1. Car pooling – motivation, advantages. HOV and HOT lanes – advantages and drawbacks
2. Uber – way of operation, critics, UberPool
3. Difference between car pooling, car sharing and car rental. Car sharing modes.
4. Ad hoc networks – basic principles. NEMO – basic principles, advantages and drawbacks
5. Source routing vs. flooding. Proactive vs. reactive routing. Comparison in terms of signaling overhead and delay.
6. AODV basic principles – route request, route reply, reverse path pointer, forward path pointer, timers, expanding ring search
7. DSR basic operation – route discovery, RREQ and RREP messages
8. Position based routing basic principles, localization service. Greedy forwarding strategies for the selection of next node.
9. Location Aided Routing (LAR) – operation principles, expected zone vs. request zone, adaptive request zone.
10. DREAM protocol basic principles – difference from LAR.
11. Contention Based Forwarding – basic principles.
12. AODV upgrades for VANETs
13. DTN networks – basic idea, why is it relevant for VANETs? (VADD and GeOpps not required)
14. VANET multicast protocols – basic idea, Zone of Relevance (Mobicast not required)
15. V2V vs. V2I communication. Comparison of centralized and distributed architectures.
16. ITS use cases – be able to give examples of co-operative awareness, vehicle type warning, traffic hazard warning, dynamic vehicle warning or traffic efficiency use cases. The fine details (maximum latency, minimum frequency) are not required.
17. DSRC frequency band. Basic goal of DSRC. Control and service channels. 802.11p MAC – EDCA. 802.11p beaconing, WSMP beacons – what is sent and why?
18. IEEE 1609.4 channel switching. Alternating, continuous, immediate access.