Question 13:

1. The number of messages needed to vote for a new coordinator is N + 1 (consider the broadcast message will not be sent to broken nodes)

If the broadcast message will be sent to every node include broken nodes. We consider 3 scenarios. Where the node with id just below the broken coordinator is running, the total messages needed is N + 1. Where the new coordinator is PN , we need 2N + i + 1messages. And where the new coordinator is Piitself, the number of messages is 2N + i.

1. Consider proposing new algorithm for recovering node, we send a message RECOVER from recovered node to the coordinator node, then the coordinator node send back OK and broadcast to every node to update their status table, total messages needed is N + 2.

On the other

Question 14:

1. Total messages needed is: 2N - 2 messages include N - 1 message REQUEST from Pi and N – 1 REPLY messages to Pito let Pi use SR (just use, did not includes release).
2. This improvement work in this specific scenario since Pi do not need REPLY from Pj to confirm that its request have the lowest timestamp to use SR, so, the total message is 2N – 2 – i where I is the number of processed sent the same time with Pi but have timestamp higher than Pi .(just messages to use SR, not include release it)