**Question 2(b) - Enlist the benefits and drawbacks of the the proposed LoRaBLE protocol**

**Benefits of LoRaBLE protocol**

1. With LoRaBLE protocol, the benefits of both short and long range communication with bounded delays have been instituted utilising the BLE and LoRa protocols respectively, in order to meet time constraints of real- time industrial traffic flows.

2. The use of clusters to bind/ group neighbouring nodes which frequently communicates with each other has enabled communication without incurring network workload. This intra-cluster communication is also power saving as it is based on the BLE protocol. Further, Cellular network independency is the key benefit to reach distant far flung areas to monitor parameters from various IoT sensors.

3. It mentions about the time-constrained communications between a LoRa end node and another LoRa end node. Earlier approaches that have been proposed in the literature so far, mention are only able to provide bounded delays to time-constrained communications from a LoRa end node to the LoRa sink. Therefore, LoRaBLE fills a gap as far as real-time communications over LoRa networks are concerned.

**Drawbacks of LoRaBLE Protocol**

1. Model is based on the assumption that each CB is located within the coverage range of all other CBs. It is known that the use of a high spreading factor value increases the Time of Arrival, and therefore exists a trade-off between bit rate and communication range. This will further limit the deployment of LoRaBLE protocol based IoT network to be applicable for soft real time applications, with cycle times in the order of tens of seconds.

2. It is also mentioned that the protocol is based on the based that nearby nodes are organized in one cluster. However, if the no of nodes exceeds the maximum permissible limit, it would cause network congestion. No discussion with regards to structure, protocol, topology to cater for multiple clusters is defined in the paper.

3. Communication between cluster takes place over LoRa protocol via master of LoRaBLE cluster. In the event of failure of this master, there is no reliability for inter communication between clusters.