SEMINAR 5

This test consists of a single question with four parts. **Each correct answer provides 2.5 points, while each incorrect answer provides -2.5 points.**

In the paper written by Tyler Treat, *"A Look at Nanomsg and Scalability Protocols",* that has been proposed in the Middleware seminar, several communication patterns are described. Select which ones (there may be more than one) have a direct equivalent pattern in ØMQ. To this end, write "**YES**" or "**NO**" in the corresponding cell (or leave it empty in case of doubt):

YES	PAIR The nanomsg PAIR communication pattern is bidirectional and asynchronous. It can be supported using a DEALER/DEALER communication pattern in ØMQ.
YES	PIPELINE The nanomsg PIPELINE communication pattern is unidirectional and asynchronous. It can be supported using a PUSH/PULL communication pattern in ØMQ.
NO	BUS In the nanomsg BUS communication pattern all processes may broadcast messages through the bus and all of them receive such messages. To this end, a single socket is used by every process. No single socket in ØMQ is able to do the same. PUB/SUB may do a similar thing, but it needs two sockets per process instead of one in order to do so. Each process should have a PUB and a SUB socket. Note that BUS implements a bidirectional communication pattern but PUB/SUB is unidirectional. So, these two communication patterns aren't equivalent.
NO	SURVEY In the SURVEY communication pattern the sender broadcasts a request message to all participants. Every participant should reply using its socket. This communication pattern is based on two unidirectional interactions, following a given order. It is synchronous: all answers are expected in order to end such interaction. ØMQ is unable to implement in a direct way this communication pattern. It should combine a PUB/SUB for implementing the first stage and a PUSH/PULL for implementing the second one. So, we need two ØMQ communication patterns in order to build something similar to the SURVEY pattern from nanomsg.