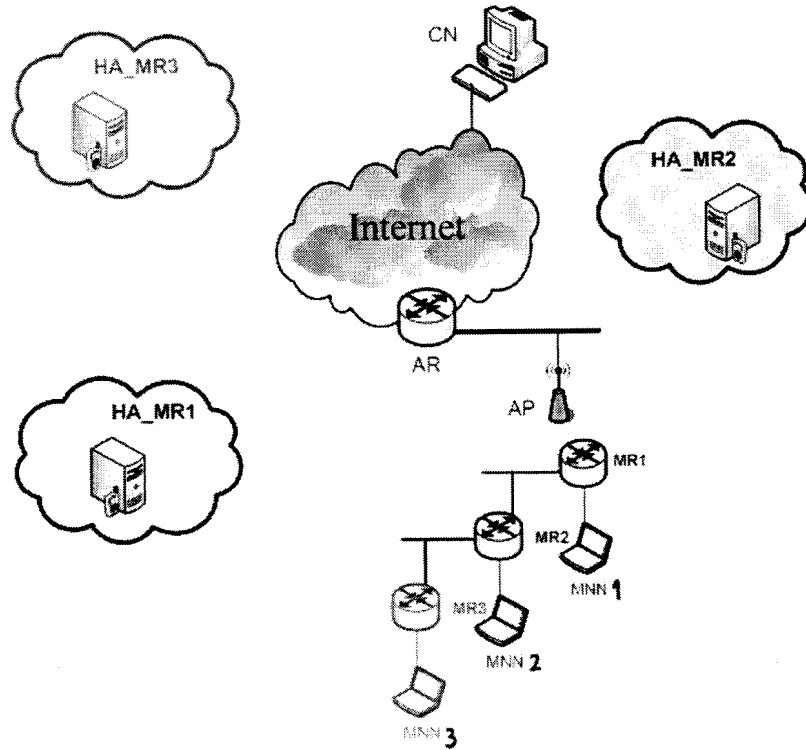
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18. This question is based on NEMO.

- a. Please draw the link paths where data from CN to MNN3 flows (to show that how pinball routing problem occurs).



- b. List problems and disadvantages of pin ball routing

Answer

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